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**An interpretive policy analysis of multi-goal, sustainable-development
research programmes**

Charlie Dobson

A thesis submitted in partial fulfilment of the requirements for the degree of philosophy

SPRU – Science Policy Research Unit
University of Sussex

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I hereby declare that this thesis has not been, and will not be, submitted in whole or in part to another University for the award of any other degree.

Signature: Charlie Dobson

Abstract

Many developed countries in the global North are funding science programmes designed to address sustainability challenges in the global South. These programmes typically combine the goals of scientific excellence, interdisciplinarity, development impact and inclusion of researchers based in the global South. This thesis reviews the existing literature related to the subject and finds that there has been almost no research on the programme level dynamics of this type of programme. This is despite the increasing prominence of this type of programme and the challenges associated with a range of actors with differing motivations (e.g., funders, senior researchers, programme actors), working together to achieve complex, and potentially conflicting goals. To address this gap this thesis applies the Interpretive Policy Analysis (IPA) methodology to a case study of two UK-based programmes. The approach asks what the programme means to different actors and provides a lens for understanding their intentions and the tensions between them.

The thesis makes two contributions to knowledge. First, it identifies and tests a suitable analytical approach and methodology in an appropriate way to study this under researched subject. The thesis finds that IPA produces valuable insights and is more appropriate than existing approaches deployed in the wider science, technology and innovation studies literature. It also identifies a number of drawbacks with the approach and ways in which it could be built on. Second, it contributes practicable, contextualised, yet critically engaged, knowledge about these programmes on which designers and implementers can reflect. This includes a set of insights around how to motivate senior researchers to engage in programme level integrative activities. It also identifies underlying and unresolved tensions around interpretations of key ideas such as poverty relevance, partnerships and capacity building that encourage reflection on whether programmes are well targeted to meet development aims.

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Abbreviations

AHRC	Arts and Humanities Research Council
BBSRC	Biotechnology and Biological Sciences Research Council
BEIS	Department of Business, Energy and Industrial Strategy
BIS	Department of Business, Innovation and Skills
BMGF	Bill and Melinda Gates Foundation
CEW	Climate Energy and Water team in DFID Research and Evidence Division
Co-I	Co-investigator
DFID	Department for International Development
EPR	End of Programme Review
EPSRC	Engineering and Physical Sciences Research Council
ESPA	Ecosystem Services for Poverty Alleviation
ESRC	Economic and Social Research Council
FCDO	Foreign, Commonwealth and Development Office
FCO	Foreign and Commonwealth Office
GCRF	Global Challenges Research Fund
GDP	Gross Domestic Product
GNI	Gross National Income
HEFC	Higher Education Funding Councils
ICT	Information and Communication Technology
IDRC	International Development Research Centre
IDS	Institute of Development Studies
IPA	Interpretive Policy Analysis
IPAC	International Programme Advisory Council
LMIC	Lower-Middle Income Country
MEA	Millennium Ecosystem Assessment
MLP	Multi-Level Perspective
NERC	Natural Environment Research Council
NGO	Non-Governmental Organisation
ODA	Official Development Assistance
OECD	The Organisation for Economic Co-operation and Development
PAT	Principal Agent Theory
PCG	Programme Co-ordination Group
PEB	Programme Executive Board
PI	Principal Investigator
RAE	Research Assessment Exercise
R&D	Research and Development
RC	Research Council
RCUK	Research Councils United Kingdom
RED	Research and Evidence Division
REF	Research Excellence Framework
RFI	Research Fairness Initiative

RQ+	Research Quality Plus framework
SAREC	Swedish Agency for Research Co-operation
SDGs	Sustainable-development Goals
STEPS Centre	Social, Technological and Environmental Pathways to Sustainability
SIDA	Swedish International Development Co-operation Agency
SSA	Sub-Saharan Africa
STI	Science, Technology and Innovation
STIS	Science, Technology and Innovation Studies
STS	Science and Technology Studies
UKCDR	United Kingdom Collaborative on Development Research
UKRI	United Kingdom Research and Innovation
UN	United Nations
UNDP	United Nations Development Agency
UPGro	Unlocking the Potential of Groundwater for the Poor
USAID	United States Agency for International Development
VFM	Value for Money

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Chapter 1: Introduction

1.1 Background to the thesis

This thesis analyses two case studies of multi-goal, sustainable-development research programmes, drawing firstly on Science, Technology and Innovation Studies and secondly on Interpretive Policy Analysis. It is intended to speak to these two academic traditions as well as being relevant to policy officials working on the design and implementation of such programmes.

The introductory chapter will begin by locating the field of study to which the thesis aims to contribute, namely Science, Technology and Innovation Studies (STIS), differentiating this field from the more critically focused Science and Technology Studies (STS). The subject of study is defined, the rising prominence of multi-goal, sustainable-development research programmes, both in the UK and globally, is reviewed, and the ideas driving the investments is considered. This is followed by a summary of the existing literature and the research gap the thesis aims to address and a brief introduction to the approach of Interpretive Policy Analysis (IPA) as a suitable approach for studying this research gap. It concludes by outlining the contributions to knowledge this thesis will make and the research questions that the thesis will answer before providing a brief overview of the chapters.

1.1.1 Locating the field of study

I will seek to contribute to the broad field of STIS, defined by Martin (2012:1220) as “*devoted to analyzing, understanding and effectively responding to the economic, policy, management, organizational, environmental and other challenges posed by innovation, technology, R&D and science*”. The field emerged in the 1950s and 1960s out of a dissatisfaction with the way that neo-classical economics dealt with the relationship between economic growth and innovation. It has been driven by the goal of establishing the conditions that lead to the development and diffusion of scientific and technological innovations and characterised by close collaboration with industry and policy professionals. Its core interest has been the policy question of how to spend resources effectively to promote scientific and technological innovation.

One line of research within the field of STIS has focused on responding to the challenge of how to organise the system of public funding for science. It has been concerned with analysing the dynamics of public funding systems to provide insight and advice to policy-makers concerning the design and management of these systems. Although it often draws on terminology and concepts developed in the wider field of STIS, it is also distinct because, rather than focusing primarily on the question of how research gets turned into innovation, it focuses on the behaviours, attitudes, relationships and institutions of the actors in the public funding system.

A major contribution has been the application of the concept of Principal Agent Theory (PAT) to funding systems, borrowed from the field of New Institutional Economics. Scholars have applied and adapted PAT to provide insightful analysis of the dynamics at the system level of the funding system (Braun, 2003; Gulbrandsen, 2005; Guston, 1996; Rip, 1994; van der Meulen, 2003). Another contribution has been developing a lens of co-ordination to define the challenges of science funding policy (Hessels, 2013; Lepori, 2011). These approaches will be returned to in detail below as they have informed the theoretical foundations for the specific line of literature studying multi-goal programmes that will be analysed in the review.

STIS can be differentiated from its sister field of science and technology studies (STS). STS also emerged in the 1960s with a shared focus on the social studies of science and technology but has been animated by a different set of questions and debates. The intellectual targets that drove the development of this field of study were the rationalist school of the philosophy of science and the functionalist school of the sociology of science. STS is less policy oriented and more motivated by debunking a range of academic views of science. As a result, the major debates have generally been centred around more conceptual issues, such as the limits of social constructivism and relativism and the role of materiality in shaping scientific processes.

It should be noted that the break between STS and STIS has not been total and there have been several contributions that have straddled the divide and been widely cited in both communities (e.g., Kuhn's (1962) seminal work on paradigms in scientific development and Gibbons' (1994) influential work on Mode 2 knowledge production). Overall, however, through an analysis of citations contained in handbooks, Bhupatiraju et al.

(2012) have shown that, although they have some common antecedents, historically there has been limited interaction between the fields.

As noted above, STIS and STS adopt different positions in their relationship with policy advice. The two extremes of positioning are labelled ‘technocratic’ vs ‘critical’ by Edge (1995). To elaborate on this dichotomy, he uses an analogy of how the alternative approaches might seek to answer the question of how do we prepare scientists to enter society and meet its challenges? A ‘technocratic’ approach would survey people in relevant employment and ask them what skills they think they need, then deduce the skills not present in education and devise ways to fill the gaps. A ‘critical’ approach would try to build a reflexive self-awareness of the social institutions into which they are entering so that they can reflect on their own paths and question conventions. This analogy can be mapped onto how I might approach my study. An extreme technocratic approach to my study would ask researchers and funders what has or has not worked across the research programmes, and seek to establish the barriers to, and drivers of, change and how they could be re-aligned to allow the identified lessons to be learned and implemented. An extreme critical approach would focus entirely on deconstructing and multiplying narratives around the goals found in the programmes, seeking to show the level of divergence through thick descriptions and analysis.

The thesis will aim to position itself somewhere in the middle of this range. The toing and froing between constructing solutions and de-constructing viewpoints can be viewed as a creative tension that the study seeks to harness. The need to balance these tendencies is very well summarised by Elzinga and Jamison (2011:192) who argue that “*the analysis of science and technology policy without the self-reflection that comes from science studies is blind, just as science studies are naïve if not informed by a science and technology policy perspective*”.

Although I will draw on critical traditions from sociology, I will also seek to contribute to the policy-oriented STIS literature for two reasons. First, STS has relatively little to say about science funding instruments, instead focusing on how scientists create knowledge and interact with each other. Second, the positioning of the thesis is oriented towards providing practicable advice to those involved in the design of these programmes, naturally aligning it with STIS rather than STS. However, the spirit of STS is very much present in the approach taken, in that it seeks to maintain some critical

distance from simply adopting the perspective of a policy-maker and instead seeks to provide knowledge that is designed to allow reflection for all actors involved in this type of programme by analysing their multiple perspectives.

1.1.2 Defining the subject of study

Having identified the broad field of study as STIS, and specifically the line of literature within STIS that focuses on the dynamics of science funding, the next section will provide clarity on the subject of the thesis. To do this it is useful to break the subject down into its four components – ‘*dynamics*’, ‘*multi-goal*’, ‘*sustainable-development*’ and ‘*research programme*’. This short section will define the constituent parts before providing the overall definition of the subject of study.

I refer to ‘dynamics’ as “*the way in which people or things behave and react to each other in a particular situation*” (Oxford English Dictionary, second edition). This definition encompasses the driving forces (motivations) of the different groups involved in a situation, how they relate to each other, the context of the interaction and how that context shapes their viewpoints and relationships.

There are numerous characterisations of the motivations of science funding actors and how they relate to each other in the literature on science funding systems. At the highest level, these studies have focused on the dynamics between researchers and government at the scale of the whole science funding system (Braun, 2003; Gulbrandsen, 2005; Guston, 1996; Rip, 1994; van der Meulen, 2003) At the lowest level, the dynamics of scientific knowledge production at the scale of scientific teams has been studied in depth using ethnographic methodologies (e.g., Latour, 1979; Traweek, 1988).

I will aim to contribute to a line of literature that sits in the middle ground between these two scales. These are studies that have addressed the dynamics of particular science funding instruments: focusing on the nature of the instrument, its purpose and the dynamics of the groups of actors involved. Wardenaar et al. (2014) have looked at varieties of research co-ordination in the research consortia model of science funding. Klerkx and Leeuwis (2008) have looked at experiences of delegating authority to research networks. However, the instrument that has received the most focus, and the line of literature on which I will draw, analyses the dynamics of research programmes.

The next definition is the concept of a research programme. At its most fundamental, a ‘programme’ is “*a set of related measures or activities with a particular long-term aim*” (Oxford English Dictionary, second edition). Buffardi and Hearn (2015) explain that programmes consist of multiple separate projects that are funded through a common mechanism and address a common broad theme. The projects are grouped together under a common set of high-level objectives, most often sharing a single results framework. Shove (2003) describes programmes as a form of temporary organisation that acts to co-ordinate and agglomerate a mix of projects. The defining feature is that, at some level through integration and synergy building activities, they aim to produce value greater than the sum of the parts. Shove (2003) explains that in research programmes, the nature of that intended added value will be some combination of the following: creating value for individual projects from being part of the programme; shaping wider research capacity by building communities of scholars around particular research subjects; achieving greater non-academic impacts beyond the programme through a higher profile; and the networks created by the programme. Building on these definitions, for the purposes of this thesis, I will define a research programme as a temporary organisation made up of a group of projects that have been funded under a common theme and mechanism, and where there is an expectation that the cumulative value of the projects will be greater than if carried out separately.

I will aim to contribute to the understanding of a particular type of research programme, that of the multi-goal, sustainable-development research programme. This issue of multi-versus single goal programming will be explored in greater detail than the other components in this definition section as it is the most complex and foundational part of the subject of study.

Multi-goal programming can be distinguished from research programming that is predominantly focused on the goal of advancing an academic discipline. This is referred to by Gibbons (1994) as Mode 1 knowledge production. Mode 1 knowledge production is based firmly within a single academic discipline and is judged predominantly by academics within the same discipline on disciplinary quality criteria. The primary actors involved in funding this type of research are researchers and the relevant research funders. This mode of research funding has been identified as the predominant form of public funding in the period from the establishment of largescale and comprehensive public

funding systems after the second world war up until around the 1980s (Elzinga and Jamison, 2011; Hessels et al., 2009).

Rip (1994), borrowing from Polanyi's influential 1962 thesis on the importance of scientific autonomy from the state (Polanyi, 1962), refers to this period as a form of 'Republic of Science'. In this model, the scientific process is understood in terms of the Mertonian norms of universalism, communalism, disinterestedness, and organised scepticism (Merton, 1973). Amongst adherents to this view, there is a strong belief in the potential of basic science (if funded properly and left free from 'external' interference) to follow these norms and to deliver breakthroughs that can then be tailored to address society's problems through applied research further down the 'chain'. This imagery of a production line of basic science guided by scientific norms through to applied science and commercial innovation has been described as the linear model (Kline and Rosenberg, 2010; Rothwell, 1994). Based on this narrative, a succession of influential authors has argued that decisions about science should be protected from the world of politics and 'external' influences and decision-making (Bush, 1945; Polanyi, 1962). Research funding institutions act like a parliament for the 'Republic of Science', where scientists, through processes of peer review, are granted autonomy to make decisions on funding. There is a level of accountability through requirements to report back to the governments funding the whole process with evidence showing the value of science; on the whole, however, scientists are left to their own devices by governments (Rip, 1994).

Since around the 1980s, there has been a steady erosion of the 'Republic of Science' narrative and a proliferation of narratives that contain more ambiguous accounts of the scientific process and its links to societal benefits. Increasingly, narratives have arisen that question the linear relationship between scientific activity and societal benefits, and that draw on a wide range of ideas on how to link scientific activity to the interests of society. Examples include ideas such as 'Mode 2' science (Gibbons, 1994), the triple helix (Etzkowitz and Leydesdorff, 2000), national systems of innovation (Freeman, 1995; Lundvall, 2010), responsible research and innovation (Owen et al., 2012), and ideas that science policy-makers have championed themselves such as 'frontier research' and 'grand challenges' (Flink and Kaldewey, 2018). These funding activities no longer have a single overriding focus on achieving academic quality goals. Instead, academic quality

goals are complemented and mixed with goals relating to the expected wider impacts of the activity.

The complexity of these societal challenges has had the effect of pushing interdisciplinarity and transdisciplinarity up the scientific funding agenda and made them mainstays of science funding practices in many countries (Lindvig and Hillersdal, 2019; Lyall et al., 2013; Lyall et al., 2015). Interdisciplinarity is needed because of the multifaceted nature of societal problems requiring integration of knowledge from across disciplinary boundaries. The multiple goals will be returned to in the literature review. I will now define the term ‘sustainable-development’, the final part of the definition of the subject of study.

International sustainable-development research funding is a prominent example of a field of research that has adopted and developed the trends of impact focus and integrative modes of research. The rubric of sustainable-development links the fields of environmental science, human development and questions of international development. The term encapsulates the biggest challenges of our epoch with concerns around how to live sustainably and promote human wellbeing within the planet’s limits, recognised in the creation of the UN Sustainable-development Goals (SDGs) (UNGA, 2015).

Sustainable-development research brings a particular complexion to a multi-goal programme. First, the type of challenge inherently raises both social and natural science questions making the research interdisciplinary across non-cognate fields. This creates the challenge of what Lele and Norgard (2005:968) call “*bridging the big divide*” between the theoretical premises, cultures and attitudes of social and natural scientists. In addition to the challenges of social and natural scientists working together, the subjects included under the rubric of sustainable-development are themselves inherently complex and difficult to study. There has been an increasing recognition of the complexity and unpredictability of socio-ecological systems emanating from a wide range of sources, including complexity science, ecology and science and technology studies. Leach et al. (2010:23) explain “*together these developments contribute to a growing appreciation of the importance of dynamic (rather than static) perspectives, based on holistic (rather than reductive) analysis, acknowledging context dependence and the conditioning effects of structure*”.

Studying sustainable-development challenges also means drawing on social sciences associated with the interdisciplinary field of development studies and engaging with longstanding epistemological and ethical debates around how to do development research. In particular, development studies has featured debates around the representation and inclusion of those being studied and issues of participation in research (Chambers, 1997; Cooke and Kothari, 2001). There are also difficult issues to be negotiated around doing fieldwork in low-income countries in terms of local political dynamics and obtaining permission to undertake fieldwork from increasingly risk adverse universities in the UK (Cramer et al., 2016).

Sustainable-development research also raises the question of the role of developing country researchers in the research programme, whether as partners, recipients of capacity building, or both. If the scientific process is being conducted across international boundaries, and most often actually taking place in developing countries, the issue of the balance of personnel between developed and developing country researchers and the roles given to them becomes important (Bradley, 2007). Another issue specific to sustainable-development research programmes is how research gets turned into impact in a developing society context, where extreme inequalities of power and wealth and poorly functioning political and legal systems are often common-place (Williams, 2012). These themes will be returned to below in the section on potential tensions between the programmes' goals.

Sustainable-development multi-goal programmes bring together the dynamics of research funding systems (which have been the focus of STIS literature) with the dynamics of international development. As Carbonnier and Kontinen (2014:5) explain "*in North-South research partnerships, academia meets the international development habitus and heritage*". Critical development scholars have repeatedly demonstrated that the field of international development is replete with contradictions and tensions stemming from situations where powerful developed country stakeholders take responsibility for 'developing' parts of the world that are less economically developed. Wolfgang Sachs contends, "*development is much more than just a socio-economic endeavour; it is a perception which models reality, a myth which comforts societies, and a fantasy which unleashes passion*" (Sachs, 1992:1). Andrea Cornwall has written compellingly about the way international development is a field of practice that has a high number of 'essentially

contested concepts’, terms that combine general agreement on the abstract notion that they represent with endless disagreement about what they might mean in practice (Cornwall, 2007). In development these words take on a particular role in morally justifying development interventions using strongly moralistic language, while at the same time remaining very vague about what actions the terms entail.

Cornwall calls them ‘buzzwords’: words that “*gain their purchase and power through their vague and euphemistic qualities, their capacity to embrace a multitude of possible meanings, and their normative resonance*” (Cornwall, 2007:472). Poverty is identified as perhaps the most compelling of buzzwords; as John Toye notes, “*the idea of poverty reduction itself has a luminous obviousness to it, defying mere mortals to challenge its status as a moral imperative*” (Toye, 2007:472). The moral unassailability of the development enterprise is secured reference to that vague but highly emotive category ‘the poor and marginalised’ (Cornwall and Brock, 2005).

These specific characteristics related to multi-goal, sustainable-development research programmes show that this type of programme has highly distinctive features, making it a distinct subject of study from other types of multi-goal research programmes. These characteristics will be returned to in greater detail in the literature review chapter that summarises the literature on how the multiple goals of a sustainable-development research programme interact, combine and potentially conflict with each other.

The above paragraphs have introduced and clarified what is meant by the subject: ‘dynamics of a multi-goal sustainable-development research programme’. In summary the subject involves analysing the motivations of the main groups taking part in a multi-goal sustainable-development research programme and seeks to understand how the actors interpret the goals, how they relate to each other and how the context of the interaction shapes their relationships.

1.1.3 Rising prominence of multi-goal, sustainable-development research programmes

Having identified the broad field of study and provided a detailed definition of the subject of study, in the next section I argue why it is an important subject of study by outlining how it is a subject that is rising in prominence globally.

Research programmes incorporating these specific goals have become increasingly prominent in line with the general rise to prominence of sustainable-development issues. Increasingly, natural and social scientists of different types in the global North are being asked to turn their attention to issues of international development. This reflects the growing recognition of the importance of research in supporting the search for solutions to intractable development problems. Citation analysis over the last decade has shown the increasing amount and interdisciplinarity of sustainability related research, particularly since the development of the SDGs that have served to raise the profile and stimulate further investment in this line of research (Clarivate Analytics, 2019; Elsevier, 2015; Kajikawa et al., 2014).

Table 1.1 demonstrates the scale and number of multi-goal, sustainable-development research programmes, showing that this field of research is no longer a niche concern. In the UK, the Global Challenge Research Fund (GCRF) and the Newton fund alone represent investments of over £2bn. The table also demonstrates the diversity of types of research funders that are investing. They include philanthropic organisations, such as the Wellcome Trust, individual universities funding programmes from their own budgets, government departments, such as DFID, and the full breadth of Research Councils. The table also demonstrates the trend for funders to collaborate on this type of programme. Of the 29 programmes described in the table, 21 involve more than one funder of research collaborating on the programme.

Table 1.1: International, multi-goal Sustainable-development research programmes

Category of programme	Name	Funders	Dates	Geographical scope	Monetary value	Topic	Description and key goals
Historical DFID programmes on Sustainable-development	DFID's Renewable Natural Resources Research Strategy (1995-2005)	DFID	1995-2005	Global	190 million	Natural resource management	A group of 10 programmes that aimed to create research supporting alleviation of poverty, the promotion of economic growth and the mitigation of environmental problems. The programmes had a focus on multi and interdisciplinary research and capacity building.
	Climate Change Adaptation in Africa programme	DFID and IDRC	2006-2012	Africa		Climate change adaptation	Programme aimed to build skilled capacity to adapt to climate change through three core activity areas: Participatory Action Research (PAR), capacity development, and knowledge sharing.
DFID and RC Collaborations ¹	DFID MRC concordat	DFID and MRC	1993-ongoing	Global	226 million (2008-2018 period)	Health	UK-led biomedical research that aims to tackle the priority health problems of developing countries. Focus on research excellence, clinical trials and capacity building.
	Sustainable Agriculture Research for International Development (SARID)	DFID and BBSRC	2006-2011	Africa and Asia	7 million	Agricultural biotechnology	Aims for production of high quality strategic and basic science, development impact, capacity building

¹ DFID has been running joint programmes with MRC since its creation in the 1990s, but the number and type of collaborations increased rapidly in the mid-2000s as it started new collaborations with BBSRC, ESRC, NERC and EPSRC)

	Combating Infectious Diseases of Livestock for International Development (CIDLID)	DFID and BBSRC	2009-	Africa and Asia	13 million	Livestock diseases	Aimed to enhance the livelihoods of the poor in these regions by improving livestock health, welfare and productivity by enabling more effective sustainable management of livestock diseases. Focus on academic excellence, development impact and capacity building.
	Sustainable Crop Production Research for International Development (SCPRID)	DFID, BBSRC, BMGF, Indian gov	2010-2019	Africa and Asia	20 million	Agricultural biotechnology	The programme was designed to address the future threats to the productivity of five staple crops (i.e., cassava, maize, rice, sorghum and wheat). Focus on capacity building and partnerships.
	Joint scheme for research on international development	ESRC, DFID	2005-ongoing	Global	62 million	Social science	Aimed for development impact, interdisciplinarity within social sciences, capacity building and accessibility of funds to Southern researchers, research excellence
	Zoonoses and Emerging Livestock Systems (ZELS)	DFID, BBSRC, NERC, ESRC and MRC	2012-2021	Global	23 million	Zoonotic diseases	Development impact, interdisciplinarity, research excellence and partnerships/capacity building
	Understanding Sustainable Energy Solutions in developing countries (USES)	DFID, EPSRC, DECC		Global	11 million	Sustainable energy	Aimed at understanding sustainable energy solutions to poverty-related and low carbon issues in the global South. Includes capacity building, partnerships, research excellence and interdisciplinarity elements.
	Ecosystem Services for Poverty Alleviation (ESPA)	DFID, NERC, ESRC	2009-2018	Global	£40.5 million	Environmental science	Four aims: to create a strong research base on the connections between ecosystem services and poverty alleviation; to develop innovative interdisciplinary tools and methodologies; to engage with policy-makers in developing countries and transmit useful knowledge to them; and to build capacity of researchers in global South.
	Unlocking the Potential of Groundwater for the Poor in Africa (UPGro)	DFID, NERC, ESRC	2012-2019	Sub-Saharan Africa	£12 million	Groundwater	To further research on groundwater and groundwater management in Africa, to develop capacity, promote interdisciplinarity and achieve research excellence.
	Science for Humanitarian Emergencies and Resilience (SHEAR)	DFID, NERC, ESRC	2014-2020	Sub-Saharan Africa and South Asia	£24 million	Disaster preparedness and response	To enable greater and more effective investment in disaster resilience and earlier action to respond to imminent natural hazards. Combining excellence, development impact, interdisciplinarity and capacity building
	Future Climate for Africa (FCFA)	DFID, NERC	2014-2019	Sub-Saharan Africa	£20 million	Climate science	Improving understanding and prediction of climate in Africa, and working with users, bring this information into use in delivering 'climate-smart' policy, planning and investments. Combining excellence, development impact, interdisciplinarity and capacity building
Global Challenges Research Fund (GCRF)	Growing Research Capability to Meet the Challenges Faced by Developing Countries (GROW)	UKRI collective fund	2016-2020	Global	£225 million	Mixed across topic areas relevant to SDGs	The aim is to build research capability in UK and developing countries to address particular development challenges. There is also an emphasis on interdisciplinarity and partnership.
	Interdisciplinary hubs	UKRI collective fund	2019-2024	Global	£200 million	Mixed across topic areas relevant to SDGs	Transformative research approaches to address intractable challenges. Emphasis on interdisciplinarity, excellence, partnerships, capacity building and development impact
	International Partnership Programme	UK Space Agency	2017-2022	Global	£152 million	Space science	IPP uses the UK Space sector's research and innovation strengths to deliver a sustainable, economic or societal benefit to undeveloped nations and developing economies.
	Foundation Awards for Global Agricultural and Food Systems Research	BBSRC, MRC, ESRC, AHRC and NERC	2017-19	Global	£16 million	Agriculture	Deploy existing UK research strengths and/or emerging capabilities in specific research area(s) relevant to agriculture and food challenges in Low and/or Middle Income Countries (LMICs), promote multidisciplinary approaches in addressing the challenges, encourage, where applicable, research partnerships between UK research teams and LMICs, build on any existing UK-LMIC links, develop new or enhanced research capacity for addressing the agriculture and food challenges of LMICs.
	Global Challenges Research Fund: Building Resilience	ESRC, NERC, AHRC	2019-2022	Global	£9 million	Resilience to environmental hazards	Aiming for research quality, capacity building, partnerships, interdisciplinarity and development impact
Other UK government investments in ODA through BEIS	Newton fund	BEIS, UKRI, National Academies, Met office and in-country teams in LMICs	2014-2021	Global	£735 million	Mixed across topic areas relevant to SDGs	Has three pillars. People: improving research and innovation expertise (capacity building), student and researcher fellowships, mobility schemes and joint centres. Research: research collaborations on development topics. Translation: innovation partnerships and challenge funds to develop innovative solutions on development topics.
IDRC programmes	Three areas outlined in 2015-2020 strategy-agriculture and environment, Inclusive economies, Technology and innovation	IDRC	Ongoing	Global	£186 million in 2017-2018	Mixed	As part of its mandate, IDRC funding is focused on capacity building, equitable partnerships, high quality research, and development impact. Its programmes are also predominantly interdisciplinary.
	Sussex sustainability research programme (SSRP)	Sussex	2017-ongoing	Global	£1.4 million	Mixed across topic areas relevant to SDGs	20 interdisciplinary research projects that address interactions among the SDGs, and how trade-offs can be minimised or synergies maximised

University programmes	Sustainability Science Programme	Harvard	2006-ongoing	Global	Not available	Mixed	Multidisciplinary research advancing scientific understanding of human-environment systems; improving linkages between research and policy communities; and building capacity for linking knowledge with action to promote sustainability
	Inter-university sustainable-development research programme	Manchester Metropolitan University, Hamburg University of applied sciences	2015-ongoing	Global	Not available	Mixed	The aim is to support and catalyse high quality research and training on sustainability issues at partner universities. Specific aims are to assemble interdisciplinary, cross-Faculty teams, joint training of PhD students, facilitating the production of high quality joint publications.
Philanthropic organisations	Our Planet, Our Health	Wellcome Trust	2016-2021	Global	Initial amount of £75 million	Environmental science and health	The programme aims to establish a number of significantly resourced transdisciplinary research programmes, with a focus on health and wellbeing, that can advance the ability to address the challenges associated with (a) the global food system and/or (b) urbanisation. Many of the projects involve partnerships between developed and developing country scholars.
Non-UK Government funded initiatives	The Swiss Programme for Research on Global Issues for Development (r4d programme)	Swiss Agency for Development and Cooperation and the Swiss National Science Foundation.	2012-2021	Global	CHF 97.6 million	Mixed	1. To generate scientific knowledge and research-based solutions for reducing poverty and global risks in least developed, low- and middle income countries. 2. To offer national and international stakeholders methods and options for finding integrated, holistic approaches to solving problems. 3. To enhance scientific skills and know-how in dealing with the complexity of global problems for the benefit of societies in developing and emerging countries
	Grand challenges for Development	USAID development lab	2011	Global	\$508 million	Mixed	It is a group of initiatives all framed around solving a particular challenge. For example, 'all children reading' challenge. Seems to be more of an innovation challenge than a science challenge.
	Global challenge fund	SIDA and partners (note that SIDA funds part of at least one of UKAID grand challenges)	2007-ongoing	Global	SEK 2 billion (circa £166 million pounds)	Mixed	A number of challenges. Such as 'powering agriculture'
International multilateral research programmes	Future Earth	International Council for Science, the International Social Science Council and a range of UN bodies	2015-ongoing	Global	Total funding for 2016-17 for Future Earth was €5.5 million	Global environmental change	An international platform for global change and sustainability research, building on existing research programmes like the DIVERSITAS, and the World Climate Research Programme (WCRP). Aims to support and network interdisciplinary science that is highly relevant to society. They emphasise co-production of science with societal actors and international capacity building.

Source: author's own

The UK Collaborative on Development Research (UKCDR) has identified a number of key trends influencing the growth in international development research (Dodson, 2016). UKCDR is a group of government departments and research funders working in international development. Established in 2007, in response to the House of Commons Science and Technology Select Committee inquiry into the use of science in international development, they seek to provide impartial mapping and analysis, a convening space, information sharing and a collective voice to shape policy. UKCDR identifies an increasing recognition of what science can do for development. This is recognised at the national level with the greatly increased level of research for development represented by the BEIS sponsored GCRF and Newton funds. In 2015 the UK government made a significant shift in terms of research for development funding – a yearly incremental rise

in aid spend specifically for research from under £400 million in 2015 to over £1.2 billion in 2021.²

Although it is outside the period of analysis of this thesis, it is worth noting here that there have been some major shifts in international development policy in 2020-2021. In June 2020, the Prime Minister Boris Johnson announced that DFID and the Foreign and Commonwealth Office (FCO) would merge. The new international department, the Foreign, Commonwealth and Development Office (FCDO), was launched in September 2020. Also in late 2020, a further major policy change was announced that, following the COVID-19 pandemic and the resulting economic downturn, the UK would reduce the legal target of 0.7% of GDP to be spent on ODA to 0.5%. In spring of 2021, the ramifications of this decision fed through to UKRI who announced that their BEIS ODA allocation had reduced significantly for the financial year 2021/2022; this meant an annual budget of £125m with a £120m gap between allocations and commitments. This in turn led to many scientists under the GCRF and Newton funds, as well as many other research programmes, facing reductions in their budgets or outright cancellations of awarded projects.³ The government has said that the reduction to 0.5% is a temporary measure in response to the extraordinary circumstances around the COVID-19 pandemic but, in any event, the situation has led to a period of profound uncertainty in 2021 around the short and medium term prospects of ODA research in the UK. ODA research remains a major strand of research funding in the UK and there are many programmes that are in the pipeline, although with uncertainty around their funding. The design and implementation of these types of programmes remains an important and topical subject in the UK. These events will not be referred to again in the context or findings sections of the thesis as they occurred two to three years after the period of analysis.

It is not only the UK that has re-oriented extra resources towards research for development. It is also recognised at the international level with Goal 17 of the SDGs giving specific importance to scientific capacity and development, both as a goal in itself and as being crucial for achieving so many of the other goals. It is also being increasingly recognised by developing country governments. For example, in SSA indications of this

² UKCDR website mission and strategy page accessed on 10th June 2021:

<https://www.ukcdr.org.uk/about-us/our-mission-and-strategy/>

³ UKRI letter to researchers accessed from UKRI website on 10th June 2021: <https://www.ukri.org/our-work/ukri-oda-letter-11-march-2021/>

increased prominence are varied. A survey of 17 African countries found an increase in those with science and technology (S&T) or STI policies (Mouton and Gaillard, n.d.). As of 2010, according to this survey, thirteen out of the seventeen countries had a national revised STI policy, up from eight countries in the period 1986-2010: none had any STI policies between 1960 and 1985. At the regional level, important policy documents, such as the African Union's Science, Technology and Innovation Strategy for Africa 2024 (AUC, 2014), increasingly relate STI to economic growth and development in Africa. UKCDR also identify a trend of increased importance being placed on the underlying higher education sector in developing countries and the importance of capacity building programmes. Lastly, they identify the rise of environmental awareness and problems being linked with an increased recognition of the complexity of challenges and the need for interdisciplinarity and co-production to address them.

1.1.4 Existing literature and the research gap

The idea of governments investing in research to address international development and sustainability challenges is not new, and there is a body of academic literature stretching back decades that has studied subjects related to the dynamics around this type of funding. The relevant literature on this subject is presented below in terms of the level at which the analysis is focused. It starts with the funder level, then looks at research related to the programme level and finally at the level of research projects and partnerships.

At the funders' level, the dynamics of this type of research for development funding have been studied through two PhDs: Currie-Alder's (2015) thesis exploring the history of DFID, IDRC and the Australian Centre for International Agricultural Research, and Broden Gyberg's (2016) analysis of Swedish research aid policy between 1973-2008.

Broden-Gyberg (2016) used discourse analysis inspired by Michel Foucault and Norman Fairclough to analyse interviews and policy documents relating to the Swedish Agency for Research Co-operation (SAREC). She found that two central perspectives dominated policy development during the period of analysis, identified as the 'universalist' and the 'localist' discourses, representing different views of science, knowledge and development. The differences between the two discourses were identified in their interpretation of how to achieve development through research; how they defined development problems in different ways; and in supporting certain modes of support over

others. Broden-Gyberg represents the details of ‘universalist’ versus a ‘localist’ discourse graphically, reproduced in Figure 1.1 below.

Universalist	Localist
Disciplinary research is highly valued. Some research considered less value-laden than other research (natural and technological sciences)	Inter-disciplinary research is highly valued. All research is considered value-laden.
Universal knowledge and technology. Results-oriented. Technology transfer. Absorptive research capacity (ability to make use of international research results)	Local knowledge and technology. Process-oriented. Local research capacity (ability to conduct research independently)
The interests and priorities of high-income countries dominate.	The interests and priorities of low-income countries dominate.
High-income country actors are experts and catalysts. Low level of critique regarding the role of aid actors.	High-income country actors supply temporary assistance. High level of critique regarding the role of aid actors.
Development is focused on the present and the future. Systems are important, but single factors are significant, not least economic factors	History affects the preconditions of development in the present. Systems are important and many factors are significant, not least social factors.
Development perspectives: modernization theory, neoclassical economics, neoliberalism	Development perspectives: dependency theories, human development, post-development
Modern science as a model for development Local/national research capacity is necessary	

Figure 1.1: Broden-Gyberg’s presentation of ‘universalist’ versus ‘localist’ discourses

Source: Broden-Gyberg (2016:11)

Currie-Alder (2015) examined the factors that determine which goals are pursued by research funders. He describes how the goals have included generating evidence on the effectiveness of foreign aid, inventing new technologies that serve poor people, and strengthening research capabilities in poor countries. He found that funders adjust their programmes in response to changing expectations within their government sponsors and the research community, and that all the funders have shifted towards a market-inspired governance of public research, favouring shorter time-horizons; at present, research for development is being pushed towards funding scientific collaboration with rising powers on common “global challenges”. Currie-Alder’s work on the development of research funding practices in DFID will be returned to in Chapter 4 on the context of ESPA and UPGro as Currie-Alder’s detailed historical analysis provides important context for the setting of the case studies in this thesis.

In addition to work focused on funders of research for development outlined above, there is also a small amount of literature looking at the dynamics of science funding by government departments in SSA; this has been funded by the Science Granting Councils Initiative, a programme designed to strengthen science funding in Africa and funded by DFID and the IDRC. Mouton et al. (2014) analysed the strategic priorities, objectives and practices of science granting councils in 17 countries in SSA. In 2018 I collaborated with Professor Joanna Chataway and others to analyse the trends and tensions in the activities of research funders based on interviews and document analysis of a number of SSA countries research funding bodies (Chataway et al., 2019). This work highlighted how science funders in many SSA countries operate with limited political and financial power and have fragile and limited capacities to define agendas. The study also highlighted that although there is a strong focus on concepts such as applied science and scientific excellence, there is limited shared understanding of what the terms mean, and different actors use them in various ways to promote their agendas.

In addition to research on internal funder dynamics, another strand of literature questions the evaluative criteria used by funders. Traditional evaluative repertoires of research have been examined and found lacking in appropriateness for the field of international development research. New ways of evaluating research with new criteria and practices designed to be fairer and more effective in promoting equitable development impact have been developed. Leading on this has been the IDRC's work on Research Quality Plus (Lebel and McLean, 2020). IDRC found that assessments that prioritise the opinion of peers, the volume of papers published, and citations were poor indicators for the quality of the work they were funding. IDRC's research has tended to focus on funding scholars in the developing world and on funding research that is embedded in local societies.

The Research Quality Plus (RQ+) tool recognises that scientific merit is an important part of the criteria, but not the full picture. The tool also acknowledges the crucial role of stakeholders and users in determining whether research is important and legitimate. The tool focuses on how well scientists position their research for use, based on the understanding that uptake and use of research begins during the research process, not afterwards. RQ+ has three tenets: 1. Identify contextual factors. Think about how, where and why it was done to identify the focus of the funder; 2. Articulate dimensions of quality, i.e., the underlying values and objectives of the research effort; 3. Use appropriate

rubrics and evidence. Assessments must be systematic, comparable and based on qualitative and quantitative empirical evidence. RQ+ has been applied by IDRC in a number of large scale evaluations, and has been picked up by other funders. For example, it is being used in the evaluation of the GCRF by BEIS.

At the programme level there is an emerging line of literature on the learning dynamics within the programmes. Harvey et al. (2017) have studied attempts at fostering learning in large programmes. Their aim is to identify learning processes and then consider how programme design and delivery can best support the emergence of learning in multi-project programmes.

At the research project level there is an extensive body of literature concerning the dynamics between Northern and Southern researchers involved in capacity building and research partnerships. This literature will be returned to in the section below on tensions around the goal of inclusion of developing country researchers.

Figure 1.2 below represents the existing literature and places it against the three levels of funder, programme and research project.

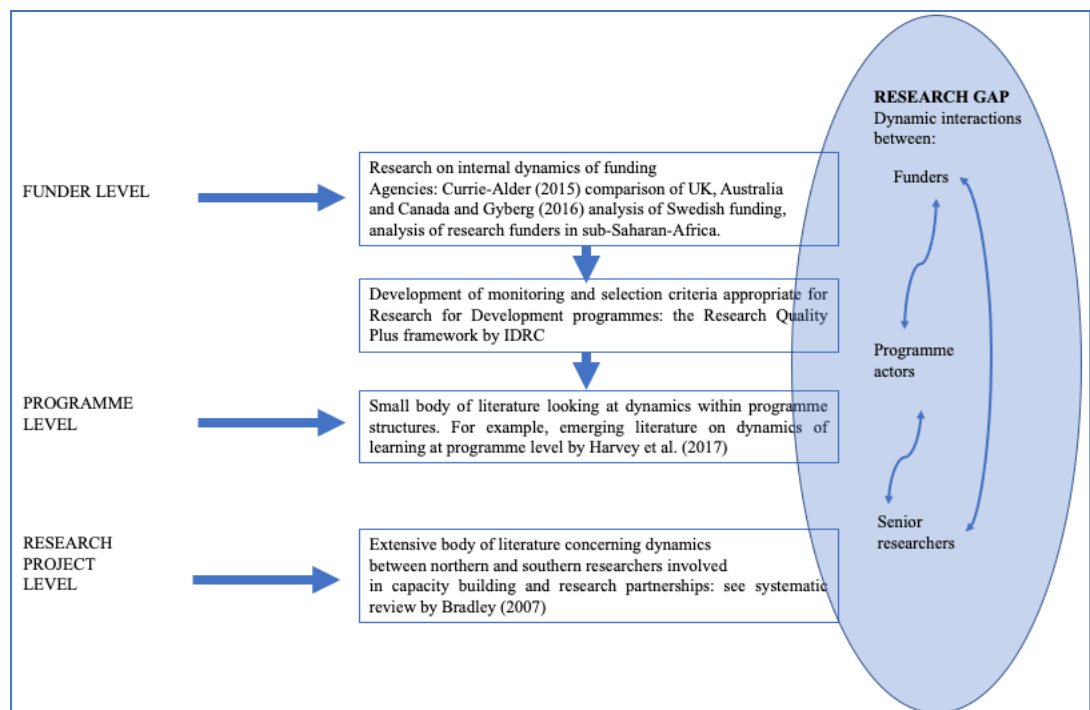


Figure 1.2: Representation of research gap

Source: Author's own

As described above, there has been very interesting work on research funders' viewpoints and more work is needed here. However, research funders are not the only actors that matter to these programmes. These programmes rely on collaboration between the funders, programme intermediaries and senior researchers to achieve their goal of creating value greater than the sum of the individual components. This means that understanding the dynamics between the different groups of actors around these types of programmes is essential in order to understand the types of actions and institutional innovations that are likely to provide sufficient coherence and shared motivation for these programmes to meet their goals. The work on RQ+ is also compelling in identifying deficiencies in common approaches and recommending solutions that better take account of developing country contexts. However, there is a lack of knowledge about the underlying dynamics around these programmes. Without an understanding of the dynamics between different senior stakeholders around the programmes it is difficult to assess which types of approaches and solutions would be accepted by the multiple stakeholders or not.

The literature review has not identified any detailed studies on the dynamics between funders, programme actors and senior researchers for sustainable development research programmes. There is one study by Jones et al. (2018) that used a single workshop amongst funders to elucidate stakeholders' views on this type of programme. They have described how hidden factors shape programmes like the windows of political opportunity to get a programme started. They also highlight the relative ease of tracking written outputs, such as publications, but difficulty of tracing impact on decision-making. However, this is not based on a detailed empirical study and, although an interesting article, it now needs to be built on with a detailed study of the dynamics between the programme stakeholders.

The decision to focus on the dynamics between funders, programme actors and senior researchers does lead to a strong bias towards analysis of UK based organisations and individuals, making the thesis as a whole relatively UK centric. This means that the thesis does not adopt a wider systemic viewpoint that would look at how the programmes impact on and are influenced by the dynamics of knowledge systems in the Global South. Elements of a wider viewpoint are brought in through the interviewing of senior Southern researchers but only in relation to how individual researchers view and interpret the

programme. The reason I chose to focus on the dynamics between funders, programme actors and senior researchers in one country is that through my literature review I found that there was very limited research looking at this level of analysis. Understanding these programme level dynamics is an important part of the picture as these are sites where decisions about the programmes are made. Building a detailed understanding of how these senior stakeholders interpret the programmes is therefore a necessary but not sufficient part of the wider knowledge and evidence landscape on the subject. As is made clear in the conclusion section, the analysis in this thesis needs to be combined with a wider analysis of knowledge systems to produce a full picture of opportunities for reflection and reform of these type of programmes.

I also made a conscious decision to not conduct a detailed review of the grey literature contained in publicly available evaluation reports. This decision stemmed from the decision to focus on the academic field of STIS (described in detail at section 1.1.1) and to bound the thesis in peer-reviewed academic literature rather than looking at the more instrumentally focused evaluation studies produced for funders by evaluation consultants and practitioners. It also partly stemmed from my lack of knowledge of the evaluation field when I started my thesis and drew up the terms of my literature review. When I started I did not realise that evaluation studies could in fact be conducted very rigorously and in line with academic standards. For the last two and a half years I have been working as an evaluation consultant, mainly on contracts for the UK government in the areas of higher education, international development and energy policy. During this period I have developed a detailed understanding of the range of evaluation tools and approaches and a respect for the standards of rigour involved in a well conducted evaluation study.

Examples of high quality studies of global research programmes in this vein include: the External Evaluation of the Think Tank Initiative Phase 2 conducted in 2019 by Niras using a realist evaluation approach combined with contribution analysis; Evaluation of the Global Challenges Research Fund Foundation Stage conducted in 2019 by Technopolis Group and ITAD using a detailed Theory of Change of research into use processes; and the set of seven external programme evaluations conducted by IDRC in 2015 using the Research Quality plus evaluation framework. The evaluation literature will be considered again in the conclusion section to the thesis where I consider how

future research may usefully review and incorporate high quality evaluation studies of multi-goal sustainable development research programmes.

In conclusion, this section has shown that despite the increasing amount of investment flowing into the funding of this type of multi-goal programme for sustainable-development, there is extremely limited peer-reviewed literature on how stakeholders around these types of programmes are interacting.

1.2 Summary of the thesis

1.2.1 Introducing the approach of the thesis and the proposed contributions to knowledge

The literature review section in Chapter 2 will make an argument for the type of approach that is needed to study this gap in the literature. It will argue that an approach is needed that has a nuanced way of drawing out the meaning of concepts and the underlying motivations of actors. It will also argue for the adoption of an inductive rather than deductive logic of inquiry so that it does not prejudge what is important to the actors involved. The thesis proposes testing an Interpretive Policy Analysis (IPA) approach, not previously applied in this area of research, as a potentially valuable approach.

The starting point of IPA is a focus on exploring what policy events and debates mean in their contextual settings to different groups of actors. This allows for an analysis of what the programme looks like to the various stakeholders in the programmes. IPA draws on various post-positivist academic lineages to reject the idea that the aim of policy analysis is to settle policy debates with value free, objective knowledge and evidence. In contrast, IPA aims to encourage reflexivity and draw attention to ambiguities and contradictions often inherent in the conversation around policy issues. The overall aim is for the reconstruction of the perspective of the groups that are involved and the wider context from which the policy derives its meaning. This comes through building up a practical understanding of the workings of the world you are studying and relating that understanding to particular perspectives of different groups involved in the conversation. A further focus of IPA is to highlight voices around a policy issue that may be side-lined, marginalised or not heard by those making the decisions. In my case, this has meant incorporating the voices of researchers from the Global South.

The study will apply this IPA approach to a detailed case study of two related research programmes that form part of an ongoing collaboration between the Department for International Development (DFID), the Natural Environment Research Council (NERC), and the Economic and Social Research Council (ESRC). The collaboration started with the Ecosystem Services for Poverty Alleviation programme (ESPA, 2006-2018) and continued through the subsequent creation of Unlocking the Potential of Groundwater for the Poor programme (UPGro, 2012-2019). Both programmes share the same overarching goals of impact, excellence, capacity building and interdisciplinarity.

1.2.2 Contributions to knowledge

The thesis aims to make two distinct contributions to knowledge:

1. *Identifying and testing a suitable analytical approach and methodology in an appropriate way to study the under researched subject of multi-goal, sustainable-development research programmes and evaluating the strengths and weaknesses of the approach used.*
2. *A novel empirical account of multi-goal, sustainable-development research programmes, their dynamics and a set of learnings for future programmes.*

The contributions to knowledge are based on the logic that this particular type of programme has not been studied in depth before. Therefore, there is no pre-existing theory that can be built on, although the conclusions section will reflect on how the findings of the case studies relate to and build on related insights on the dynamics of science funding and research programmes in the wider literature.

1.2.3 Research questions

As derived from the identified research gap, the overarching research question of the thesis is:

What are the dynamics between senior stakeholders of multi-goal, sustainable-development research programmes?

This will be approached by answering a number of more specific supporting research questions:

What different interpretive communities can be identified at programme level?

What are the main tensions at programme level and what are their sources?

How do the contrasting interpretations and dynamics between senior stakeholders involved in multi-goal sustainable development research programmes affect the implementation of those initiatives?

1.2.4 Overview of the thesis

Chapter 2: Literature review and analytical approach

Having set out the broad parameters of the study in the introduction, the literature review will begin with a discussion of literatures concerning the *dynamics* of science funding instruments, and will review the main theoretical approaches and characterisations in the STIS literature applied to science funding scenarios. Literature on the multiple goals driving this type of programme (excellence, interdisciplinarity, capacity building and research impact) will then be reviewed and will be followed by a discussion of how these literatures interact with each other. While reviewing these literatures, the particular context of sustainable-development science funding will be outlined. Lastly, literature on the dynamics of multi-goal research programmes will be reviewed; this is the closest line of literature to the subject of the thesis. The review will conclude with a synthesis section that critically analyses the key themes from the literature and argues that the literature suggests a particular type of approach should be adopted to study the dynamics of multi-goal sustainable-development, research programmes.

The analytical approach section will use the list of criteria for the approach developed at the end of the literature review section to argue that the IPA approach as developed by the scholars Schon and Rein, Hajer, Yanow, Bevir and Rhodes, Wagenaar and others (the specific relevant texts of these authors will be described in this chapter) is an appropriate analytical approach for the subject. This section will explain the different ideas within the IPA tradition and then explain the parts that will be used and why.

Chapter 3: Methodology, methods and implementation

This chapter will describe how the analytical approach was put into practice in the study, describing the research design and how it was operationalised. The chapter is divided into three parts. Part 1 will start with describing and justifying the research design in line with the epistemology of IPA. Part 2 will introduce the case studies: Ecosystem Services for Poverty Alleviation (ESPA) and Unlocking the Potential of Groundwater for the Poor in Africa (UPGro). This will include a brief descriptive account of the two programmes

describing their scope and aims, structure, processes (a fuller account of the genesis and stories of the programmes will also be provided in the findings chapter). Part 3 will cover the detail of the methodology, outlining the stages of the interpretive policy analysis process and how it was operationalised through the methods of document analysis, semi-structured interviews and analysis on NVivo using a tailored coding strategy. It will also provide an account of the ethical and reflective elements of the analysis.

Chapter 4: Context of ESPA and UPGro

This chapter will look at the context within which the case study programmes are situated. The aim of the chapter is to provide the background context that will be drawn on in explaining the interpretive communities and tensions, and place the funders and research actors within the wider system of public support for research funding in the UK.

Chapter 5: Identifying the Interpretive Communities

This is the first of two findings' chapters in the thesis. This chapter outlines the seven interpretive communities identified in the analysis. It provides a detailed account of what each community values from the programme and the key meanings they attribute to the programmes.

Chapter 6: Tensions and their sources and insights from the analysis

In this chapter, five core tensions between the interpretive communities are identified and described together with an account of the source of the tension and how it has developed over the lifetime of the two programmes, including the effect it has had on the programmes. The chapter concludes by drawing on the analysis of interpretive communities and tensions to identify a series of insights about the dynamics between senior stakeholders in the two case study programmes.

Chapter 7: Discussion and conclusions

The discussion and conclusions chapter is split into four sections. The first section will consider how the findings relate to the literature presented in the literature review. The second section will outline a set of policy implications from the case studies. The third section will consider the strengths and weaknesses of the IPA approach and the way it was applied in this thesis. The last concluding section will revisit the research questions and contributions to knowledge and finally consider further avenues for research.

Chapter 2: Literature review and analytical approach

2.1 Literature review

Having set out the broad parameters of the study in the introduction, the literature review will begin with a discussion of literatures concerning the *dynamics* of science funding instruments, and will review the main theoretical approaches and characterisations in the STIS literature applied to science funding scenarios. Literature on the multiple goals driving this type of programme (excellence, interdisciplinarity, capacity building and research impact) will then be reviewed, followed by a discussion of how these literatures interact with each other. While reviewing these goals, the particular context of sustainable-development science funding will be outlined. Finally, literature on the dynamics of multi-goal research programmes will be reviewed; this is the closest line of literature to the subject of the thesis. The review will conclude with a synthesis section that critically analyses the key themes from the literature and argues for a particular type of approach to be adopted to study the dynamics of multi-goal sustainable-development research programmes.

2.1.1 The constituent parts of the subject

The following section will focus on each element of the subject and critically review the available literature on each to build an argument for how the subject should be studied. It will start at the broadest level of *dynamics* of science funding instruments, reviewing the main theoretical approaches and characterisations in the STIS literature applied to science funding dynamics. It will then review the literature on the multiple goals of excellence, interdisciplinarity, inclusion of Southern researchers and research impact and how they have been found to interact with each other, with a particular focus on the context of sustainable-development science funding. Finally, it will review the specific line of literature on the dynamics of multi-goal research programmes; this is the closest line of literature to this thesis, despite not specifically focusing on sustainable-development programmes.

2.1.1.1 *The dynamics of science funding systems*

This section will review the main analytical approaches that have been applied to studying science funding systems and the resulting characterisations of science funding dynamics. To provide a description of the types of approaches used in science policy studies, the section will begin with an interlude providing a summary of distinctions between different orientations to social science. This will allow for the development of an understanding of which analytical orientations have been dominant in this field to date.

Analytical orientations can be understood as a combination of ontological and epistemological viewpoints. Ontology relates to a viewpoint on the nature of reality (Guba and Lincoln, 1994) discussing the basic objects that make up a social reality and how they fit together. Epistemology is the related question of what we can know about the world and how we can know it. It is impossible to do social science without some viewpoint on ontology and epistemology. As Lowndes et al. (2018:25) put it “*they are a skin not a sweater*”.

The ontology and epistemology of social science is a vast subject and there have been many different typologies developed to split up and describe different orientations. As it does not explore the complexities of typologies in detail, this thesis will apply a broad and widely used typology to provide a simple and practical division of approaches. Any typology of this sort will involve idealised positions that simplify the nuances and complexities of positions. In reality, social scientists will routinely construct mixtures of the different orientations in their work. However, it is still possible to provide a broadly representative description and one that suffices for the purposes of describing the analytical approaches that have been applied to the dynamics of science funding to date.

For this purpose, Lowndes et al.’s division between positivist, interpretivist and realist approaches is useful (Lowndes et al., 2018). Positivists adopt the ontologically foundationalist position that there is a social world that exists independently of our observation of it. This analytical orientation is influenced by experimental and empirical approaches heavily influenced by the natural sciences. Positivists believe that in this social world there are general patterns and structures that are similar enough to patterns found in the physical world to allow for similar types of analytical approaches to be applied. This means they believe it is possible to use empirical methods, in an objective and removed sense, to identify generalisable laws and structures. Positivism tends to be associated with quantitative methodologies that seek to measure and describe social

phenomena. Within social science, positivism is most associated with the discipline of economics, which has gone furthest in seeking to identify generalisable laws and theories in developing and applying quantitative approaches. However, positivism has also been pervasive in branches of sociology and psychology.

The interpretivist position was in large part developed as a critique of positivist approaches. Interpretivists adopt a non-foundationalist ontology; this means they believe that, unlike natural systems, social structures do not exist independently of the actors' views of what they are doing. The reflexivity of actors is emphasised, meaning that humans' ability to understand and change within social structures is highlighted, meaning they believe that social structures are highly variable across time and space. The emphasis on human processes of understanding leads to a focus on the power of ideas to shape action, in particular, how ideas interact through discourses. A discourse can be defined *"as an ensemble of ideas, concepts, and categories through which meaning is given to social and physical phenomenon"* (Hajer and Versteeg, 2005:67).

Lowndes et al. (2018) also describe an intermediate position that attempts to find some middle ground between positivism and interpretivism. Realism is founded on the idea that reality has an objective existence but that our knowledge of it is subjective and mediated by concepts. In my literature review I did not come across any studies explicitly using this approach on science funding dynamics; the section below therefore focuses on only interpretivist and positivist approaches.

Positivist analytical approaches to studying science funding dynamics

A particular line of studies has emerged since the mid-1990s from within the wider field of STIS that has studied and characterised the dynamics of science funding systems. These studies have largely adopted a positivist analytical orientation by trying to distil the structure of science funding relationships and its overall characteristics. They have attempted to identify the essence of the relationships between actors in the system by characterising the main actors, their primary interests, their position in the system and the consequent patterns of relationships over different contexts. This has been pursued primarily through the application of Principal-Agent theory (PAT).

The idea of applying a PAT approach to the study of public funding mechanisms first appears in Braun (1993). Braun explains that the principal agent approach was developed

in the field of New Institutional Economics and so follows the ontological assumptions central to this field of research: that the social world is comprised of rational utility maximising actors and that it is possible to discern general truths from the structure of relationships and the relatively uniform motives of the actors (Braun and Guston, 2003). This approach places it in the broad category of positivist approaches described above, using a law-like structure to deduce a set of explanations of the dynamics of the scenario.

The principal agent relationship is described as a relationship of delegation where one individual/organisation (the principal) who wants to achieve a particular aim, but does not have the knowledge or other relevant resource to achieve it on its own, rationally seeks to delegate to an appropriate agent, who is happy to oblige in return for remuneration. In this case, the principal is the funder of research who wants to draw value from novel research findings but is not in a position to carry out, or manage, the research due to a lack of specialised scientific knowledge, and so has to delegate this to an agent, the researchers. The government, as principal, and the researchers, as agents, are described as having diverging interests. Researchers are characterised as motivated primarily by the need to improve their role and position in the scientific system, not to satisfy the funding agency (Van der Meulen, 1998); this can conflict with the government's primary interest in promoting particular policy goals from the research.

The core of the PAT approach is that it finds that the structure of the relationship throws up a set of problems from the point of view of the principal. This happens where the agent has an information advantage due to their superior knowledge of the area of expertise, and where there is a collective action problem of utility maximising individuals pursuing divergent interests, and includes problems such as knowing which agent to choose and of agents pursuing their own interests or shirking, known as moral hazard.

Arie Rip's notion of linked credibility cycles elaborates on this crucial role of peer review (Rip, 1994). Rip draws on accounts of scientific culture taken from science and technology studies to build a model of political-economy in this sector. Specifically, he uses Latour's idea of a credibility cycle (Latour, 1979) and builds it into an account of the whole funding system. Rip explains that scientific activity is driven by scientists' desire to have their knowledge claims become more like facts, i.e., more credible, while others try to show its limitations. Credibility becomes a form of cultural capital that can get translated into material resources and positions that further enhance the ability to

pursue credibility, thus becoming a cycle. Rip argues that in order for RCs to be successful they need to become part of this scientific value system. This is because RCs rely on the research community submitting proposals and providing the evaluative repertoire that legitimately separates good science from bad. The key mechanism to achieve this is peer review.

Rip goes on to argue that RCs also have a linked credibility cycle of their own, with the need to show their worth periodically to their government funders in order to obtain their budget. To do this they have to display their portfolio of worthwhile science, both completed and in the pipeline, which as explained above relies on the co-operation of the research community to co-produce. The insight that Rip draws from this is that RCs must rely heavily on research communities and consult with them when they make changes, in addition to satisfying their government funders.

Alongside the PAT approach and the linked idea of credibility cycles, other theoretical lenses have been applied with a broadly positivist approach. The co-ordination modes approach introduced by Benedetto Lepori in his 2011 article *Co-ordination modes in public funding systems* is another example of this form of analysis (Lepori, 2011). The co-ordination mode approach has many similarities with the PAT approach in that it identifies collective action problems created by the existence of a range of actors rationally pursuing their goals. However, Lepori moves the central analytical idea from delegation, with its focus on top-down steering, to a problem of *coordination*.

In terms of characterisations of relationships and levels of autonomy of actors to make decisions, credibility cycles, PAT and co-ordination modes provide similar insights. They describe (1) divergent interests between actor groups, and (2) relationships of dependency and limited independent power to shape the system. Researchers' primary interest is in promoting their credibility in the scientific system. They are powerful in the sense that they alone are able to carry out the primary activity of conducting research and provide the evaluative repertoires that enable decisions on funding to be made. However, they are also ultimately reliant on RCs and the government for funding and can therefore be steered and influenced by them. RCs themselves are characterised as having limited interests beyond the securing of their continued and increased funding from the government (Braun, 2003). They are heavily reliant on government and the research community and must balance and translate the interests of both actors (Braun, 1998).

To label the above accounts as positivist is arguably slightly simplistic. The scholars associated with these approaches do recognise the need to allow space for capturing complexity and context, and they draw on critical scholars like Bruno Latour. At their heart, however, they are pursuing positivist ideals in that they rely on a level of consistency and structure in the world that allows for the development and testing of law-like high-level predictive theories.

Interpretivist analytical approaches to studying science funding dynamics

As explained above, interpretivist approaches are characterised by a shared concern regarding the examination and description of the meaning that individuals and societies ascribe to phenomena. Bevir and Rhodes (2003) distinguish two approaches to examining and describing meaning with these traditions. The first is that influenced by hermeneutic and phenomenological traditions. Hermeneutics was originally associated with close reading of the Bible to ascertain the meaning of the text. However, the meaning has evolved to refer to cover broader theory of understanding and interpretation, especially interpreting texts and actions (Bevir and Rhodes, 2003). Phenomenology, developed principally by Edmund Husserl, argues that meaning is primarily generated by the everyday life-world and common sense of individuals and so places at its heart understanding individual perspectives and meanings (Husserl, 1913). Bevir and Rhodes describe how these two traditions have interacted to create a hermeneutic/phenomenological tradition in interpretivist social science. The key point is that this approach starts with the experiences, perceptions and interpretations of individuals.

In contrast to this individually centred approach is placed what Bevir and Rhodes call post-structuralist or post-modernist approaches. Wagenaar (2015) describes this second approach as ‘discursive’. The key is that instead of looking at how individuals give meaning to their own social worlds they focus on how “*individual understanding is the product of a larger meaning structure that emerges out of the interplay of the elements of a discursive entity*” (Bevir and Rhodes, 2003:53) These approaches focus on supra-individual aspects of social life: belief systems, ideologies, institutions, traditions. They try to make the discursive formations that govern individuals visible, either through looking at existing architecture of a particular discourse or through looking at the historical development of ways of thinking. Key scholars in this field include Foucault,

Laclau and Mouffe who have articulated the analytical implications of this perspective in their most systematic and sophisticated form. The social linguists Norman Fairclough and Ruth Wodak have also developed an elaborate linguistic version of critical discourse analysis (Wagenaar, 2015).

My review of the literature has found that discursive type approaches have been quite prominent in STIS, whereas the hermeneutic/phenomenological tradition has been largely absent. There have been a number of studies that have traced the historical development of science policy ideas using discursive type approaches. Examples include Edgerton (2009), Finnemore (1993), Kaldewey (2018), Pielke (2012), Godin (2009), (Calvert, 2006) and Kearnes and Wienroth (2011

This section on the dynamics of science funding systems has outlined the predominant conceptual approaches to studying science funding systems. It has shown that they have been either positivist-inspired structural approaches or discursive approaches that have sought to trace the evolution and interaction of ideas. A theme that will be returned to later in the thesis is that studies of science funding dynamics have not utilised the hermeneutic/phenomenological tradition in interpretivist social science. In the section on the justification of the use of the hermeneutic/phenomenological tradition, I will argue that this approach to interpretive policy analysis offers a promising balance between the technocratic and critical positions and the potential for grounded, nuanced and critical policy insights.

The next section will review what has been written about the constituent goals of the subject of my study (excellence, interdisciplinarity, inclusion of Southern researchers and research impact) before outlining the insights generated by the literature on more general multi-goal research programming. It will then bring the insights from all the sections together to make an argument for what type of analytical orientation should be applied in this thesis.

2.1.1.2 Literature on the goals of excellence, interdisciplinarity, capacity building and research impact

This section focuses on the particular type of science funding that is the subject of this thesis. It does this by exploring the literature on the four goals that typically constitute the

type of multi-goal programme in which I am interested: research impact, scientific excellence, interdisciplinarity, and inclusion of Southern researchers.

This section will first introduce some broad definitions and background around these goals and will highlight how the definitions demonstrate a high degree of ambiguity around the meaning of the goals. In particular, it will highlight the way that some of the goals can get folded into each other in the way they are used or spoken about. It will then consider the literature that sheds light on the dynamics of how the goals interact with each other. This section will explore the literature on how key science funding actors relate to the goals and to each other in the context of efforts to achieve impact, interdisciplinarity, excellence and inclusion of Southern researchers.

Scientific quality and excellence

The first goal to be considered is that of creating high quality science. This section will start with considering what quality in science means generally, and then focus on the concept of ‘excellence’ that has come to prominence in the language around scientific quality in recent years.

Conceptions of what constitutes high quality science shape the whole endeavour of science funding because they are the framework used to decide what should or should not be funded from the limited pool of science funding. The various disciplinary communities that constitute academia rely on creating shared definitions of quality that can then be applied in processes of review carried out by colleagues within the community. This process of peer review is relied upon to give the assurance of quality within communities and to outside observers. Lamont (2009:2) explains that these processes

“determine the allocation of scarce resources, whether these be prestige and honours, fellowships and grants to support research, tenured positions that provide identifiable status and job security, or access to high-status publications. Peers monitor the flow of people and ideas through the various gates of the academic community”.

Through a detailed qualitative study of various peer review processes, Lamont (2009) identifies six criteria that are commonly used to evaluate quality:

- Clarity (e.g., luminescence, transparency, precision, analytical articulation, crispness, and tightness);
- Quality (e.g., craftsmanship, depth, attention to detail, soundness and rigour);

- Originality (e.g., adding to scientific knowledge, new theories, new discoveries, bringing a fresh perspective, drawing on new sources of information);
- Significance (e.g., generalisable results, speaking to broad theoretical questions or processes);
- Method (e.g., adopting a methodology appropriate for the research's goal); and
- Feasibility (e.g., scope of the project and preparedness of the applicant).

Lamont finds that the interpretation of these criteria and the weight ascribed to them differ substantially in different disciplines and funding organisation contexts. The key conclusion from Lamont's lucid description of quality adjudication processes is that definitions and criteria of scientific quality are not self-evident and are applied flexibly in different contexts.

In recent years, debates around academic quality have taken on a particular character revolving around the concept of 'excellence'. One meaning attributed to the term is that it is just a synonym for quality and, as such, uncontroversial. However, more often additional meaning is given to the term (Tijssen, 2003). In particular, it imbues a focus on competitive comparison. To be excellent means to excel beyond the quality of others. Tijssen (2003:91) explains "*nowadays, research excellence has taken on a new utilitarian and economic guise, marked by an emphasis on 'competitiveness' and 'centres of excellence'*". Benner (2011) argues that the narrative of research excellence as a model of research governance rose to prominence on the back of the concept of the knowledge-based economy. The OECD describes this idea as "*knowledge is recognised as the driver of productivity and economic growth, leading to a new focus on the role of information, technology and learning in economic performance*" (OECD, 1996:3). The idea driving the focus on excellence is that the best way to produce this economically-valuable knowledge is through concentrating resources on the most academically-excellent institutions, groups, and individuals.

Ferretti et al. (2018) describe research excellence as an essentially contested concept due to its complex, open and value laden nature. They say it cannot be defined in an objective way and is likely to lead to endless debates. They also highlight the way, for some, excellence is inseparable from the process of peer-review while for others it is more closely associated with citation and publication metrics. They highlight that it is controversial because any conception of excellence comes with a set of political, social,

and ethical commitments in terms of what needs to be quantified and/or measured and what those measurements mean.

Interdisciplinarity

Klein (1990) explains that, at its heart, the idea of interdisciplinarity is about the unification or synthesis of different types of knowledge across disciplinary boundaries. Disciplines are “*the tools, methods, procedures, exempla, concepts and theories that account coherently for a set of objects or subjects*” (Klein, 1990:104). In their seminal book *Academic Tribes and Territories*, Becher and Trowler (2001) add an emphasis on the institutional element arguing that whether a type of knowledge is recognised as a discipline or not will depend mainly on whether leading institutions recognise them as disciplines in departmental organisation. The key point for this thesis is that disciplines, in their many forms, present a level of shared language and norms across a group of researchers that allow them to participate in shared knowledge production and that they therefore exist as bounded communities that require boundary crossing to work together.

It is generally agreed that the key element of interdisciplinary study is some form of integration to push it past multidisciplinary. However, there is widespread, and perhaps inevitable, confusion on what integration looks like in detail. Newell (2001) explains that integration is the great mystery of interdisciplinary studies. He says that many people can point to some examples of it, but no-one can explain clearly how to do it or exactly what it is. This means that it has been interpreted in multiple ways by researchers and has taken numerous forms. A number of studies have developed typologies of types of integration to capture this diversity.

For example Barry et al. (2008) present a nuanced account of the differing logics driving integration. They recognise the accountability and innovation logics covered in mainstream accounts of interdisciplinarity, but they also highlight a critical/ontological logic that is associated with antagonistic modes of interaction whereby social science disciplines can provide reflection and criticism through presenting different types of knowledge.

Another way that researchers have divided up types of interdisciplinarity is in terms of the approaches for producing valid interdisciplinary knowledge. The typology devised by Mansilla (2006) as a result of a large-scale study of interdisciplinarity by the

Interdisciplinary Studies Project at Harvard, divides the types of integration by the criteria under which the knowledge is validated and the connected mechanisms used to integrate it. Mansilla identifies three types of integration: conceptual-bridging, comprehensive, and pragmatic integration. Conceptual-bridging integration involves bringing disciplines together under a unifying concept, principle or mechanism thought to account for a variety of phenomena. Comprehensive integration does not seek to find a unifying concept; it instead seeks a complex explanation of a phenomenon. Pragmatic integration involves producing results that enable prompt, informed, and impact-full advice.

The key point for this thesis is that the concept of interdisciplinarity is complex and that empirical research has found that, in general, researchers pursue it for different reasons and do so in widely differing ways.

Research impact

The concept of research impact is also a term that is understood in differing ways. A systematic review of grey and academic literature on definitions of research impact found 108 different definitions of the term (Alla et al., 2017). Boaz et al. (2009:256) suggest that at a very high level there is a common meaning that “*the different terms have a shared interest in change that lies beyond the research process and its primary outputs*”. In the UK, this level of shared understanding is evident in that impact has become the term of choice for research influence beyond academia as opposed to meaning the academic impact of a scientist’s work. Alla et al. (2017) found that the most common definition cited domestically and globally was the RCUK definition that impact is “*the demonstrable contribution that excellent research makes to society and the economy*”⁴.

Alla et al. (2017) found that beyond this general basic level of understanding the definitions differed across how they address four domains of impact. First, they differ in how the contribution area is described in the definition. The most common target of impact is the economy followed closely by society, policies, environment and health. The second domain of difference is the avenues through which impact occurs; this is often but not always contained in the definition. The most common pathway is through academic/scholarly activity. Processes, attitudes, awareness and ideas are referred to but not very commonly; of the 108 definitions, only 16 explicitly mention excellence in

⁴ This has remained the UKRI definition, accessed from ESCR website on 10th June 2021: <https://esrc.ukri.org/research/impact-toolkit/what-is-impact/>

research leading to impact. The third domain is the synonym of change/impact that is used in the definition. Most use the language of benefit. Others are more neutral and use a language of change. Only 6 out of 108 definitions mention the possibility of negative consequences and only 2 mention reduction of risks. The last and least referenced domain of difference is the level of scale of impact, with some specifically referring to whether impact is expected at international, national or local levels. Which of these domains a definition of research emphasises will depend on how they conceive of the knowledge generation to uptake process and what elements of this process they value above others.

Overall, there seems to be a higher level of shared understanding of what research impact means than for excellence and interdisciplinarity. The basic level of shared understanding is that it represents changes related to research but beyond the research process and its primary outputs. However, the definitions then divide along contribution areas, avenues through which impact occurs, synonyms of changes and the level/scale of impact.

[Inclusion of Southern researchers](#)

The final characteristic goal of multi-goal, sustainable-development research programmes is the inclusion of Southern researchers. This issue has been present in research for development since its inception and has become an integral part of this type of programme, especially since the 1990s when there was increased recognition that research systems are important for development (Velho, 2004). It is also linked to notions of untied aid and equal partnerships in development (Upreti et al., 2012).

The use in this thesis of the term ‘global South’ and ‘Southern researcher’ deserves some explanation. It loosely refers to less developed or emerging countries and is thought to have emerged in the 1960s (Kraemer-Mbula et al., 2019:4). The term is used because it is a convenient tag and matches the language commonly used by leading donor organisations involved in research capacity strengthening (e.g., DFID, UKCDR and IDRC). There are two separate but closely linked rubrics that are used in relation to the inclusion of Southern researchers: capacity building and partnerships.

Capacity building is defined as “*the process through which individuals, organizations and societies obtain, strengthen and maintain the capabilities to set and achieve their own development objectives over time*” (UNDP, 2009:54). In the context of research capacity building, DFID provide a specific definition “*as enhancing the abilities of*

individuals, organisations and systems to undertake and disseminate high quality research efficiently and effectively” (DFID, 2010b:3). They conceive of capacity building taking place at three levels. The individual (usually via training, scholarships, funding for projects), organisational (developing capacity of research departments in universities and research organisations to manage and undertake, publish and disseminate research), and institutional (relating to the ‘rules of the game’ and addressing the incentive structures and political and the regulatory context) (DFID, 2010b).

Turning to the concept of ‘partner’, its meaning is, on the face of it, more self-explanatory, with two or more researchers from different organisations working together. In the context of sustainable-development research programmes, the three common types of ‘partner’ are academic institutions based in the global South, civil society organisations based in the global South, and international non-governmental organisations and international organisations providing research capacity building or playing a brokering role between the other partner groups and UK-based academics/research funders (Fransman et al., 2018). This thesis is focused on partnerships between academics based in the global North and academics based in the global South.

It is common in the use of the word ‘partnership’ in this context that an adjective is added before the word. In the UK context, this is most commonly “meaningful”, “equitable” or “fair” (Asare et al., 2020). These words are added in recognition that these types of partnerships are subject to inequalities of resources between Northern and Southern researchers and that partnerships need to be alert in some way of the tendency for Northern researchers to dominate. This issue is explored in depth below in the section on tensions around the concepts of capacity building and partnerships.

Ambiguous and overlapping nature of the goals

The definitions demonstrate that there is a degree of core agreement of what these terms mean in the science policy studies literature: interdisciplinarity means integration across disciplines; impact refers to changes beyond the academic field; capacity building and partnership are relatively clear. However, there is a large amount of ambiguity that remains. The studies referred to above that have used discursive techniques to trace and unpack the use of ideas and language in science policy, make clear that different actors will adopt different meanings depending on their position, interests and background. For example, Calvert’s study of the use of the term ‘basic research’ by British scientists

demonstrated how the elasticity and ambiguity of the term was used flexibly by scientists to defend their position on the governance of science.

This inherent ambiguity means that the terms of excellence, interdisciplinarity, capacity building, partnerships and impact can be used or defined in ways that break down the barriers between them. They will often be subsumed and folded into each other. The rest of this section will briefly describe some of the ways in which this can happen.

The term excellence is arguably the most elastic term as at its simplest it just means ‘good’ or ‘high quality’. All the other terms, by their very nature of being goals of science policy, are also ‘good’ things and so can sometimes get subsumed under excellence. To some the idea of research ‘excellence’ is to sharply demarcate criteria of quality set in academia from extra academic criteria of quality. In this vein of thinking, excellence can be closely linked in meaning with the processes of evaluation associated with scientific decision making, either bibliometrics, peer-review or both. However, some have concerns that a focus on scientific criteria as the meaning of ‘excellence’ leads to an inward-looking process of knowledge production or to distortions caused by biases in peer review or scientists’ gaming metrics. Those with these concerns will often introduce extra-academic considerations to try to produce more balanced and relevant science.

Many of these definitions move away from the competitive element of the excellence notion and emphasise instead ideas like rigour and meeting high standards of research design. They will also introduce some notion of relevance/impact to the definition. This is evident in the definition of ‘engaged excellence’ produced by the Institute of Development Studies (IDS) in 2016 to guide their research practice (Oswald et al., 2016). The Four Pillars of Engaged Excellence are identified as delivering high quality research, co-constructing knowledge, mobilising impact-orientated evidence, and building enduring partnerships. The definition brings these concepts together as interrelated and mutually dependent concepts. As described above, the notion of RQ+ developed by IDRC is also wide in what it encompasses. The RQ+ definition of quality encompasses all the elements of the programmes’ goals (Ofir et al., 2016).

The meanings of interdisciplinarity are also very elastic. The history of the idea has been closely linked with debates about relevance of scientific knowledge. This is the narrative that the reason that scientific knowledge often lacks in relevance is because it is siloed in

disciplines, the famous quote being that the ‘world has problems, universities have departments’, which nicely sums up this sentiment. Interdisciplinarity can therefore almost be synonymous with problem solving, impactful research. For example, Mansilla (2009) referred to ‘Pragmatic’ integration that involves producing results that enable prompt, informed, and impact-full advice, and where the main validation criteria are effectiveness and relevance to the problem.

The relationship between research impact and inclusion of Southern partners is also ambiguous. This relates to whether partnerships and capacity building are seen as a desirable goal of the programme in themselves or whether they are seen primarily as a means to an end of another type of impact. Capacity building of the science system is often seen as a legitimate impact in itself. For example, the ESRC definition of impact includes “capacity building” as one of the types of impact it expects to see from its funding.⁵ Capacity building is particularly seen as a legitimate aim when talking about capacity building of wider stakeholders to use knowledge. The same applies to partnerships and network building. For example, the IDS Impact Initiative suggests that the definition of impact should be taken to include network and partnership building as a valuable impact of the programme (Georgalakis and Rose, 2019).

2.1.1.3 Interactions between the goals of the programmes

The section above introduced definitions of the programme goals and demonstrated that the meanings given to them are relatively elastic and can overlap or in some instances be subsumed into each other. The goals can, in various ways, be folded into each other as complementary goals, or held separately, depending on the perspective of the individual. Though they can be seen as complementary they can also be seen to clash. This section will highlight some of the main tensions identified in the literature that can arise within and between these goals and between different actors in science funding systems.

Tensions around systems to evaluate impact

A key tension relating to research impact is around researchers’ concerns that research funding is becoming increasingly bureaucratic. As explained above, the common definitions of impact are linked to bureaucratic procedures developed by funders of science and, more broadly, they are linked to moves to provide accountability to science

⁵ Definition accessed on 17th May 2021 from: <https://esrc.ukri.org/research/impact-toolkit/what-is-impact/#:~:text=We%20define%20research%20impact%20as,to%20society%20and%20the%20economy>

growing since the 1970s. Martin explains “*during the last 20 to 30 years, publicly funded research has become subject to ever more intensive accountability*” (Martin, 2011:247).

The idea of asking researchers to account for the benefits of their work is not a new one, and multiple techniques and practices have been developed. Examples include bibliometrics, economic rate of return, peer review, case studies, logic modelling, and benchmarking (Grant et al., 2010). These techniques can become the primary site of tensions between the views of those funding and those being funded around what impact should be, the nature of processes whereby research turns into impact, and the degree to which it is measurable (Martin, 2011).

In addition to these questions around autonomy of researchers there is the linked issue of whether it is even realistic to measure and evaluate societal impact from research. The challenges of assessing research impact are well documented (McCowan, 2018; Penfield et al., 2014). First, many studies have demonstrated how the processes concerning how research gets turned into impact are messy and complicated. Evidence and ideas from research mixes with existing evidence and enters into the political realm of diverging interests (Cairney and Oliver, 2020). This means tracing the attribution of any change to a particular piece of research is very difficult.

Second, numerous authors have highlighted how the nature of conducting research contradicts attempts to predict the possible impacts of a research project (Hammersley, 2008). This relates primarily to *ex ante* evaluation, usually involved in the process of selecting projects. This is because research often proceeds in unpredictable ways (Bedessem and Ruphy, 2019). Predicted lines of impact may become null if the results do not fit with the knowledge required by practitioners and policy-makers, or new lines of impact may become apparent through the process of research. These difficulties of predicting and describing the impacts of research have been shown to lead to researchers sometimes resorting to inflating impact claims in project application forms. For example, through an interview-based study of researchers in the UK and Australia Chubb & Reed (2018) found that researchers objected to how impact requirements sometimes led them to overstate, or even fabricate, claims.

Third, numerous studies have shown how the pathways from research being conducted to it being taken up in policy and practice can take a long time (Bornmann, 2017). This

produces a tension between the need to account for programme outcomes and impacts at the end of its running period, and the reality that impact can take place years or even decades later. This is linked to ideas around how individual pieces of research will join existing and emerging research in a body of knowledge that will slowly influence policy in complex ways.

Systems to evaluate impact have been carefully designed to try to address these tensions around the desire to produce accountability and traceability and the perceived reality of how impact happens in practice. For example, the Research Excellence Framework (REF) 2015 and 2021 decided on the case studies approach for measuring impact, and it adopted a very wide definition of impact to take account of all the different ways that researchers across so many disciplines conceive impact (Williams and Grant, 2018). The case study approach is designed to let researchers describe long impact pathways across multiple funded projects. The Pathways to Impact model of the RCs has also tried to balance the imperative to hold researchers to account with perceptions of how impact occurs. Kearnes and Wienroth (2011) have documented in detail how the Pathways to Impact model and specific notions of impact was developed by EPSRC to ameliorate the tension between government demands for accountability and the needs and beliefs of their research community.

This shows how the funder's approach to defining the measuring of impact depends on the context and what they are trying to achieve. Researchers are also not homogenous in how they respond to the tensions described above. The norms and traditions shared within academic disciplines, fields and modes of enquiry frame what can count as worthwhile 'impacts' (Chubb and Reed, 2018; Oancea, 2013).

Particularities of tensions around impact in developing country context

There are a number of tensions around conceptions of research impact that are specific to developing country contexts. The first tension is between common characterisations of how research is turned into policy impact in developed countries and the reality of developing country policy contexts. Carden (2009) conducted a detailed study of a portfolio of the IDRC's research (23 case studies covering more than 60 projects in over 20 countries) in developing country contexts; the study established a wide variety of differences in how impact commonly gets translated into policy in these national contexts (while recognising wide national diversity).

Carden argues that models developed in the global North make a series of assumptions: that groups such as researchers, outside government, can and do influence policy decisions, that there are reasonably stable and predictable institutional arrangements, and that there are lively and critical academic, journalistic, and think-tank communities busily trying to inform and influence government. In reality, Carden found that:

- democratic institutions and customs are often precarious;
- policy-makers often have limited autonomy from international aid and finance providers
- staff turnovers, in research organisations and in government, often weaken both research and policy influence;
- demand for research can be missing;
- implementation challenges are significant; and
- researchers sometimes must construct their own research-to-action machinery (Carden, 2009).

They conclude that the case studies suggest that influence is possible but rarely certain, and that if it does happen it is often not in the way predicted at the start. Impact relies on extensive work building relationships over a long period of time and demands “*patient diligence, observant responsiveness to changing conditions, careful networking, and luck*” (Carden, 2009:56).

Another concern is that the impact agenda can lead to serious ethical issues in the context of development studies. The concern is that the imperative to demonstrate impact can lead to researchers prioritising fast changes and lead to an absence of careful, thoughtful and critical engagement with how work might affect different communities. It can also lead to a focus on working with the grain of power rather than perhaps seeking more difficult to achieve but genuinely transformational change by working with disempowered groups. This is a particular concern in the field of development studies when researchers may be working in highly unequal societies and where there may be a particular concern that those in power are not necessarily working in the interests of all groups in society. Williams (2012) documents the concerns of development scholars in the UK of what researching with impact might mean for research practice. They argue that the “*RCs UK’s definition of ‘high impact’ research sits uncomfortably with both critical scholarship on the power of ‘development knowledge’ and with ‘alternative development’ practices that call for knowledge co-production*” (Williams 2012:223).

[Tensions around excellence driven science policies](#)

Many development scholars have expressed a particular concern about how science, if being driven primarily by an excellence narrative, can lead to scientific work that is of limited relevance to solving the development problems of particular regions or countries. Benner (2011) argues that the narrative of research excellence as a model of research governance rose to prominence on the back of the concept of the knowledge-based economy. The idea is that the best way to produce this economically-valuable knowledge is through concentrating resources on the most academically-excellent institutions, groups, and individuals. Benner argues that the scientific excellence narrative is a mix of narratives that emphasise academic autonomy and linear conceptions of innovation developed under the rubric of innovation systems that emphasise the “*systemic interaction between academic research, and the economy and significance of clusters around leading universities and research environments*” (Benner 2011:11). He explains that for the links to be made between excellent science and economic growth, it requires a scientific system at the forefront of knowledge and a rich flora of intermediaries connecting the breakthroughs to competitive science-based industries such as pharmaceuticals and chemistry. As Benner (2011) explains, in this case, there is not necessarily a contradiction between scientific excellence and societal relevance, at least in many areas of science.

Increasingly, however, the suitability of this narrative to LMICs is being questioned if there is not the scientific system at the forefront of knowledge and the required rich flora of intermediaries connecting the breakthroughs to competitive science-based industries. Vessuri et al. (2014) argue that equating excellence with citation impact in international journals can negatively affect science systems in developing countries. In this case, it is argued that seeking to produce excellent science, evaluated according to universal standards, has the potential to take research away from being relevant to local problems, as scientists are forced to follow research agendas developed in wealthy nations where the centre of gravity of the academic world lies. Bianco et al. (2016) make similar arguments in relation to Uruguay’s research system where the conclusion is that it is necessary to incorporate the views of stakeholders in developing countries and produce relevant knowledge to avoid the science system being oriented away from local concerns.

Challenges around interdisciplinarity for funders

Lyall et al. (2013) have described how interdisciplinary research presents challenges for research funders. They describe how it:

“calls for a clear understanding of the complexities of the interdisciplinary process but also a good dose of realism..... interdisciplinary vision on the part of those who direct the programme at both funder and academic levels, combined with a clear understanding of how to bring the community along so that interdisciplinarity lies at the heart of such a programme and is not simply an add-on” (Lyall et al., 2013:15).

For the programme to reach its full interdisciplinary potential they describe how funding needs to be flexible *“to allow programmes the time and space to evolve”* (Lyall et al., 2013:15), and adopt novel process innovations such as liaison roles, warm up activities, seed corn support, and activities to promote team building activities.

[Dynamics relating to inclusion of Southern partners](#)

The inclusion of Southern researchers in research programmes for development raises a number of tensions within, between and around the concepts of partnership and capacity building and other goals such as scientific excellence.

The most profound tension identified in the literature is between the rhetoric of ‘equal’, ‘fair’ partnerships and the extensive evidence, built up over decades, that has shown that partnerships between Northern and Southern academics rarely live up to these types of ideals. The idea of equal partnerships revolves around the Southern partners having an equal say in the identification of research issues and design and equally shared credit and funding (Grieve and Mitchell, 2020).

Bradley (2007) conducted a systematic review of the literature on north-south research partnerships and found an extensive body of work that has explored these relationships through case studies and surveys. Bradley found that there were structural inequalities evident in North-South partnerships in all stages of the partnerships, from the creation of the partnership to project management and evaluation. This inequality manifests itself in the form of unequal access to information, conferences, publishing opportunities, training and funding, and the greater influence of Northern partners in decision-making on the research agenda, project administration and budget management. Other researchers have elaborated on the causes of this inequality. Muriithi et al. (2018) found Southern researchers operate from a position of weakness to take up leadership positions. They are

operating in a context of low levels of investment in funding research, at both the institutional and national level, and institutions with inadequate policies, high levels of bureaucracy, competition among local institutions, weak links with industry, and a major focus on teaching as opposed to research. Partnering is often the only way they can access research funding, placing them in a position of resource dependence on the Northern partners.

Costello and Zumla (2000) provide evocative descriptions of the practices that result from these inequalities. They describe *parachute research* whereby Northern researchers travel to Africa or Asia for short periods of time and take back their research findings, *postal research* whereby Northern researchers request Southern researchers supply them with data, and *annexed sites* for field research led and managed by expatriate staff. Overall, they describe these common situations as semi-colonial in nature.

Funders have responded to the nature of structural inequalities in two ways. First, they have tried to be more realistic in their rhetoric and adopted phrases that strive for more equality while recognising the prevailing conditions. For example, UKRI started using the term ‘equitable’ over equal. Funders have also worked together to produce guidelines on how to conduct partnerships more equally. The Council on Health Research for Development (CHRD) developed an evidence-based tool, the Research Fairness Initiative (RFI). The RFI is an organisational learning tool that encourages governments, business, organisations, research/academic institutions and funders to describe how they take measures to create trusting, lasting, transparent and effective partnerships in research and innovation – and how they plan to improve their practices moving forward (Al-Khaldi, 2020).

A further tension lies around the concept of capacity building. The language of capacity building is seen as potentially highly patronising to Southern researchers. It tacitly assumes that they are less experienced and/or skilled than their Northern counterparts and that they require their capacity to be built. Bradley (2007:19) explains:

“In many cases, this assumption is clearly unfounded. Many Southern countries are home to exceptional research institutions that are well-resourced, well-staffed, well-connected, and politically influential. Researchers from such institutions are able to take the lead in conceptualizing and managing robust North-South research partnerships”.

In other cases, it may be true that the institution is less well-resourced, but the particular individuals may be highly skilled and able to contribute to building the capacity of the Northern researchers involved in the partnership as much as the other way around. The point is that inherent in the idea of capacity building is a notion of a one-way flow of teaching and lesson learning that can create interpersonal tensions within the team.

Another area of tension around the notion of capacity building relates to how the goal is often included in short term programmes and projects but is by its nature a long term and systemic issue. Chataway et al. (2005:21) explain this tension eloquently:

“There is often a tension between finding suitable interventions that can bring shorter term and longer-term capacity building. Although short-term approaches may play some role in shaping long-term capacities, they may not be systemic, cost-effective, or appropriate. Loosely allied in many ways to differing shorter- and longer-term approaches to building capacity are the spectrum of activities such as projects, programs, networks, and institutions. Supporting the correct mix of activities is crucial to building effective capacity in Africa. Short-term initiatives and activities must be understood in the context of longer-term institutional support and innovation”.

This throws up a number of issues similar to the goal of meeting societal goals. Who should decide what type of capacity to develop? Having decided what capacity to develop, how do funders go about creating it? Is the priority to increase the number of researchers, support institutional development or reform the system? It requires an understanding of how science systems are built and of the particular context in which you are hoping to build capacity. This picture of capacity building as a long term and complex project is in sharp contrast to how it can get included in programmes as just one goal amongst many and without much theorisation of how it might occur.

Another potential tension is between capacity building and scientific excellence. A focus on indicators of excellence such as prestigious peer-reviewed publications and citation counts can incentivise Northern research institutions to prioritise collaboration with already well-established research organisations rather than focusing on the complex partnerships with less well established research organisations who may benefit more from capacity building efforts. Carbonnier and Kontinen (2014:5) observe *“The tensions between short-term recognition of academic excellence and longer-term capacity-building objectives lie at the heart of the North-South research partnership debate”*.

The tensions described above relate to a rich and longstanding literature on the decolonisation of knowledge. This line of literature traces the historical and discursive roots of knowledge systems through colonisation and decolonialisation and argues that hegemonic Eurocentric understandings of knowledge have marginalised and excluded those with differing systems of knowledge and worldviews (Quijano, 2000). The starting point of this tradition is that knowledge is never politically neutral. As Jansen (2020:2) explains “*Who produces knowledge, what knowledge is produced and what knowledge is left out are central questions of inquiry within the politics of knowledge*”. This tradition has its roots in the 1960s and 1970s with seminal studies published by leading postcolonial scholars such as Franz Fanon (*The Wretched of the Earth* published in 1961), Immanuel Wallerstein (*The Modern World System* published in 1974) and Edward Said (*Orientalism* published in 1978).

The decolonisation of knowledge has recently risen to public and academic prominence starting with the Black Lives Matter movement which originated in 2013 in the USA and the Rhodes Must Fall movement that started in 2015 in Cape Town. Building on this momentum a new generation of scholars is now actively applying the decolonisation lens to all elements of knowledge production and higher education systems. For example to critique and reform university curriculums (Le Grange 2016 and Bhabra et al. 2018) and to reconsider the design and impacts of university campuses on cities in terms of their historic and current legacies (McNeill et al. 2022). There has also been a set of studies on research production practices describing the unequal power relations between Southern and Northern researchers using the lens of decolonisation theory (Minasny et al 2020). This is where there is a strong element of crossover with the literature that this thesis has described and drawn on e.g. Costello and Zumla (2000) descriptions of ‘postal’, ‘parachute’ and ‘annexed site’ research.

Conclusions to this section

This section has reviewed the literature relating to the four goals of the programmes being studied, namely interdisciplinarity, inclusion of Southern researchers, excellence and development impact. First, it established the difficulties of definition of many of the terms; how the meaning given to the terms is linked with specific agendas and how they can be seen to conflict with each other or complement each other depending on your perspective. Second, it looked at potential tensions related to the goals. It highlighted the

ambivalent relationship between scientific excellence and the other goals and how scientific measures of quality are seen as essential to all the goals, but how an insular focus on what scientific communities want to pursue can also draw away from the other goals. It also highlighted how the tensions are often reported to arise specifically around particular practices of selection and management. A further key point established by this section was that researchers and funders are not homogenous groups in relation to how they measure quality and their level of support for different extra academic goals. The final key point drawn out in this section is that the solutions in the literature to tensions around achieving these goals often relate to providing enough time and a focus on the need for relationship building and dialogue. This is a common thread from interdisciplinarity, impact, capacity building, partnerships.

2.1.1.4 Dynamics of multi-goal research programmes

The above section has outlined the meaning of the goals of this type of programme and, at a high level, how tensions can arise within and between the goals. This section looks at the specific funding instrument of the research programme. There is an increasing amount of literature that has looked at case studies of research programmes in STIS. As explained in the introduction, I have not been able to locate any detailed studies looking specifically at multi-goal *Sustainable-development* programmes but have identified an emerging literature on the dynamics of multi-goal programmes more generally. This is the core literature that is closest to my study and so will be reviewed in close detail to both sensitise my study to look for similarities or differences in my findings. It will also be used to review the types of analytical approaches that have been used to date that may be appropriate for my subject.

Almost all studies carried out on programmes relate to multi-goal programmes: that are focused on having societal impact and often that are interdisciplinary. This is not a coincidence as multi-goal programmes are very common in this domain because the programme model is suited to interventions where a government is seeking to have a particular societal impact. Shove (2003) explains that programmes are distinctly deliberate funding instruments as they allow a particular societal challenge to be framed and responded to. They allow for having a theme that suits policy-makers but can be flexible enough to allow for researchers to interpret and respond to competitively. They also allow for the assembly of relevant stakeholders together in the running of the

programme through setting up a temporary organisation. These features have led to an increase in the use of the mechanism of competitive research programme funding (Shove, 2003; Rip and van der Meulen, 1996).

The literature search identified six detailed studies of dynamics of multi-goal research programmes. I have not included articles that are reflective pieces based on experiences of authors or that have focused at the project rather than programme level. However, some insights from these periphery articles will be summarised in a short section at the end of the summary of the main articles where they have had complementary, contradictory or interesting things to say in relation to the findings of the main articles.

The detailed studies have drawn on the approaches to science funding dynamics outlined above (PAT, co-ordination modes) but have moved beyond them by adopting a wider array of approaches: PAT is used but then critiqued by Shove (2003), ‘action science’ is adopted by Adler et al. (2009), a Multi-Level Perspective approach is used by Kloet et al. (2012), the concepts of ideographs and articulations are adopted by Bos et al. (2014), a co-ordination framework approach is used by Bernard de Raymond (2018), and a logics of transdisciplinarity approach is used by van der Hel (2016).

For each of the six articles the following section will summarise the conceptual approach, the methodology, the nature of the programme studied and the key findings. It will then synthesise the main themes and critically analyse the evolution of the approaches to date.

Shove (2003): ‘Principals, agents and research programmes’

Shove’s (2003) study was published in a special edition of *Science and Public Policy* devoted to exploring the applicability of the PAT approach to various avenues of science funding policy. Shove set out to test PAT’s applicability to research programmes. Her methodology is to draw together themes and insights from a series of programme evaluations she conducted: an ESRC programme called Health Variations; a European Union project on socio-economic and environmental research; and a European Science foundation networking and exchange programme. The article aims to draw out ways in which the PAT approach does or does not adequately explain the dynamics observed from the evaluations.

Shove finds that PAT is inadequate in various ways. First, she observes that PAT does not capture the ways that researchers (as agents) shape a programme; it puts too much

emphasis on the principal's ability to shape the agenda. In fact, principals are constrained by the existing research capacity: there has to be at least embryonic capacity to tap into for a programme to function. Shove also observes that the image presented by PAT of a static agenda that is presented by the principals is incorrect. She observed that the process of shaping programme agendas was an iterative one with many moments where researchers and funders together shape the agenda. Shove finds that PAT obscures the researcher's point of view. The researchers are already running their own work programmes and use the funders' programmes to piece together the funding they need to support their research aims. This means it is an iterative process of mutual adjustment on both sides, with researchers not aiming to collectively capture the agenda but rather work together with the funder's agenda to develop their own.

Building on these insights Shove finds that PAT cannot capture the collective, cumulative and unpredictable nature of the effect of multiple interacting principal-agent relationships. She concludes that programmes take on a life of their own and become actors in their own rights, rather than just an instrument of the principal. Shove (2003:379) states *"seen in this way they really are more than the sum of their parts, not because they add value to a pre-determined agenda, but because they (have the potential to) function as uncontrollable monsters roaming wild outside the neat compound of PAT relations"*. This perspective on programmes emphasises the synergistic relationships that can develop in a programme between researchers, but can also lead to new directions in research not foreseen by the funders.

Shove proposes alternative ways to understand programmes beyond the delegation characterisation of PAT. She argues that the theoretical viewpoint of co-production makes more sense for the reality of how the programmes work as it better accounts for the researcher's position and highlights the limits of a funder's control over a programme. She also introduces the notion of programmes as virtual social institutions. This is to capture the way that, from a researcher viewpoint, the programme offers benefits of networking that are valuable to them but not visible to the funders.

Adler et al. (2009): 'The challenge of managing boundary spanning research activities: experiences from the Swedish context'

Adler et al. frame their study as focusing on "boundary-spanning" research programmes: *"boundary spanning research cuts across traditional scientific disciplines, societal*

sectors and university assignments as well as national and university borders” (Adler et al., 2009:1136). The focus of the specific case study is on research with industrial collaborators. They argue that this mode of collaborative research involves different management challenges from non-boundary spanning research but there is little research into what these are. They identify that research on boundary spanning and funding dynamics has focused on macro policy issues and not on management challenges. They also identify that there is a lack of scientific and practicable knowledge about this type of boundary spanning research programme. The aims of the study are to elaborate the main challenges for project leaders, to find approaches that work and lastly to bridge the gap between macro approaches in the literature with actual and operative approaches. The methodology took a sample of participants from 16 programmes in Sweden including multiple projects that are cross-disciplinary and working with industry partners. They adopt the iterative and collaborative action research approach of Argyris and Schön (1989) to develop practical insights from their participants through a series of workshops with researchers.

Their findings focus on management challenges from the perspective of a project manager. They find that a major challenge from their point of view is that they are not rewarded for the management activities, not given training or development, and there is a weak identity of being a research manager. They also identify two challenges beyond these specific management ones: the unreliability of long-term funding (i.e., the problem of stringing programmes together) and second, the difficulty of managing the multiple and contradictory needs of the stakeholders.

The study provides further detail on these contradictory needs. Funders are said to want measurable results such as publications and doctoral degrees. They value predictability and little deviation from the plans. Researchers find the funding system too rigid: in particular the requirement that there is equal disbursement of funding over the years. They find it would be better if there was more flexibility and to have the ability to continue funding for successful projects at the end of a programme. Researchers also do not like administrative burden. In terms of the university institutional perspective they identify two different types of universities that in turn affects the attitude of the researchers working in them. They identify ‘traditional’ universities as hindering collaboration because they lack incentives to do this kind of work. They find younger universities have

more incentive to focus on working with companies. Looking at the company perspective they found that they have shorter timescales, and more demand for faster commercialisation and less interest in publications. They find that the main challenge is managing these contrasting stakeholder perspectives while operating in a traditional academic environment that prioritises traditional academic outputs.

[Kloet et al. \(2013\): 'Understanding constraints in the dynamics of a research programme intended as a niche'](#)

This study also focuses on a multi-goal programme and follows a similar framing to Adler et al. (2009) of programmes as important instruments for translating scientific research into societal value, and study uses a single case study methodology focusing on a Dutch EcoGenomics Consortium. The programme is interdisciplinary, excellence-oriented with identified societal goals and matched funding with the private sector. The article begins by explaining that these programmes are complex and challenging because of the multiple objectives of actors, particularly between academic excellence pursued by researchers and the funder, and private sector focus on the societal and commercial goals.

Kloet et al. use the Multi-Level Perspective (MLP) conceptual approach. This analyses change at three levels in society: the landscape, regime and niche (Geels, 2002). The regime level is the stable path dependent level with a dominant technology and incremental innovation. The niche level refers to spaces where, although influenced by the regime, space has opened up for radical innovations to occur that could challenge the dominant regime. The landscape sits above both the regime and niche level and structures change in the other levels. It consists of factors such as demographics, long term environmental change, cultural developments and general political ideology (Smith et al., 2010:6-7). The solution is seen to be to construct spaces for niches to develop that can eventually destabilise the regime if the landscape conditions are also favourable. The MLP is justified by Kloet et al. because it allows for analysis of the dynamics between niche and regime actors around a programme and for providing practical knowledge. The methods used were semi-structured interviews, two focus groups and participation in meetings.

Kloet et al. found that the programme was characterised by tensions around its purpose. At the start it was framed primarily as focused on filling a knowledge gap, but the non-academic partners were disappointed by the lack of focus on impact. They found there

was a conflict between the range of goals and framings of the programme. The programme started with disciplinary excellence focus, then re-oriented to marketable products. But there was another aim, which the authors conceived of as the ‘niche’ – that of introducing the biological paradigm into soil policy that was neither marketable nor fitting into a discipline. They conclude that for this niche to be effective, it needed stronger recognition from the start at the board level. They also found that for this type of more transformational change it required a programme longer than the four to six year period of funding. Their key lesson is that to achieve goals of interdisciplinarity and particularly societal goals, these goals need to be written into the programme and supported clearly from the beginning.

[Bos et al. \(2014\): ‘Steering with big words: articulating ideographs in research programs’](#)

Bos et al. (2014) also uses a similar framing of the changing dynamics of science and the place of research programmes, describing how curiosity driven science is being replaced by science responding to societal concerns. This article has a specific focus on three concepts represented in a single large programme about Nanotechnology called NanoNext NL in the Netherlands. The article aims to explore the concepts of ‘sustainability’, ‘responsible innovation’ and ‘valorisation’ (which refers to commercialisation and working with companies), and how they are used by researchers to justify and give legitimacy to their particular activities. Bos et al. use the idea of ‘Big words’, defined as uncontested concepts that allow for multiple interpretations, as a theoretical lens for understanding how the ideas relate to scientific practice. Particularly using the concept of ‘articulation’ to explain the process by which actors bring these words into use as legitimatising their actions. In this process a certain linguistic structure is created: vertically by specifying the meaning given to the words, and horizontally by ordering them in relation to the other concepts.

They find that the three ‘Big words’ exert a strong normative pressure on actors to interpret and use them in justifying their actions and programmes of research. They also find that the concepts are highly malleable and subject to a wide range of interpretations. The actors strategically trade the goals off against each other by saying that they are focusing on one at the exclusion of the others. Bos et al. say “*by replacing one societal goal with another, their research can still be considered societally relevant and thus ‘good’*” (Bos et al., 2014:167). Bos et al. conclude that the ‘Big words’ do steer research practice but not in uniform ways and in conjunction with practical considerations.

Van der Hel (2016): 'New science for global sustainability? The institutionalisation of knowledge co-production'

Van der Hel's paper presents a case study analysing the institutionalisation of the idea of co-production in the Belmont Forum's global research programme, Future Earth. Future Earth merges existing large-scale earth system science programmes under a new umbrella programme. One of its primary aims is to promote co-production of knowledge with societal actors. Van der Hel used qualitative coding analysis of key documentation and 18 in-depth interviews with managers and researchers to construct the case study. She identified three logics of co-production at work in the programme: a logic of accountability (making science more responsive to the needs of society); a logic of impact (to ensure implementation of knowledge in society); and a logic of humility (being humble and reflexive about science in society). Although all the logics were found to broadly support the goal of co-production in Future Earth, they also leant themselves to different practices of scientific production and to working with different groups of societal actors.

Van der Hel identified that in the process of establishing Future Earth, major tensions emerged between efforts to institutionalise the viewpoints of extra scientific actors and efforts to maintain the autonomy of scientific decision-making. She found that the logics of accountability and impact were relatively easy to accommodate with traditional notions of scientific autonomy and so were more readily institutionalised in the structure of Future Earth than the logic of humility, which became relatively side-lined.

Van der Hel concludes that if programmes try to accommodate all visions of how science interacts with society then this can just lead to continuation of traditional modes of knowledge production. She calls it the tension between being inclusive and transformative.

De Raymond (2018): 'Aligning activities – coordination, boundary activities and agenda setting in interdisciplinary research'

De Raymond analyses the UK Global Food Security programme; this is an inter-agency forum designed to co-ordinate and implement a programme of research on food security. De Raymond agrees with Adler et al. (2009), that research on science funding dynamics has been too focused on macro-policy issues at a system level and has neglected the micro-organisational dynamics of programmes. De Raymond focuses on the co-ordinating function of the programme, using Hessel's definition of co-ordination as the

establishment or strengthening of a relationship among the activities in a system, with the aim to enhance their common effectiveness. De Raymond based his analysis on 15 semi-structured interviews with programme actors and analysis of programme documentation.

De Raymond developed a set of varied findings about the organisational dynamics of the programme. He found that a key issue in the programme was promoting trust between funders with different visions of the programme. He found that it matters where a programme comes from and who first articulates it, because after this you are adding to that vision. A key further finding was that when you have complex problem such as these and actors with multiple interests, what can result is a long list of goals and little prioritisation. De Raymond finds that the challenge of coordination is to achieve a certain level of coherence to the programme without letting one frame dominate or to lead to the uncoupling of research projects.

Themes from the studies on multi-goal programmes

The first theme identified in a number of studies is that there has been a lack of practicable knowledge created on the subject, and that science policy studies have focused on macro policy justifications for intervention rather than the intricate realities and dynamics closer to the ground. This is raised by Adler et al. (2009) and Kloet et al. (2012).

The second and strongest theme from the studies is that programmes that seek to achieve transformative changes struggle in the context of traditional funding systems (Adler et al., 2009; Bernard de Raymond, 2018; Kloet et al., 2012; van der Hel, 2016). The studies report how efforts to turn science programmes towards complex societal goals are often held back by systems of measurement and management that are geared towards high-quality scientific production. This is related to the point raised by de Raymond and Van der Hel that the framing and articulation at the beginning is difficult to shift once a programme has started.

The third theme is that programmes are often too short for the extra academic goals to bear fruit (Adler et al., 2009; Kloet et al., 2012). This mirrors the finding from the section above that processes to produce interdisciplinarity, capacity building and impact often outrun the length of standard science programmes.

The last theme is that neither funders nor researchers have full control of programmes and that they are intertwined in a negotiation as the programme develops. Shove (2003)

found that researchers are already running their own work programmes and are using the funders' programmes to piece together the funding they need to support their research aims. This means it is an iterative process of mutual adjustment on both sides with researchers not aiming to collectively capture the agenda but rather work together with the funder's agenda to develop their own.

2.1.2 Towards an interpretive approach to studying sustainable-development research programmes

The last section of the review will aim to address the question of how the subject should be studied. It will do this by synthesising and critically analysing the key themes from the literature described above to argue for a particular type of approach to be adopted to study the dynamics of multi-goal sustainable-development research programmes.

This section will first summarise what the review has told us so far about the potential dynamics of multi-goal sustainable-development programmes and the types of issues to which an approach will need to be sensitive. It will then critically review the predominant approaches that have been used to study science funding dynamics generally and multi-goal programmes in particular. On the basis of this synthesis it will conclude by outlining a list of criteria that the analytical approach will be designed to meet.

2.1.2.1 Dynamics of sustainable-development multi-goal research programmes: summary of existing literature

Despite there not having been a specific study completed on the subject of study of this thesis, the literature review has enabled a picture of the possible dynamics and key issues based on studies relating to the subject's constituent parts. From this, a number of key characteristics and tensions can be distilled.

The review set out how research programmes are temporary, integrative organisations that attempt to create some greater value from the individual value of their parts. The meaning of what type of greater value is not predefined. It could include: creating value for individual projects from being part of the programme; shaping wider research capacity by building communities of scholars around particular research subjects; achieving greater non-academic impact beyond the programme through a higher profile and the networks created by the programme. Multi-goal sustainable-development programmes have a set of complex, intertwined objectives at their core. The meaning of the goals is

flexible and likely to be interpreted quite differently depending on the context and the goals and interests of the actors involved.

It has also been established that some degree of tension between the goals and actors is likely to exist and that these tensions are likely to be unpredictable and complex. It was shown that there is an ambivalent relationship between scientific excellence and the other goals, also how scientific measures of quality are seen as essential to all of the goals but how an insular focus on what scientific communities want to pursue can also draw away from the other goals. It was also highlighted how often tensions are reported to arise specifically around particular practices of selection and management.

There are a number of particular characteristics and tensions introduced by the sustainable-development character of the subject. Sustainable-development multi-goal programmes bring together the dynamics of research funding systems (which have been the focus of STIS literature) with the dynamics of international development. Critical development scholars have repeatedly demonstrated that the field of international development is replete with contradictions and tensions stemming from situations where powerful developed country stakeholders take responsibility for ‘developing’ parts of the world that are less economically developed. The review detailed how the inclusion of Southern researchers in research programmes for development raises a number of tensions within, between and around the concepts of partnership and capacity building and other goals, such as scientific excellence.

A strong theme from the literature review is that researchers and funders are not homogenous groups in how they react to the goals of these types of programmes. Broden Gyberg's (2016) and Currie-Alder's (2015) work on agencies that fund research for development showed how funders have highly differing logics and motivations, drawing on various narratives, around funding this type of research and that these shift over time. Bos et al.'s (2014) study of how researchers in the Netherlands responded to the concepts of ‘sustainability’, ‘responsible innovation’ and ‘valorisation’ found that the researchers developed distinctive interpretations based on their varying strategic interests. The literature on the motivations and institutional contexts of Southern researchers (Bradley, 2007; Muriithi et al., 2018) suggested that this group may have significantly different motivations from the funders and Northern researchers.

The last theme from the literature to be highlighted is the need for practicable knowledge on this subject. The studies on multi-goal programmes found that there has been a lack of practicable knowledge created on the subject and that science policy studies have focused on macro policy justifications for intervention rather than the intricate realities and dynamics closer to the ground (Adler et al., 2009; Kloet et al., 2012). This thesis touches on the issue of positioning of the research a number of times.

First, in the introduction discussing the positioning of the thesis in the policy-oriented field of STIS. This section identified the extremes of positioning labelled ‘technocratic’ and ‘critical’ by Edge (1995), and how the thesis will aim to position itself somewhere in the middle of this range. The toing and froing between constructing solutions and deconstructing viewpoints can be viewed as a creative tension that the study seeks to harness. The need to balance these tendencies is summarised by Elzinga and Jamison (2011:192), who argue that “*the analysis of science and technology policy without the self-reflection that comes from science studies is blind, just as science studies are naïve if not informed by a science and technology policy perspective*”. Second, in the section on existing approaches to the studies of science funding system dynamics, the review outlined how the predominant conceptual approaches to studying science funding systems have been either positivist-inspired structural approaches or discursive approaches that have sought to trace the evolution and interaction of ideas. The PAT, co-ordination and credibility cycle approaches, while producing interesting insights at the level of the whole system, do not meet the need to explore the nuances of how goals are interpreted and acted upon at the programme level. The interpretivist approaches to date applied in STIS have tended to be those that look at the history of particular ideas rather than how ideas are interpreted and used by actors in particular situations. Some balance between these positions is sought in this thesis. In a short section below I consider the idea of phronetic social science as a way to seek this balance and as a useful framing for the positionality of the thesis.

2.1.2.2 Phronetic social science as a way of thinking about practicable knowledge

In his book *Making Social Science Count*, Flyvbjerg (2001) provides a way to think about studying social science that creates some balance between the approaches described above. Flyvbjerg starts by outlining Aristotle’s three intellectual virtues:

- Episteme/scientific knowledge: this is universal and invariable knowledge based on general analytical rationality and concerned with uncovering universal truths about society and social organization.
- Techne craft/art: pragmatic knowledge oriented towards production and based on practical instrumental rationality with a pre-defined goal. Social science practised as techne is consulting aimed at running society or social organizations better by means of instrumental rationality.
- Phronesis/ethics: deliberation about values with reference to practice. This type is pragmatic, variable, context-dependent. It is oriented toward action and based on practical value and rationality but is also concerned with questioning values and interests.

Flyvberg makes the argument for practising the third virtue: ‘phronetic’ social science. He explains that:

“The goal of phronetic social science is to produce input to the ongoing dialogue and praxis in relation to social organizations and social life, rather than to generate ultimate, unequivocally verified knowledge about the nature of social organizations and social life... The task of phronetic social science is to clarify and deliberate about the problems, possibilities and risks that different social organizations face, and to outline how things could be done differently – all in full knowledge that we cannot find ultimate answers to these questions, or even agree on a single version of what the questions are” (Flyvbjerg, 2001:54).

Flyvberg joins other scholars in calling for a social science of this type. Toulmin, a philosopher of science, criticised the hegemony of universal rationalism at length in the sciences in general and particularly in social science. For social science, he calls for greater respect for everyday reason and understanding of social context. He sees practical wisdom as growing out of intimate familiarity with the uncertainties and contingencies of social practices embedded in various social settings (Schram, 2006; Toulmin, 2001).

Flyvberg makes clear that, in adopting this kind of stance, the researcher must be careful not to ‘go native’ and should maintain some distance from the subject. This differentiates it from ‘action research’. Flyvberg explains that ‘action researchers’ and anthropologists who have gone native typically over identify with the people they are studying; they adopt the perspective and goals of those studied and use research results in an effort to achieve their goals. Phronetic social science requires maintaining some outside perspective and distance from the subject.

The positionality presented by the idea of phronetic social science provides the balanced viewpoint that this thesis seeks to adopt. Phronetic social science provides a middle

position between the extremes labelled ‘technocratic’ and ‘critical’ in the introduction, and between the ‘positivist’ and ‘discursive’ analytical approaches that have dominated the theoretical explorations of science funding system dynamics. Neither the positivist nor discursive approaches provide practicable knowledge on how to create programmes. In different ways they are both too abstracted from the pragmatic realities of research programme design and management. Positivist approaches create simplified characterisations of group motivations in order to create law-like generalisations about the resulting dynamics. Discursive approaches that are not also focused on individual meaning making and actor’s motivations, are abstracted because they focus on the history and development of ideas but not how the ideas are then consumed and experienced by individuals and groups. Discourse analysis lends itself well to critical analysis, but not to policy formulation. Pieterse (2011:239) says that “*discourse analysis is a good tool for criticism but not for policy... it is most apt for a particular kind of criticism; it is most appropriate for critiquing hegemonic discourses and exposing its silences, omissions and double talk*”. The approach adopted in this thesis tries to maintain some of the critical spirit while moving beyond high-level abstractions and making the knowledge relevant and practicable to those designing and managing research programmes of this type.

Having now summarised the key findings from the literature and also put forward a balanced and pragmatic position from which to approach the subject the next section will make an argument as to why the current approaches in the literature are not a good fit with the dynamics of multi-goal, sustainable development research programmes and also do not provide the balanced positionality that the thesis is seeking to use. After explaining why current approaches are not sufficient the final section will set out the key criteria that an approach should fulfil.

2.1.2.3 Why current approaches to multi-goal programmes are insufficient

This section will consider the approaches used to date for studying multi-goal programmes and critically appraise their appropriateness for studying sustainable-development research programmes. It will consider them in chronological order, starting with Shove (2003).

Shove (2003) set out to test PAT’s applicability to research programmes, drawing together themes and insights from a series of programme evaluations. Shove makes a compelling argument that PAT is restrictive in relation to analysing programmes and does

not capture the complex dynamics between researchers and funders around programmes. She proposes alternative ways to understand programmes beyond the delegation characterisation of PAT, and argues that the theoretical viewpoint of co-production makes more sense for the reality of how the programmes work as it better accounts for the researchers position and highlights the limits of a funder's control over a programme. She also introduces the notion of programmes as virtual social institutions. It is movement towards approaches that let in more context, show multiple perspectives, more complexity. However, Shove does not develop a full analytical approach that allows analysis of difference of motivations and interpretation that the literature review has shown are important for sustainable-development programmes. The concepts of 'co-production' and 'virtual social institutions' are mainly descriptive and lack explanatory power.

Adler et al. (2009) adopt the iterative and collaborative action research approach of Argyris and Schön (1989) to develop practical insights from their participants through a series of workshops with researchers. The action research approach is effective at gaining participants' trust as it tries to adopt their position and further their aims. However, it does not maintain enough critical distance from the participants, mainly taking them at their word. The analyst runs the risk of adopting the perspective of the actors being studied whereby he loses the ability to be critical. It does not allow space for identifying tensions, contradictions or having a focus on holding actors' views up against each other.

Kloet et al. (2012) use the MLP approach that analyses change at three levels in society: the landscape, regime and niche (Geels, 2002). It is interesting as it highlights interactions between the programme (conceived as a niche) and its context (conceived as regime and landscape). However, it is difficult to differentiate between niche and regime in this context. Which elements of a programme would be seen as novel and niche as opposed to part of the existing regime? Trying to fit the elements into these pre-ordained categories is likely to be more confusing than illuminating. It is too pre-structured and draws attention away from encounters between the actors.

Bos et al. (2014) uses the idea of 'Big words', defined as uncontested concepts that allow for multiple interpretations, as a theoretical lens for understanding how the ideas relate to scientific practice. The positives of this approach are that it is the only approach that looks at how the programme's goals fit together. The downside of the approach is that it focuses

on researchers only and does not look at the tensions and dynamics between groups of actors. It does not, therefore, look at the overall dynamics of the programme. The literature review has shown that there are likely to be important tensions between the goals and between the groups of actors in how they interpret them, and it is important that the analytical approach aims to capture both.

van der Hel (2016) used the concept of logics of co-production at work in the programme: a logic of accountability (making science more responsive to the needs of society); a logic of impact (to ensure implementation of knowledge in society); and a logic of humility (being humble and reflexive about science in society). This approach is good at identifying different perspectives and how they interact with each other. However, it does not look at the reasons behind why the actors think this way about the programme. It does not have an account of motivations/interests to explain this deeper level to the programmes. This reduces its practicability because it does not allow for reflection on what combinations of ideas may work considering the perspectives of the different actors involved.

Bernard de Raymond (2018) focuses on the co-ordinating function of the programme, using Hessel's definition of co-ordination as "*the establishment or strengthening of a relationship among the activities in a system, with the aim to enhance their common effectiveness*". The co-ordination approach used by de Raymond helps draw attention to the integrative nature of programmes and draws attention to researcher perspective. Again, however, it does not provide any tools for analysing internal motivations and values of different groups.

In summary, the literature review has not identified an approach that seems appropriate for producing the type of phronetic knowledge identified by Flyvberg and none of the approaches provide the inductive style logic of inquiry to study the complexity of the dynamics of this type of programme in context, including how values and ideas shape interactions.

2.1.3 Conclusions: setting the criteria for the analytical approach

As explained above, the aim of my study is to produce a practically oriented, critical and contextual study to draw out how the programme's goals are interpreted and integrated by the different actors and where the sources of tension and alignment arise between the

actors. The research should produce an account of what works and why in the programmes, but not from a purely practical basis. It should also draw out the underlying values, perspective and contradictions to allow for deliberation about what actors *should* be doing.

The above points mean that an approach is needed that meets four criteria:

1. It requires an approach that has a nuanced way of drawing out the meaning of concepts and the underlying motivations of actors. It must also allow for analysis of the different motivations and interpretations within groups of actors rather than starting with assumptions of what an actor will want. Furthermore, it needs to allow for analysis of funders and researchers together rather than viewing the programme from one or other perspective.
2. It needs to adopt an inductive rather than deductive approach so that it does not prejudge what is important to the actors involved. This is partly because it is a subject that has not been studied before, but also because the literature review has demonstrated that the goals and dynamics are nuanced and contextual, and any attempt to raise a clear hypothesis of the dynamics of this type of funding instrument are likely to be frustrated.
3. It needs to allow for analysis of the way that institutionalised practices (particularly systems of selection and management) influence the dynamics of this type of funding instrument.
4. The literature on Southern researchers and partnerships suggests that it should be an approach that allows for a focus on representing less heard voices.

2.2 Analytical approach

The analytical approach builds on the literature review by using the list of criteria developed at the end of that section. It will introduce the Interpretive Policy Analysis (IPA) approach as developed by Schon and Rein, Hajer, Yanow, Bevir and Rhodes, Wagenaar (the specific relevant texts of these authors are referenced in the main body of this section below) and others as an appropriate analytical approach for the subject. The section will explain the different ideas within the IPA tradition and then explain the parts used and why.

2.2.1 An introduction to IPA

IPA entails applying ontological and epistemological positions derived from interpretive philosophies to the study of public policies (Yanow, 2007). The basic outlines of the interpretivist approach were introduced in the literature review section in order to allow an analysis of the predominant approaches to studies of science funding systems. This section will add further detail and nuance to the introduction in the literature review.

As explained above, the interpretivist position was in large part developed as a critique of positivist approaches. An interpretive approach adopts a non-foundationalist ontology; this means that, unlike natural systems, social structures are not seen to exist independently of the actors' views of what they are doing and their consequent actions. The key defining feature of interpretivist approaches is a concern with examining and describing the meaning that individuals and societies ascribe to phenomena (Bevir and Rhodes, 2002).

In the section on interpretivist approaches in the literature review, two traditions of interpreting meaning were outlined: the first influenced by hermeneutic and phenomenological traditions that start with the experiences, perceptions and interpretations of individuals; the second what Bevir and Rhodes (2002) call post-structuralist or post-modernist approaches and that Wagenaar (2015) describes as 'discursive'. The key is that instead of looking at how individuals give meaning to their own social worlds, they focus on how "*individual understanding is the product of a larger meaning structure that emerges out of the interplay of the elements of a discursive entity*" (Bevir & Rhodes, 2003:53) These approaches focus on supra-individual aspects of social life: belief systems, ideologies, institutions, traditions. At the end of the literature review, the reasons for not adopting the discursive approach were outlined. For the rest of this thesis, when referring to IPA I will be referring to the school of thought that is influenced by hermeneutic and phenomenological traditions that starts with the experiences, perceptions and interpretations of individuals

2.2.2 Placing IPA in context

IPA started developing in the USA in the 1970s and 1980s as ideas from hermeneutic and phenomenological traditions that developed in the 19th century. It started influencing policy scientists who were becoming disenchanted with dominant positivist approaches. (Glynos et al., 2009).

Van Bommel et al. (2014) provide a detailed account of the institutionalisation of IPA and introduce the leading scholars in the field. The story starts with the influence of Martin Rein teaching in the Urban Studies and Planning department at MIT in the early 1980s. Rein was working with Donald Schon, developing an account of the way that policies get framed and how different frames can lead to intractable policy conflicts. Their work culminated in the publication of the leading text ‘Frame Reflection: toward the resolution of intractable policy controversies’ in 1996 (Schön and Rein, 1996). Throughout the 1980s, Henrik Wagenaar and Dvora Yanow, who were both heavily influenced by Rein’s approach while respectively working as a PhD student and post-grad at MIT, started developing a methodological approach to what would become IPA. In 1996, Yanow published the influential text *How does a policy mean?* (Yanow, 1996). Through a case study of community centres in Israel, she developed a working definition of IPA as an approach to policy analysis “*that focuses on the meaning of policies, on the values, feelings, and or beliefs which they express and on the processes by which those meanings are communicated to and read by various audiences*”(Yanow, 1996:9).

During the same period, Frank Fischer, Martin Hajer and Rob Hoppe were working through the implications of critical theory for policy analysis, eventually joining up with Wagenaar with Yanow to establish the ‘Theory, Policy and Society’ group at a 1998 Boston American Political Science Association meeting. This led to the publication of the seminal edited text *Deliberative Policy Analysis* in 2003 that included contributions from Fischer, Yanow, Rein, and other leading thinkers David Law and Patsy Healey. The IPA tradition has spanned the USA and UK, and has also had a particularly strong tradition in the Dutch universities Leiden, Wageningen and Amsterdam. It has become particularly associated with the journal *Critical Policy Studies* and has since had its own annual conference.

The tradition has generated a series of accessible texts on methodology including: *Conducting Interpretive Policy Analysis* (Yanow, 2000); *Interpretive Research Design* (Schwartz-Shea and Yanow, 2013) and *Meaning in Action: Interpretation and Dialogue in Policy Analysis* (Wagenaar, 2015). Although IPA is institutionalised with a strong methodological outline, it is still highly heterogenous and remains an open methodology that is not highly prescriptive. There are ongoing debates around conceptual and

methodological issues. Binding the approach together is the focus on exploring the meaning of policies to heterogonous policy stakeholders.

2.2.3 The meaning of meaning

The starting point of IPA is asking what particular policy related phenomena *mean* to actors. Rather than producing a causal account of phenomena, the aim is to produce explanations of social phenomena by seeking to explain what they mean to different audiences. Wagenaar (2015:14) explains that the “meaning of meaning” to IPA theorists is actually difficult to unpack. The foundation is the belief that humans are, at their core, meaning making beings, and that this is what separates us from inanimate objects. This means humans act with intentions rather than mechanically reacting to circumstance.

Physical chains of action can be explained in a simple causal fashion. Wagenaar uses the example of a hammer hitting a nail, which causes the nail to go into the wood. However, human behaviour cannot be explained in this way. The key for Wagenaar is the notion of intentions. Human actions have to have intentions referring to some inner aspect behind the action and some intended result that the action is designed to bring about. The point is that people do not act mechanistically but rather by referring to their beliefs and preferences. Humans do things for a reason, and these reasons are not fixed.

This introduces a filter of interpretation in human actions that makes them complex and unpredictable. Wagenaar explains that this does not mean that IPA is entirely focused on individual meaning making. Rather they recognise that the meanings that individuals give to actions feed from, and in the process alter, wider shared meanings that have been communicated and become entrenched between humans, setting up a constant interplay between subjective and objective meaning. This extends the sphere of interest of IPA beyond individual intentions to the social context in which they are acting. The difference from a positivistic causal explanation is that interpretivists are not trying to isolate a specific cause of an action. Rather they start by trying to understand the interpretation of a particular actor in a particular social context.

Building on this central insight, IPA has a number of other key tenets. First, that what is meaningful is not fixed in time or place (Schwartz-Shea and Yanow, 2013). It is possible for humans to interpret acts, words and concepts in very different ways depending on their perspective or context, and this can change over time. Béland and Cox (2010)

explore the implications of this. They explain that seeing policy processes in this way means they cannot be explained in a mechanistic way where actors formulate a goal, devise a strategy and compete with others to achieve their goal. Rather, drawing on a palette of existing cultural and ideological symbols, actors develop a set of ideas and then share them with others who, in turn, may challenge them and provide alternatives. In these interactions ideas are refined, reframed and reinterpreted. They conclude that ideas shared by political actors are in flux and potentially at odds (Béland and Cox, 2010).

The second tenet that flows from the central focus on understanding meaning making is that social science cannot be an objective science because the observer is also interpreting the case. The meaning of acts cannot be accessed directly but can be interpreted through observing and interpreting language and actions. Although this does not mean that studies cannot be done in rigorous ways, a point that will be explored further in the methodology section.

The third key tenet is that language and ideas have power in themselves. Language is not a *“transparent referent for what it designates nor does it merely mirror or reflect an external world but instead plays a role in shaping or constituting understandings of that world”* (Schwartz-Shea and Yanow, 2013: 43).

The fourth key tenet is that accessing meaning requires an abductive or inductive mode of enquiry rather than a deductive one. A deductive logic of inquiry begins with a theory; this leads to an hypothesis from which testable concepts are generated and then tested against observations. An inductive logic of inquiry begins with observations of particular instances from which understandings/theories are developed. An abductive logic refers to the creative exploration of alternative hypotheses; these can be generated by pre-existing disciplinary frameworks in addition to the inductive process of observation where theory is directly generated by empirical evidence (Stirling, 2015). In other words, an abductive logic allows not only for grounding of the data in the specific context but also a flexible use of appropriate concepts from the literature.

2.2.4 Components of the IPA analytical approach

As well as the key guiding methodological tenets set out above, this section will identify the key concepts and ideas that IPA scholars have developed to make sense of the social

world. What are the basic objects that make up a social reality and how do they fit together; in other words, the ontology of IPA.

2.2.4.1 Concepts that link and structure ideas

There are a series of concepts used by IPA scholars to discuss the way ideas form together and become structured; these include frames, narratives/storylines. These concepts help analysts try to make sense of the complex morass of ideas around a policy situation and how they interact. Erving Goffman's 1974 monograph *Frame Analysis: an essay on the organisation of experience* first brought the concept of framing onto the social science agenda (Goffman, 1974). Frames were described as cognitive structures that humans used to understand events and their involvement with them. In the 1980s and early 1990s, Martin Rein and Donald Schön applied these ideas to policy analysis and provided many of the key ideas and definitions around framing which are still influential today. The definition of frames deployed by Schön and Rein is that they are structures of belief, perception, and appreciation which underlie policy positions (Schön and Rein, 1994). These structures allow policy actors to "*draw disparate elements together in a pattern, selecting some things as relevant or important and discarding, backgrounding or ignoring others, occluding other ways of seeing (and acting)*" (Van Hulst and Yanow, 2016:99).

The idea of storytelling and narratives is often used to analyse the way that within actors 'frames' they will construct stories around policy issues. The stories structure elements of the frame by weaving together a narrative that makes sense as a whole. A story/narrative has a beginning, a middle and an end. This involves first sketching out the situation (the beginning), describing its development into something concerning (the middle), and describing the possible solution/resolution (the end) (Van Hulst and Yanow, 2016).

2.2.4.2 Concepts that link actors into groupings of shared perspectives

A further imperative for making sense of the complexity of ideas and how they are used by individuals and groups is to conceptually link various actors into groupings based on shared perspectives. Hajer (2006:70) uses the term discourse coalition to describe "*a group of actors that in the context of an identifiable set of practices shares the usage of a set of story lines over a particular period of time*". Yanow (2000) uses the idea of interpretive communities. Interpretive communities are formed when members of a

community come to use similar cognitive mechanisms, engage in similar acts and use similar language in regard to a policy issue. These characteristics become re-enforced and lead to the creation of identity markers in contrast to other communities. These are not communities based on shared location. They can be based on wide range of characteristics such as race, professional training and background and membership, sex and gender, and myriad other possible dimensions. The measure of whether it has become an interpretive community is whether the shared sense has become more common than not. Also, these communities can be fluid, changing from issue to issue. In a policy situation you will have at least three communities of meaning: policy-makers, implementing agency personnel, and affected citizens/clients.

2.2.4.3 Concepts that describe the institutionalisation of ideas

Although IPA starts with the experiences, perceptions and interpretations of individuals, it also recognises and emphasises that meanings are not purely subjective. Individuals draw on shared meanings that can become strengthened in various ways to form culture, norms and institutions. When analysing how actors use ideas in the policy-making and implementation process, it is important to understand that these actors are not operating in a vacuum. Institutions like “*the formal rules and procedures governing policy making affect which ideas penetrate the policy-making process and are adopted and implemented as policy*” (Campbell, 2002:30). IPA needs to have a way to identify these institutional filters. The relationship between, on the one hand, individuals’ values and ideas and, on the other hand, institutional structures is complex. Institutions are both constraining and constitutive of individuals’ perceptions and motivations around a policy problem (Chang, 2002). In addition, institutional structures are only as strong as the extent to which individuals recognise their authority and accept them in their personal perspective on the policy issue. Overall, existing institutional structures both enable and constrain what can be said and thought, but these structures also need to be “*constantly reproduced and reconfirmed in actual speech situations*” (Fischer, 2003:85). Institutional arrangements can take on a very wide variety of forms ranging from more solidified forms such as laws through to organisational routines and practices and, to the more informal, uncoded forms of practice.

2.2.4.4 Motivations and interests in IPA

Interpretivist scholars bring a specific conceptualisation of interests. This is usually presented in contrast to ‘rationalist’ explanations of policy processes that have drawn on neo-classical economist understandings of interests; these characterise interests as individuals maximising personal utility. In this rationalist school, interests are usually seen as relatively stable and uniform, and individuals are seen to pursue their attempts at utility maximisation in a rational fashion, resulting in a picture of interests and motivations that is quite easily accessible to the analyst (Blyth, 2002). IPA scholars recognise that individuals have motivations and interests, but the core idea is that these interests are not objective facts but historical, socially contingent constructions. Interests are seen as highly flexible and formed from a complex mix of emotions, identity, ideas and strategic calculations.

Béland and Cox (2010:11) explain:

“As clusters, ideas embrace thoughts, emotions, and desires, as well as interests, all in delicate and fluid balance with one another. Changing emotions, especially in response to new ideas and circumstances, help us to reassess, and possibly alter, the manner in which we perceive our interests. This could be simply a strategic calculation of advantage, which would be consistent with a materialist explanation. But ... it might also involve a fundamental reassessment of priorities, perhaps even of identity”

Interests are closely linked with the values of the individual and are limited by what those individuals know or understand about a policy situation. Hay (2011:79) explains that interests *“reflect, as much as anything else, subjective/intersubjective preferences regarding the things the actor values and the relative values the actor assigns to the desires he or she can imagine”*.

2.2.5 Suitability of IPA as an analytical approach based on my criteria

Based on the literature reviewed in this chapter, a list of criteria for the analytical approach was identified. First, it specified that a practically oriented and critical positioning was appropriate. IPA has a critical and reflexive focus by presenting the range of values and meanings around a policy issue and allowing for analysis of the tensions between differing perspectives. It does not accept one value system as the correct way of looking at a policy issue and encourages reflection on the underlying values. It is also

practicable because it provides a detailed contextualised account of potential solutions that may be acceptable to the wide range of perspectives.

The second requirement was that the subject required an approach that had a nuanced way of drawing out the meaning of concepts and the underlying motivations of actors. The approach would allow for analysis of the different motivations and interpretations within groups of actors rather than starting with blanket assumptions of what an actor wants depending on high level structural accounts of interests. IPA does this through a range of concepts that allows for analysis of actors' underlying motivations.

The third requirement was that it needed to adopt an inductive rather than a deductive approach so that it did not prejudge what is important to the actors involved. IPA does not require the prior delineation of hypotheses and allows for exploration of the issue at hand through inductive reasoning.

The last requirement was that the approach needed to allow for analysis of the way that institutionalised practices (particularly systems of selection and management) influence the dynamics of this type of funding instrument. As explained above, these concepts are present in the IPA conceptual landscape and will need to be drawn out for the analytical framework in this study.

IPA analytical framework used for this thesis

This thesis will draw on the conceptual categories described from the IPA 'toolbox' to construct an analytical framework to study the subject of dynamics of multi-goal sustainable-development research programmes.

The concept of frames will be fundamental to the analysis because it is, in my opinion, the most fundamental and intuitive way of describing how individuals group together motivations, values, beliefs and attitudes into a way of perceiving a specific phenomenon or concept. Therefore, in this thesis I will examine:

- *What is the frame through which different individual stakeholders perceive the programme?*

Where individual stakeholders have a frame that is more similar than not to another individual, these individuals will be placed together in an 'interpretive community'.

The language of 'institutional arrangements' will be used to describe shared institutionalised practices. These institutional arrangements are understood to be in a

complex dynamic with the different individuals' frames. The arrangements are constitutive and constraining of individuals' understandings of the programme. The arrangements in turn rely on individuals supporting and using them, and are themselves highly flexible and malleable and can be used in strategic ways by the individuals.

The analytical approach section used the list of criteria for the approach developed at the end of the literature review section to argue that the IPA approach as developed by the scholars Schon and Rein, Hajer, Yanow, Bevir and Rhodes, Wagenaar and others is an appropriate analytical approach for the subject. It then explained the different ideas within the IPA tradition and which parts will be used and why. The next Chapter will describe how the analytical approach was put into practice in the study, describing the research design and how it was operationalised.

Chapter 3: Methodology, methods and implementation

3.1 Methodology

Chapter 2 described the analytical approach of interpretive policy analysis and justified its use in this study. It also outlined the specific analytical aspects of IPA that the study will use. This chapter will describe how the analytical approach was put into practice in the study, describing the research design and how it was operationalised. The chapter is divided into three parts. Section 3.1 describes and justifies the research design of case studies and introduces the two cases: Ecosystem Service for Poverty Alleviation (ESPA) and Unlocking the Potential of Groundwater for the Poor in Africa (UPGro). Section 3.2 describes how the methodology was operationalised in the study; outlining the stages of the interpretive policy analysis process and the methods of document analysis, semi-structured interviews and analysis. Section 3.3 provides an account of the ethical and reflective elements of the analysis.

3.1.1 Choice of research design

The chosen research design for this thesis is a case study approach. Yin (2009) provides a widely cited definition of case studies as *“an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident”* (Yin, 2009:8). The case study research design is well suited to the IPA analytical approach and to the subject of study. IPA methodologies are concerned with the societal context and the situated meanings and human subjectivities of the subject of study. They seek to gain in-depth understandings of particular phenomena. The case study approach allows for this form of deep exploration of a phenomenon in its context.

As explained in the literature review, the dynamics of these types of programmes are not a well-established subject. It is not clear from the outset what factors will be important or not, or how the different stakeholders around these programmes will interact and interpret the key programme goals. The case study design allows for an inductive logic of deep exploration of the issue in a small number of cases that should allow for compelling and

robust answers to the research questions. The literature review showed how the goals and objectives and range of actors involved in these programmes are highly diverse. Case studies are a good methodology to use to understand complex social phenomena because they enable the analyst to retain the holistic and meaningful characteristics of real-life events (Yin, 2009).

The most common criticism of case studies as a research design is that they have limited generalisability. However, as explained above, Flyvbjerg (2001, 2010) has argued that there are different forms of generalisability. The aim of this thesis is to contribute to practical rationality and judgement around this type of programme, described by Flyvberg as phronetic knowledge (Flyvbjerg, 2001, 2010). Actors who are involved in designing and running these programmes will not be able to take the results of this thesis and apply them automatically to their work. The aim is that they can read the detailed case study and reflect on what elements are similar to their situation and experiment with possible solutions. The ultimate aim, as explained in the conclusions of this thesis, would be for a corpus of in-depth case studies of this phenomenon, complimented with other methodologies, to be developed that could provide a body of practical, reflexive knowledge on the subject.

3.1.2 Introducing the case studies and why they were chosen

This section will begin with an introduction to the two case study programmes, followed by a description of why they were chosen as appropriate case studies to explore the subject. Both the cases, ESPA and UPGro, are funded jointly by DFID, NERC and the ESRC. The initial motivation for DFID and NERC to work together was the need to develop a response to the Millennium Ecosystem Assessment published in 2005. DFID and NERC started working on the design of ESPA in 2006 and were then joined shortly afterwards by the ESRC. Although DFID had a long history of working with the ESRC, ESPA was the first collaboration between DFID and NERC and the first time these three funders worked together on a programme. After a long design process, ESPA was launched in 2009. Shortly afterwards groundwater access and management were identified by DFID via stakeholder consultations as an area where there was a research gap and where the UK had a fairly unique offer. UPGro was launched by the same collaboration of funders in 2012.

A summary of the key features of the two cases is given below. A fuller analysis of the two programmes in context and their development over time is given in the context section of the thesis. The aim of introducing the case studies here is to give enough information about the cases in order to explain why they are suitable. The later more detailed section is presented as a narrative that draws on the interview evidence and aims to set the programmes in the context of wider developments in the research for the development funding landscape in the UK during the relevant period.

3.1.3 Introduction to ESPA

ESPA was a ten-year £43.5 million investment designed as a global interdisciplinary research programme, aimed at generating evidence to support decision making related to sustainable ecosystem management and poverty reduction. DFID contributed around £30 million, NERC contributed £10 million and ESRC contributed £3.5 million. The programme's stated purpose was "*to positively influence end users and decision makers through the generation of cutting- edge evidence on ecosystem services, their full value, and links to sustainable poverty reduction*" (ESPA, 2009:8). It had four sub-goals:

- a strong research and evidence base on the interface between ecosystem services, management and poverty reduction;
- innovative, interdisciplinary research and methodologies;
- a high uptake of research outputs by policy-makers and end-users;
- enhanced capacity of Southern researchers.

The central component of ESPA was a series of research calls issued through the ESPA Secretariat. The Secretariat was responsible for managing the project selection and was run by NERC. There were competitive calls selected through NERC's peer review processes and using NERC and ESRC peer review colleges. There were broadly five phases to the calls. First, there were situational analyses to help scope and design the programme (circa £3 million). Second, there were three rounds of grants to help form partnerships and build some extra research capacity (circa £7 million). From 2011 to 2013 there were three rounds of major investments that formed the central element of the programme and used around £24 million of the budget. These were followed by some smaller calls designed to build on and deepen elements/themes of the programme (around £2 million), and finally some calls to synthesise the findings of the programme before it closed (circa £1 million).

In total, there were over 120 individual research projects funded by ESPA, although the majority of the funds went to a smaller number of larger projects. The major investment grants funded large scale consortia projects, usually in the range of £0.5 million to £2 million; these involved multiple research partners and often partnerships with non-research partners such as NGOs or government departments. Figure 3.1 below shows the phases of the calls and the dates in which they were initiated.

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Broad phases	o. Situational analyses. Scoping the research focus of ESPA. Total budget ~ £3m		I. Opening up the market. Strengthening capacity, building North-South networks and partnerships, and establishing some early wins. Total budget ~ £6.7m		II. Major investments. A series of grouped projects with significant budgets, running through to 2016/17). Total budget ~ £24m			III. Going deeper. Three sets of grant calls, each deepening a key area of ESPA (blue skies research; capacity building; development impact). Total budget ~ £2m		IV. Syntheses. Synthesis of key insights from ESPA interdisciplinary research, and learning for and on impact pathways. Total budget ~ £1m	
Calls (Directorate grants in green)	Situation analyses		Strengthening Research Capacity Grants	Programme Framework Grants Partnership and Project Development Grants	ESPA 2011 grants	Open Access Grants Evidence & Impact Research Grants ESPA 2012 Grants	ESPA 2013 Grants RIU Grants	ESPA 2014 Grants ESPA Fellowships	Regional Opportunities Fund	ESPA 2016 Grants	Impact Activities Fund

Figure 3.1: Stages of the ESPA programme

Source: DFID (2018:12)

As a large, multi-funder research programme, ESPA had a relatively elaborate governance and management structure. At the top of the structure was the Programme Executive Board (PEB) that made strategic level decisions about the programme; it had a representative from each funder and an independent chairperson. The second most important body in terms of governance was the Directorate. The Directorate, which was outsourced and led by a director, was given the task of leading the intellectual, communications, knowledge management and capacity building functions of ESPA. The Programme Management Unit, which included the Directorate, a Programme Management Group (made up of funder representatives) and a Secretariat, was responsible for the day-to-day management of the programme and implementing the PEB's decisions. There was also an Independent Programme Advisory Committee (IPAC), established by the ESPA director to provide advice on the implementation of ESPA, with membership agreed by the PEB. Figure 3.2 shows the governance arrangements.

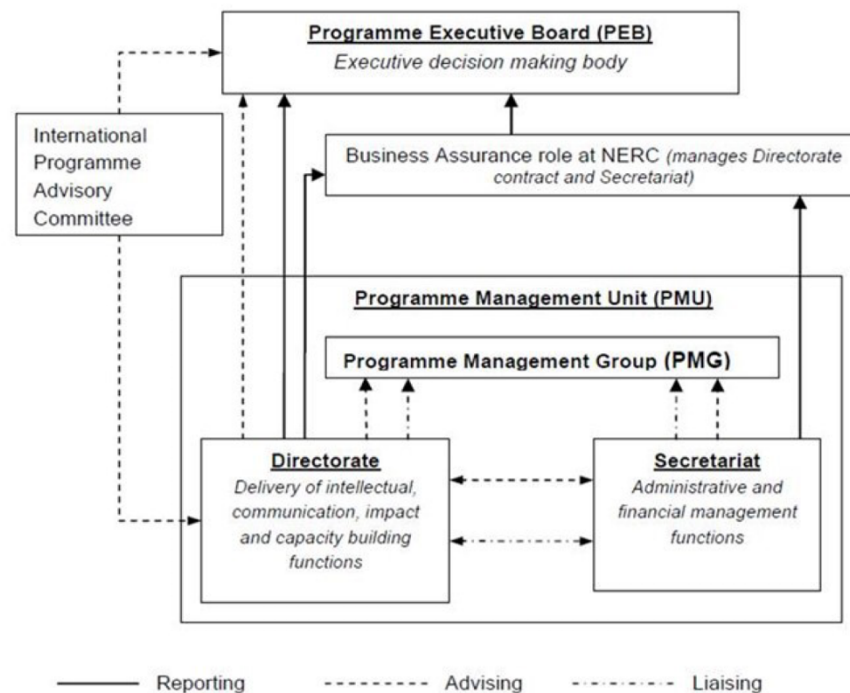


Figure 3.2: Governance of the ESPA programme

Source: ESPA (2009)

Following DFID's standard reporting requirements, the main monitoring tool in ESPA was reporting against the DFID programme Logframe. The Logframe was reported against on an annual basis using data derived from standard project reporting (through

ResearchFish and ESPA Directorate six-monthly catch ups) and reviewed through DFID Annual Reviews. These reporting practices will be described in detail in the context section.

3.1.4 Introduction to UPGro

UPGro was an eight-year £12 million investment also funded by DFID, NERC and ESRC. For this programme the split of contributions was £8 for DFID, £2 million for NERC and £2 million for ESRC. The overall aim of the programme was to improve the evidence base around groundwater availability and management in Sub-Saharan Africa (SSA) to enable developing countries and partners in SSA Africa to use groundwater in a sustainable way in order to benefit the poor.

The guiding objectives of the programme were research excellence, development impact, and creating meaningful partnerships with African research organisations. The programme also specifically required interdisciplinary research across the social and natural science divide.

The programme ran in two stages over eight years. The first stage consisted of fifteen catalyst grant projects that ran from 2013-15. The second stage got underway in spring 2015 and consisted of five consortium projects, four of which developed from catalyst grants and one of which was chosen from the open call.

Three themes were identified under the programme call, at least two of which had to be addressed by every programme. The first theme was titled “understanding the resource” and related to natural science questions. The second theme was called “governance, institutions and access” and aimed to “enhance evidence and frameworks for understanding the social, economic and political dynamics surrounding groundwater use”. The third theme was titled “impacts of future trends” and focused on the interaction of both natural and social science factors.

UPGro was set up in a similar way to ESPA with NERC providing access to their peer review processes and peer review college and handling the management of the programme, with DFID designing the Logframe and monitoring requirements. Like ESPA, UPGro also had a Programme Executive Board responsible for strategic decision-making. UPGro differed from ESPA in that it did not use a Directorate model. Instead, it

information content’ (Silverman and Gubrium, 2006:396). The choice of ESPA and UPGro as case studies is based on information-oriented selection.

They have been chosen as relatively typical cases that will allow for exploration of the types of dynamics and interactions around multi-goal, sustainable-development research programmes. They exhibit all the typical goals of this type of programme: development impact, scientific excellence, some form of inclusion of Southern researchers, and a focus on interdisciplinarity. They are multi-funder, which is also typical of this type of programme. They allow for a detailed exploration of how excellence and impact fit together, which is identified as a key issue in the literature review. This is particularly the case with these programmes because of the mix of funders, with DFID more focused on development impact while NERC and ESRC are focused more on scientific excellence. They also use a programme intermediary (Directorate in ESPA and Knowledge Broker in UPGro) that is a typical way of organising this type of programme (Harvey et al., 2017). Overall, they have a good mixture of types of funders/researchers/intermediaries to allow for a detailed exploration of the relevant dynamics of these types of programmes.

The two cases were also chosen because they are closely linked to each other. They are almost one case in that it is mainly the same teams within the funders dealing with the two programmes and they follow on from each other within a couple of years. Their links to each other allow the thesis to explore the impact of the changing context over time and to explore how the funders’ understandings and interactions developed from one programme to the next.

There are also several differences and specific features of the programmes that make a combined focus on both worthwhile and enriching for the analysis:

- I knew from scoping interviews and initial consideration of the documentation that there were differing narratives around the programmes. Broadly-speaking, ESPA was seen by many external observers and internal participants as being a difficult programme with multiple tensions between the funders and between the funders, directorate and the researchers. I also knew that UPGro was seen as much more harmonious and that its governance arrangements and decision-making systems were seen to be working well. This contrast between

the two programmes would help me to draw out some of the sources of tensions through exploring why this was the case.

- I knew that the programmes had different sizes and scopes that could provide interesting comparisons in terms of explaining sources of tension and challenges.
- I knew that ESPA used a more top-down governance model in the Directorate, whereas UPGro used the bottom-up PCG model. This contrast would allow me to explore whether the bottom-up governance structure made a difference to ameliorating tensions.

It is important to emphasise that is not a comparative case study research design trying to isolate causal factors. It is about looking at different actors' viewpoints in different situations that helps to provide insight through an inductive logic. A further important reason for choosing the case studies is that my supervisors both had good connections and access to researchers and programme level actors in the programmes, making it realistic that I would be able to obtain a significant number of interviews.

3.2 Methods and implementation

3.2.1 Operationalising the IPA methodology

The previous sections introduced the case studies and why they were chosen. This section explains how the cases were analysed using the IPA analytical approach and the specific methods applied. It starts with further exposition of the IPA analytical stages before describing how the principles of IPA were operationalised through the methods: semi-structured interviews; document analysis; and the coding strategy implemented on the qualitative research software package NVIVO.

3.2.2 Analytical processes involved in IPA

Yanow (2000:13) explains that “*the role of IPA is to map the architecture of the debate relative to the policy issue under investigation by identifying the language and its entailments (understandings, actions, meanings) used by different interpretive communities in their framing of the issue*”. It is focused on trying to uncover how individuals make sense of their particular social worlds. The analytical steps and methods involved in IPA are all designed to help the analyst gain a level of access to this ‘local

knowledge’. The aim is to use data that are as close as possible to the actions, events or texts that are being studied to allow for in-depth and highly situated exploratory analysis.

There are four analytical processes in IPA (Fischer, 2003; Yanow, 2000):

1. Identify the artefacts that are significant carriers of meaning

Artefacts are the human creations that embody human meanings, values, beliefs and feelings, such as language, dress, patterns of action and interaction, written texts, or built spaces. Artefactual symbols can be language, objects or acts.

2. Identify the interpretive communities

Through a process of interaction, members of a community come to use the same or similar cognitive mechanisms, engage in the same or similar acts and use similar language to talk about thought and action. Group processes re-enforce these characteristics and lead to the creation of identity markers in contrast to other communities, familiar ‘us and them’ characteristics. These communities are not necessarily based on shared location. They can be based on a wide range of characteristics such as race, professional training and background and membership, sex and gender, and myriad other possible dimensions. The measure of whether a group of individuals has become an interpretive community is whether shared sense has become more common than not.

3. Identify how the groups talk and act in relation to the policy issue

The goal of this step is to be able to say something about the meanings – the values, beliefs, feelings – that are important to each policy relevant community. For the analysis in this thesis, the concept of policy frames will be used to help structure and describe the different interpretive communities’ viewpoints. In this step the key institutional arrangements will be outlined and considered in terms of how the stakeholders perceive and use them.

4. Identify the points of conflict and their conceptual sources (affective, cognitive and/or moral)

This stage moves the analysis from descriptive to becoming more explanatory by asking what the source of the tension between the different interpretations is. The explanation of sources comes through distilling the differences in interpretation.

In practice, these four analytical activities are intertwined, and the analyst will go back and forth between them.

3.2.3 Collecting the data

Schwartz-Shea and Yanow (2013) use the idea of ‘exposure’ to discuss the types of methods and data that are appropriate to IPA: “*The concept of exposure rests on the notion that the researcher wants to encounter, or be exposed to, the wide variety of meanings made by the research relevant participants of their experiences*”. (Schwartz-Shea and Yanow, 2013:85). Common data collecting methods to gain exposure to different meaning include (Yanow, 2000):

- written sources to provide background on the issue and help identify policy relevant groups (can include news articles, archives, annual reports, memos, minutes, correspondence, newsletters, etc.);
- oral sources (interviews with key actors);
- observations (of acts and interactions and objects);
- participation (in the lived experience of the agency or community you are studying).

IPA is not prescriptive on what specific methods should be used, recognising it will depend on the context and the research questions. Yanow (2000) does say that the analyst should use at least two of the methods to help see the issue from multiple angles.

For this thesis, the main methods used were document analysis and semi-structured interviews to collect the qualitative data on which the analysis is based. I also attended a number of meetings and had a number of relevant engagements that are described at the end of the chapter. These were very useful for guiding me as to the important topics, language and dynamics around the policy issue. However, they were not officially part of my study and the data were not used directly in the analysis. This is because it was required as part of my ethical review process to get each person in these scenarios to sign an ethical consent form; this was not practical given the number of people present and the context in which I was attending.

In the following paragraphs, a chronology of the thesis methodology is presented in order to introduce the data gathering methods and analysis stages of the thesis and demonstrate the stages of analysis.

October-November 2017: I read background documentation and familiarised myself with the detail of the two programmes, produced a chronology of the two programmes and conducted some initial coding of programme documents. This stage related most closely to the stage of IPA where artefacts (language, objects) that are significant carriers of meaning for a policy issue are identified. At this stage I developed a list of key artefact words that I would take into the interviews to ask participants about, e.g., excellence, impact, interdisciplinarity, partnerships (meaningful, fair, etc.), Logframes.

December 2017 to January 2018: I conducted six scoping interviews with people with knowledge and experience of the programmes and issues, including long serving members of the ESPA and UPGro programme executive board and a consultant who had conducted an evaluation of ESPA. This helped to decide which issues to focus on and to refine interview templates

March 2018 to December 2018: I carried out the bulk of the semi-structured interviews (described below in detail), undertaking the initial coding and analysis over the same period. I also undertook the coding documentation.

February 2019: I completed a three-week field trip to Tanzania and Uganda, arriving in Dar es Salaam in Tanzania before travelling to Morogoro then Arusha. From Arusha I travelled to Makerere University in Kampala, Uganda before visiting one of the projects working in Bwaise slum, Kampala (Uganda). Accompanied by one of the Ugandan researchers I met local residents and community leaders involved in the project. Tanzania and Uganda were chosen because they were the country of focus in multiple UPGro projects. The fieldtrip enabled me to interview researchers who were working on four out of the five UPGro Consortium projects.

March 2019-May 2019: detailed coding analysis of interviews and documents.

June 2019 onwards: writing up thesis.

Meth3.2.3.1 Semi-structured interviews

Wagenaar (2015) describes deep qualitative interviewing and the analysis of interview data as the core business of IPA. They are an essential part of the process of mapping the meaning that individuals and groups ascribe to the phenomena. The interviews were open interviews with some pre-defined topics and issues to be covered. I did not use a single

interview template for every interview as the interviews were designed to be tailored to the individual/group. However, particular questions relating to particular issues were put to many of the interviewees and there were a series of subjects that were covered in almost all interviews (unless not relevant to the interviewee). For example, I asked every interviewee a series of questions around how they interpreted the four constitutive goals of the programme. The subject areas were used as a guide only and I followed up on interesting points made throughout the interview. I also allowed the interviewee to go on tangents where they were relevant and/or interesting. A list of the topic areas covered in the interviews is provided in Appendix 1.

Wagenaar (2015) describes three processes that are key to conducting high quality interviews for IPA studies. First is the process of establishing a working relationship with interviewees. Following Wagenaar's advice, I explained the research topic at the beginning of the interview and what I was trying to discover from interviewing them. I then opened with a question that was quite broad but also very focused on eliciting what the programme meant to the interviewee: e.g., What do you/your organisation hope to achieve from participation in the programme?

The second crucial process is monitoring the quality of the interview material. The key is to avoid slipping into a conversational type style where many of the shared assumptions go unchallenged and the interviewee slips into talking in generalisations. To enhance the quality of the material I avoided closed questions and was conscious of the conversation slipping into shared assumptions and asked them to explain what they meant by specific phrases.

The third process, linked to the first and second, is helping the respondent to develop the material. Wagenaar (2015:258) explains that "*You need to allow the respondent full freedom to explore his world in his own manner*" but you also need to guide them to explicate fully and as concretely as possible. The key is asking simple questions, at the right moment, that invite the respondent to provide further detail and give examples. I did this by asking follow up questions that allowed the interviewee to expand on the point they were making. I would ask questions like could you give me an example of x? what did you feel when x happened? Who else was involved?

3.2.3.2 Sampling of interviews and making contact

As explained above, random sampling was not the aim in this thesis, neither was generalisation from the actors to a larger population. Rather the research was interested in the personal accounts of the key actors around the programmes. The aim was to speak to the main stakeholders around the programmes at the senior level and to interview as many of them as possible until the majority of key people had been interviewed, the main perspectives described, and the interpretive communities identified (Yanow, 2000).

Through programme documentation, I was able to map the range of actors involved in the programmes and identify the lead researchers, key funding agency staff and members of the directorate (ESPA) and knowledge brokers (UPGro). I was also able to draw on the knowledge of my supervisors: Fiona Marshall (who had detailed knowledge and contacts in the ESPA programme) and John Thompson (who had detailed knowledge and contacts in the UPGro programme and personal links to the ESPA Secretariat).

I focused on interviewing individuals who had close and in-depth engagements with the programmes. For the researchers I focused on Principal Investigators (PIs), but I did interview some co-investigators where I knew they had particular engagement at the programme level or could provide insight on a particular topic. I focused on the PIs of the large consortium grants as these took up the bulk of the programme's funding, and they were the PIs who would have engaged most closely with the programme actors and funders. As explained above, for ESPA there were three rounds of large grants and I interviewed a senior researcher from the majority of these large grant projects. I also interviewed at least one PI from all the other stages of ESPA to gain a rounded view of the programme. For UPGro, I interviewed at least one senior researcher from all the large grants.

In terms of the Southern researchers on ESPA, this was quite limited as it was difficult to persuade many to speak to me and I was only able to interview four senior researchers spread out across the ESPA projects. I decided to focus my efforts on UPGro because its geographical focus on SSA, and particularly East Africa, meant I could organise a trip where I would be able to meet many of them in person at their home institutions and field-sites. The fieldwork enabled me to speak to senior Southern researchers from four out of the five UPGro Consortium projects.

At the programme level, I interviewed seven prominent individuals at ESPA and five at UPGro. I cannot give their titles because this would enable them to be identified but they were all senior members of staff with extensive knowledge and experience of the programmes. Throughout the rest of the thesis I will refer to people who have been employed (or are offering their time for free) in advisory or implementation roles with the programmes as *programme actors*. I recognise that the use of the phrase ‘programme actor’ is not standard vocabulary in science policy but I needed a phrase to describe this group of interviewees and upon reflection this seemed the most precise and appropriate. This will include all the members of the ESPA Directorate and the Knowledge Broker and Programme-Coordination team in UPGro.

I interviewed three members of staff at the ESRC and NERC who had collectively been responsible for ESPA and UPGro for most of their respective running periods.

At DFID I interviewed five programme managers in the Climate, Energy and Water team, part of the Research and Evidence Division, who collectively were the responsible programme managers for the two programmes for most of their active periods.

The gender distribution of interviewees overall was 30 men and 27 women. This was broadly equally distributed across the different groups. Table 3.1 summarises the interview sample across the various groups.

Table 3.1: Interview sample across stakeholder groups

	ESPA	UPGro	Total Number
Senior Southern researchers	4	9	13
Senior Norther researchers	13	7	20
Programme actors (e.g., Directorate/Knowledge Broker)	7	5	12
ESRC	1	2	3
NERC	2	2	4
DFID	3	2	5
Total	30	27	57

Source: Author’s own

Roughly half of the interviews were conducted in person and half over the phone. All the interviews were recorded except for one DFID interview where the interviewer was not

comfortable being recorded and notes were taken instead. All the interviews were transcribed fully before being uploaded to NVivo. All the interviewees were assured that the interviews would be confidential to enable them to speak freely.

3.2.3.3 Document analysis

Analysis of policy documentation is often the first step in IPA. It has a number of important functions for the analysis and particularly for helping the analyst start to embed themselves into the worldview of the various policy actors. It provides the first step in mapping the policy architecture, and allows for:

- an initial rough mapping of the key groups and their roles in the policy area;
- identification of key concepts and uses of language;
- a broad background understanding of the policy area and how it has developed over the years; and
- insights into the motivations of different actors and their frames.

The programme documents are also essential for gaining an understanding of the institutionalised practices being deployed in the programmes as the practices are often accompanied by processes of documentation that provide accountability and an audit trail. Reviewing programme documentation is also an essential step in preparing for interviews, helping to tailor interviews with the appropriate language and ideas from the programmes.

Documents were chosen based on their potential for providing these types of background understanding of the programme. The classes of documents are roughly split into documentation that was generated as part of the process of running the programmes and the funders' strategic policy documents. At the programme level, key documents included the DFID annual reviews, the business cases and the PEB minutes. The PEB minutes were particularly essential for gaining insight into the tensions and interactions between the funders across the programmes. Although the minutes were not verbatim they did record which subjects came up for discussion and often recorded where there were disagreements or shared common ground. Table records the classes of documents across the programme and funder levels.

Table 3.2: Classes and description of documents reviewed in analysis

Class of documents	Description of documents reviewed (number of documents in brackets where relevant)
ESPA programme documentation	- Programme Executive Board monthly meeting minutes September 2010 to June 2018

	<ul style="list-style-type: none"> - Programme management group monthly meeting minutes August 2010 to June 2016 - Business case and programme memorandum - Annual Reviews for DFID (8) - End of project independent evaluation - Funding call specification documents (20) - Knowledge and impact strategies (2) - Theory of change (multiple versions) - Governance terms of reference - Project websites and journal articles to gain understanding of each research project prior to the interview - Miscellaneous other documents including director's reports/newsletters, end of project learning reports, blogs, website screenshots (23)
UPGro programme documentation	<ul style="list-style-type: none"> - Programme Executive Board monthly meeting minutes December 2012 to March 2017 - Business case - Annual Reviews for DFID (5) - Funding call specification documents (5) - Funding applications for the five consortium projects
ESRC strategic and procedural documents	<ul style="list-style-type: none"> - Delivery plan 2011-2015 - Delivery plan 2015-2016 - Royal charter text - Strategic plan 2015
NERC strategic and procedural documents	<ul style="list-style-type: none"> - NERC research grants and fellowships handbook - Pathways to Impact guidance - NERC Strategy 2007-2012 - Delivery Plan 2011-2015 - Delivery Plan 2015-2016 - Impact reports (2011-2016) - Royal charter text
DFID strategic and procedural documents	<ul style="list-style-type: none"> - How to notes on DFID internal procedures e.g., annual reviews, scoring project, etc. (4) - Independent Commission for Aid Impact reports on DFID (3) - DFID business plan 2011-2015 - DFID draft structural reform plan 2010 - Research and Evidence Division Operational plans (4) - Research Strategy 2008 - Research Review 2016 - Research Uptake guide for DFID funded research programmes

Source: Author's own

3.2.3.4 Other engagements with the programmes

As explained above, I also attended a number of meetings and had a number of relevant engagements with programme stakeholders. These were very useful for guiding me as to the important topics, language and dynamics around the policy issue. However, they were not officially part of my study and the data were not used directly in the analysis. A description of these engagements is provided below for context.

Summer 2016: conducted MSc dissertation titled: *How are natural and social science disciplines being integrated in interdisciplinary research on groundwater sustainability? A comparative study of the five UPGro Consortium projects*. Included detailed analysis of the five UPGro Consortium projects, and interviews with eight researchers working on UPGro projects. It also included attending and taking part in two UPGro Programme Co-ordination Group meetings.

November 2017: attended the two-day ESPA final conference. Attended multiple sessions across two days and spoke informally with funding staff and researchers related to the programme. Helped to facilitate a session on interdisciplinarity with the Directorate.

December 2017: spent roughly two weeks working with the ESPA Directorate to help them analyse the results of a survey they had conducted with ESPA researchers as part of the process of extracting learnings from the programme.

June 2018: attended an UPGro interactive webinar on interdisciplinarity, and attended the closing event of the ESPA programme where I interacted with a number of ESPA researchers.

November 2018: UPGro Early Career Workshop over four days, which I attended as a participant. I presented emerging findings to UPGro researchers and representatives from funding agencies and received constructive feedback.

3.2.4 Analysing the data

The interview and document data were uploaded to the NVivo qualitative data analysis software package and analysed using a coding strategy based on the research questions and conceptual approach. Saldaña (2013:3) describes a code as “a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative

attribute for a portion of language-based or visual data". Coding of the data is the process that bridges the large amount of qualitative information with the broad analytical strategy of IPA. The function of coding is to allow movement from raw materials to interpretation and assigning theoretical meaning to the materials. Charmaz (2006:113) explains "*through coding you define what is happening in the data and begin to grapple with what it means*". Coding is not just labelling, it is linking: "*It leads you from the data to the idea, and from the idea to all the data pertaining to that idea*" (Richards and Morse, 2007:137). Coding is not a mechanical process. It is "*an heuristic (from the Greek, meaning "to discover") – an exploratory problem-solving technique without specific formulas or algorithms to follow*" (Saldaña, 2013:8). The type of coding method used can be determined by the particular methodological needs of your study.

The coding strategy used for this thesis consisted of two stages. The first stage of initial coding consisted of reading the data line by line and assigning chunks of data to a set of pre-defined coding groups (explained below). The second stage of theoretically guided coding involved constructing interpretive communities and then the main tensions between the interpretive communities. Each of these stages and the use of memos to bridge the two stages is explained in greater detail below.

3.2.4.1 Stage 1 - initial coding of the data

This thesis starts with the question: *What does taking part in ESPA/UPGro mean to different actors?* and the initial coding strategy was designed to allow me to address this question. As explained above, it is essentially about trying to construct the frame through which actors see the programme, referring to the salient factors of how different actors respond to and think about the programmes. The frame for my purpose includes the set of beliefs around the programmes and the set of motivations actors have to be involved and how actors interpret key goals of the programme, excellence, development impact, interdisciplinarity and capacity building.

Saldaña (2013) describes the range of initial coding methods:

- Grammatical Methods are techniques for enhancing the organization, nuances, and texture of qualitative data.
- Elemental Methods are foundation approaches to coding qualitative texts.
- Affective Methods investigate participant emotions, values, and other subjective qualities of human experience.

- Literary and Language Methods draw on aspects of written and oral communications for codes.
- Exploratory Methods are those that permit open-ended investigation,
- Procedural Methods use pre-set “standardized” ways to code data.

The aim of my study is to build up the subjective experience of those taking part in the programmes. Based on the goal of exploring subjective meanings, the ‘affective’ methods were identified as the key group to draw on.

The aim is to try to uncover the motivations of actors. At its essence, motivation is what moves people to act. It is essentially the answer to the question: *Why did you do that?* It is defined by the Cambridge dictionary as the need or reason for doing something⁶. The question of what drives people to act has driven longstanding and complex debates in various fields of social science. Motivations are a foundational idea in social psychology and been subjected to detailed examination, particularly the extent to which people are driven by intrinsic or extrinsic motivation (Lai, 2011) and what difference these types of motivation make to behaviour and learning. In the field of economics, the question of the extent to which humans can be characterised as utility maximising individuals seeking maximum economic benefit has been subjected to a sustained critique over decades by other social science disciplines, such as anthropology and sociology, and from within economics by behavioural and institutional economists (Urbina and Ruiz-Villaverde, 2019).

In line with the approach of this thesis to try to put myself in the perspective of the programme stakeholder and not use predetermined theories of what is motivating them, this thesis will not adopt a strong theoretically developed notion of human behaviour such as *homo economicus*. Rather, in line with the discussion in the analytical approach chapter above, it will take motivations to be a complex mix of attitudes, values and beliefs that are not necessarily coherent or rationally derived.

To try to access the motivations of actors the following code groupings were used.

- Attitudes: An attitude is the way we think and feel about ourselves, another person, thing, or idea. Attitudes are part of “*a relatively enduring system of*

⁶ Online Cambridge Dictionary accessed 10th June 2021:
<https://dictionary.cambridge.org/dictionary/english/motivation>

evaluative, affective reactions based upon and reflecting the evaluative concepts or beliefs, which have been learned” (Shaw and Wright, 1967:3).

- Values: a value is the importance we attribute to oneself, another person, thing, or idea. Value is connected to the meaning that an individual attributes to the subject. Saldana explains that *“the greater the personal meaning [of something to someone], the greater the personal payoff; the greater the personal payoff, the greater the personal value”* (Saldaña, 1995:28).
- Beliefs: are treated slightly separately as a proposition put forward by the actors about how the world works. A belief is part of a system that includes our values and attitudes, plus our personal knowledge, experiences, opinions, prejudices, morals, and other interpretive perceptions of the social world (Saldaña, 2013).
- Interpretations of key artefacts: How do actors define key goals in the programme? This is a subset of beliefs, but I coded them separately to help identify the key artefacts and how they are interpreted. This includes how they interpret key institutional arrangements, i.e., peer review.
- Process coding using gerunds: looking and describing actions of individuals. This is suited to the analysis because it helps draw attention to participant’s perspective through their actions. Actions are artefacts in IPA terminology. In this study it is the description of actions from the interviews rather than direct observation of actions.
- Metaphor coding: coding for metaphors used by individuals and considering the extent to which the particular metaphor echoes through the issue.
- In Vivo coding: using participants own language, suited because study is trying to understand participant perspective. Language is identified as an artefact in Yanow’s vocabulary.

Each interviewee’s data and the key documentation were coded using the initial coding grouping outlined above. Pertinent pieces of text were identified using a prefix as an Attitude, Belief, Value, Interpretation, Gerunds, Metaphor, Key Artefact, and coded with a description.

3.2.4.2 Stage 2- *developing theoretical categories*

In Stage 2 I used analytical memo writing and further higher-level coding to move from the initial codes of the interviews and documents to codes identifying the different interpretive communities and the main tensions and their sources.

Saldaña (2013:41), quoting Clarke (2003:202), defines analytical memos as “*sites of conversation with ourselves about our data*”. The codes are prompts for written reflection on the different meanings it evokes. I used them to reflect on patterns emerging from the data and links between different codes. I wrote analytical memos for each of the actors I interviewed, summarising my interpretation of how they think about the programme. By assessing what the differences are and whether they are fundamental or more minor, I then iteratively experimented with different conceptualisations of groupings of interpretive communities by comparing different perspectives.

Deciding how to group individuals together into interpretive communities was a complex task and required long reflection and experimenting with different groupings. Following Yanow (2000), the measure of whether it had become an interpretive community was whether the shared sense had become more common than not. Within the final interpretive communities there are of course a set of minor differences of opinion and interpretation. The way that I decided how to finally draw the lines around the groups was to reflect on the shared overall interpretation of the programme in terms of the fundamental and most important things they wanted to get from taking part in the programme and in terms of how, in broad terms, they interpreted the four goals of the programme and which were most important to them. This did of course involve a level of interpretation on my part in interpreting what was the most important factors to the actors. I did this by looking carefully at the language they were using and again reflecting and challenging my assumptions through writing critical memos.

Once I had established the groupings of interpretive communities, I further reflected on the policy frames of each community, using memos and high level codes to link between the different interview data. At the same time I started to reflect on and write memos about the key tensions between the interpretive communities. A tension is produced when you have forces pulling in different directions, and identifying the tensions involved looking at the main strains and points of unease in the programme based on what the actors told me. I repeatedly went back and forth between memos, codes, interview texts,

documents until I was satisfied that the key interpretive communities had been identified and the key meanings they attached to the programme had been described, as well as the tensions between them. I also wrote memos about how the tensions played out across the programmes as well as looking at the effects they were having on the programmes and how they were ameliorated over time.

During this process of memo writing I pulled key quotes to use in the write up. Quotes were chosen based on the extent to which they helped to elucidate a key interpretation that I had found to be common across the interpretive community in question. I was careful to reflect critically and check that the quote represented a viewpoint that was common across the group and was not contradicted by other interviewees. I did not include quotes of opinions that were specific to that one interviewee.

3.3 Ethics, reflections on personal biases and limitations of how IPA was applied in my study

I took a number of steps to comply with ethical considerations in the study. I applied for and was granted ethical review approval by the University of Sussex in September 2016. The study was assessed as low risk as it did not involve vulnerable individuals or personally sensitive information. The main ethical considerations in the study were to obtain consent from interviewees and to maintain confidentiality and anonymity of interviewees.

Interviewees were purposively selected based on their particular knowledge of topics of interest. I used public internet searchers to identify relevant individuals and a snowball technique to identify further individuals. I sent the interviewees a detailed information sheet about the project in the introductory email, together with a consent form that they were asked to return before I conducted the interview. Respondents were told that they could withdraw at any time and ask for their data to be destroyed and/or removed from the project until it was no longer practical to do so. I maintained confidentiality by ensuring that I present quotes and descriptions of people's views in a way that would not allow identification of the interviewee.

3.3.1 Reflections on personal biases

Reflexivity, refers to *“a researcher's active consideration of and engagement with the ways in which his own sense-making and the particular circumstances that might have*

affected it... relate to the knowledge claims he ultimately advances in written form” (Schwartz-Shea and Yanow, 2013:100). Maintaining a reflexive approach is a crucial part of the IPA approach that is premised on the notion that social science cannot be a purely objective science because the observer is also interpreting the case. The meaning of acts cannot be accessed directly but can be interpreted through observing and interpreting language and actions. Reflection needs to be built into the stages of the research process. It starts at the research design stage where the researcher should consider their personal characteristics and how they might affect their treatment of the subject (Schwartz-Shea and Yanow, 2013:100); it should continue through the data collection, analysis and writing up phases. In IPA, key to the process of reflection is the keeping of journals as the research progresses. I kept one journal of developing ideas so that I could track how the approach, questions and ideas about the research were developing, and one methodological and reflective journal where I recorded reflections on the stage of data collection, particularly my experiences and thoughts on the interviews, and on general biases and reflections. I outline below some of the main reflections I had on the process as it progressed.

The main potential bias I reflected on relates to my position as a researcher, albeit a very junior one. I have already been exposed to some of the tensions between researchers and those funding and administering research. I had already picked up on some forms of negativity from research colleagues working in development oriented research towards the funders. I had some preconceptions that the funders would be lacking in some sense. I reflected that this is a serious bias and an unhelpful thought pattern. The whole point of IPA is to try to put yourself in the shoes of the person you are interviewing and having negative preconceptions could block insights. I remained aware of this potential bias and was careful to try and see the funders’ position in a more positive light to present a fairer view of their perspective. I was also careful to consider when someone was saying something negative about the funders that I did not take it at face value but rather considered what it was saying about the person saying it.

Another bias I noticed as the research process progressed was that I was searching for a political underlying point about these programme that they should be more critical and aiming for transformative change. This relates to my education in critical social sciences. I am trained to look for ‘underlying’ issues that are perhaps not visible to the actors. This

is also not helpful as it sets me up to feel a bit superior to many of the actors and introduces a bias to the lens through which I view the data. In the end in the analysis I found a group of actors who were highly critical of the programmes and wanted more focus on transformative change. I have introduced this perspective to the thesis via this group of actors but have tried to present it as just one of the many voices in the programme.

I also noted that I have a bias towards presuming that donors/Northern researchers are not very good at actually working in partnership with Southern researchers and that power relationships are unequal. This may be the case, but I tried to remain aware that it was a preconception and be careful to check that I am not just finding evidence to support it.

I noted that I am definitely biased towards seeing it in contrast to PAT approaches. This is acceptable because it is largely the point of my PhD to move beyond these types of approaches and use interpretive approaches. However, I need to be careful not to caricature the principal-agent type approaches. I tried to get past this by taking the time to read up extensively on the approach and its benefits when I wrote the literature review.

3.3.2 Limitations of how the approach was applied in my study

The main limitation in how the IPA approach was applied in my study was that I was not able to get as much access to the funding organisations as I would have liked. I managed to secure interviews with the majority of those involved directly with running the programmes and was able to ask them for their opinions about the programmes. However, I was not able to gain further access behind this first line of engagement into the organisations at more senior levels. This meant I was not able to fully explore the context behind some of the decisions and actions. My understanding of the context was limited to reading the extensive grey literature and academic works. I tried to strengthen this by confirming different key points from the grey literature with the interviewees.

To take account of this I have tried to be clear in the write up of the results that I am describing the viewpoints of those working as programme managers rather than being able to make any findings about the culture or circumstances within the organisations.

I would also have liked to use ethnographic methods in the thesis so that I could gain more insight by looking directly at individuals' actions. This would have allowed for further triangulation with the interview and documentary sources of evidence and likely provided further insights. However, as explained above, I struggled to get access to

meetings with funders present. It was also difficult because at some of the events I attended where I might have been able to do participant observation, I was not able to get consent of all the individuals present as they were large events and it would not have been practical or appropriate.

Another element that would have strengthened the thesis would have been to gain access to materials relating to the peer review panels which would have allowed analysis of the tensions and interpretations arising within these processes. However, I was not able to gain access to these materials as they tend to be very sensitive to the individuals involved and therefore confidential.

This methodology chapter has described in detail how the analytical approach of IPA has been operationalised in the thesis. An important component of IPA is that it is serious about analysing the context of policies and programmes. The next chapter is designed to honour this aspect of the IPA approach and look in detail at the context within which the case study programmes are situated.

Chapter 4: Context of ESPA and UPGro

4.1 Background context to the programmes

This chapter will look at the context within which the case study programmes are situated. The aim of the chapter is to provide the background context that will be drawn on in explaining the interpretive communities and tensions, and place the funders and research actors within the wider system of public support for research funding in the UK.

The first section starts at the landscape level. It describes in summary the basic structure and key ideas shaping the public research funding system in the UK and landscape level changes that have taken place between 2005 and 2017. This will include an account of changes to the management of academia during this period, the broad changes to the political and economic context in the UK, and key themes in UK research funding such as the rising prominence of interdisciplinarity. It includes a section on the RCs, focusing particularly on the ESRC and NERC. It will describe how the RCs work and the key changes that have taken place from 2005 to 2017.

The second section will introduce the Department for International Development (DFID). It will describe the creation of the department in 1997, its core mandate and its trajectory over recent years. It will also weave in the connected story of the increasing prominence of research for international development during the relevant period to help make sense of the story of research within DFID. It will describe a number of related aspects of the way that DFID works and changes over the period. This will include introducing the key institutional arrangements that governed programme management at DFID during the relevant period.

The third section will provide a high level summary of research systems in the global south. It will provide some more detailed information on research systems in Tanzania and Uganda as these are the countries I was able to visit and interview a number of participants in the UPGro programme. The last section of the background context chapter will provide some more information about the programmes in context. It will cover the genesis of the programmes and give more background on their scope in terms of research subjects.

4.1.1 The landscape of UK research funding and the RCs

According to common metrics of research performance, the United Kingdom has one of the strongest research systems in the world. For example, according to the Nature Index the United Kingdom is “*one of the world’s best in producing high-quality research in the natural sciences, retaining its long-standing fourth rank*”⁷, and in 2018 the UK was ranked second in the world for the number of high quality universities by QS University Ranking (Dutta et al., 2017). The UK has a broad and deep research base with high quality research across many areas spanning the natural and social sciences and the humanities (HM Government, 2020). To support this system a complex array of research funders consisting of commercial, charitable and public funding bodies has developed. This thesis focuses on the publicly funded element of this system that, in itself, is diverse and complex.

The paragraphs below set out the basic structures of the publicly funded science system in the UK as context. This includes the focus on universities in the UK’s research system, the main sources of public funding, and the core ideas animating the system, e.g., the Haldane principle and the concept of a dual support system.

Publicly funded research in the UK has a higher than average concentration in universities. Although think tanks, consultancies and public research institutes play an important role, the non-university sector is relatively small compared to science systems in other European countries such as France, Germany and Italy. Before the 1980s, there were more government labs and RC institutes but the reforms of the Thatcher government meant the majority were privatised, merged, or closed (Whitley et al., 2010). This means that when discussing public funding of research in the UK context, it is really discussing the funding of research in universities.

University research funding in the UK is structured around the idea of a ‘dual support’ funding system characterised by two streams with differing rules and processes governing who gets what. The first stream is the ‘core grant’ to universities from the higher education funding councils (HEFCs) of England, Wales, Scotland and Northern Ireland, which is calculated and awarded on an institutional basis. The second stream is project

⁷ Information from Nature Index news accessed on 10th May 2021: <https://www.natureindex.com/news-blog/top-ten-countries-research-science-twenty-nineteen>

funding won by individual academics from the RCs and governmental department research budgets.

Figure 4.1 below shows the breakdown of funding streams across the £11.5 billion public funding budget for the financial year 2016. Almost a third was from RCs, with civil governmental departments and HEFCs contributing 29% and 20% respectively. Defence expenditure and contributions to European Union R&D expenditure made up the remaining 14% and 8% respectively.

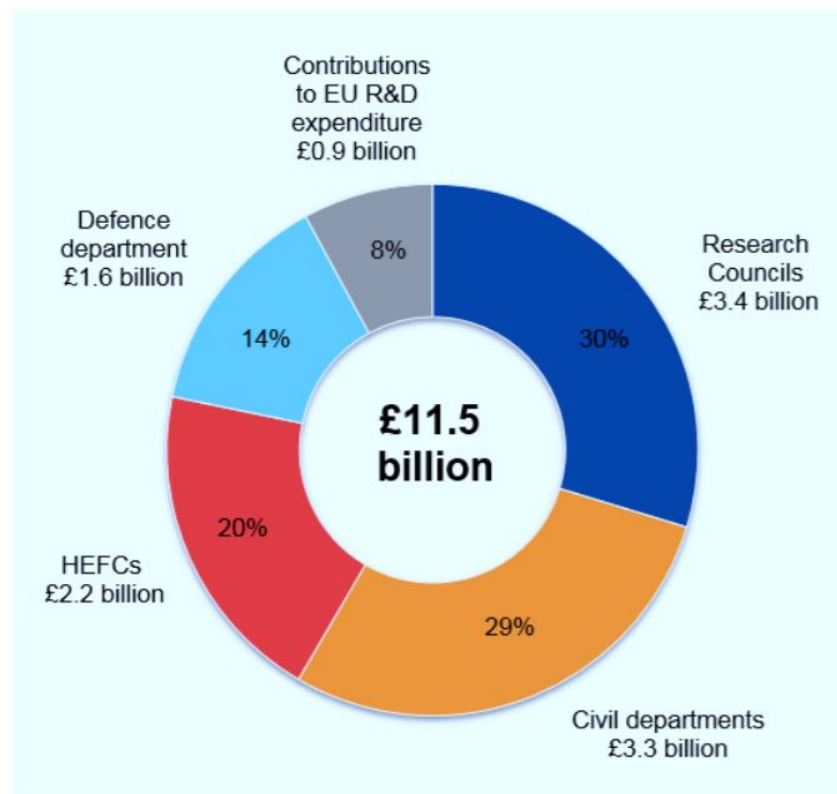


Figure 4.1: Structure of UK public science funding (for financial year 2016)

Source: Office for National Statistics (2018)

The aim of the “dual support” system is to provide not only a balanced system of funding that provides stability and autonomy for researchers but also a system that allows government a degree of steering of the system and balances the rewards for those with potential with rewards for established performance. The aim of the core grant is to help institutions maintain infrastructure and develop independent research themes. The idea is that it supports a level of autonomy and stability in research funding. Since the 1980s the core grant has been awarded based on a periodic retrospective assessment of research performance; this was known as the Research Assessment Exercise (RAE) before being

renamed the Research Excellence Framework (REF) in 2014. These assessment exercises are overwhelming influences on academic life in the UK effecting authority relations between academics and managerial staff, the reputational standing of universities and departments, and the individual behaviours of academics (Martin and Whitley, 2010). The effects of these exercises and the important changes made to them during the relevant period will be covered in greater detail below in the section on the increased use of metrics in academic life in the UK.

The second element of the dual support system, project funding, is provided on a prospective basis and awarded through competitive grant making processes to individuals and project teams. This stream of funding comes predominantly from the RCs and government departments and means that researchers who wish to conduct additional research projects, or who require additional resources that cannot be met by the core grant, are able to apply for funding to do so. This form of funding and how it has developed will be covered in greater detail in the section on how RCs have evolved over the relevant period.

In addition to the dual support concept, the second structuring idea is the Haldane principle. The basic principle is that *“that researchers are best placed to make detailed funding decisions and that Government should set the over-arching strategic direction”* (RCUK, 2009:1). Its origins lie in two parliamentary committee reports produced in 1905 and 1918, chaired by Richard Haldane (Secretary of State for War, and later Lord Chancellor). The first report influenced the creation of the University Grants Committee, and the second led to the creation of the UK RCs (Currie-Alder, 2015). The historian David Edgerton has argued that the Haldane principle was actually only invented in the 1960s and is not a stable and clear cut idea but rather a language of debate that has encompassed many different meanings and nuances over the years about how publicly funded research should be governed (Edgerton, 2009). Despite this historical ambiguity there is greater clarity now because in 2017 it was enshrined in law as the principle that *“decisions on individual research proposals are best taken following an evaluation of the quality and likely impact of the proposals (such as a peer review process)”* (Higher Education and Research Act, 2017).

The RCs are the part of the system that are particularly meant to represent and follow the Haldane principle. The section below introduces the RCs, their mandates and a summary

of how they work, including the centrality of the concept of peer review to their functioning. Following this introduction the next section will consider trends in research funding in the UK in the relevant period, including changes to the RCs and the development of the REF amongst other important developments.

4.1.1.1 Introduction to the RCs

The seven RCs are the largest public funders of research in the UK, with a combined annual spend of circa £2.5 billion between 2010 and 2015 (BIS, 2010). The seven councils are:

- the Arts and Humanities Research Council;
- the Biotechnology and Biological Sciences Research Council (BBSRC);
- the Economic and Social Research Council (ESRC);
- the Engineering and Physical Sciences Research Council (EPSRC);
- the Medical Research Council (MRC);
- the Natural Environment Research Council (NERC); and
- the Science and Technology Facilities Council (STFC).

RCs have common objectives, which are to:

- fund the highest quality internationally competitive research;
- support postgraduate training;
- advance knowledge and technology, and provide trained researchers and services that meet the needs of users and beneficiaries, thereby contributing to the economic competitiveness of the UK, the effectiveness of public services and policy, health and the quality of life;
- support public engagement with research (RCUK, 2009).

The mandates of the RCs are focused on bringing benefit to the UK. Their core objective *“is to support excellent science and research, providing the UK with knowledge and highly trained individuals to drive and safeguard the long term prosperity, health and sustainability of the UK”* (RCUK, 2009:1). They have an overarching concern with the health of the UK research base and it is important to note that this is fundamental to their mandate and identity: the research base and the councils are intertwined. The research base legitimises the councils through enabling peer review and, in turn, the Councils are

responsible for the pipeline of researchers and ensuring the research field stays healthy, adaptable and resilient. The *Triennial review of the RCs* noted that they need “*a strong relationship with relevant research and user communities in the UK and overseas, to ensure their confidence, and to be able to draw on their expertise for peer review in order to enable the identification of the highest quality proposals*” (BIS, 2014:22).

The ESRC is the smallest of the RCs by financial allocation. Between 2010 and 2015 its allocation was around £155 million per year (BIS, 2010). Its mandate is set by its Royal Charter and largely mirror the mandate set out by RCUK but with a particular focus on the economic and social sciences.

The ESRC Royal Charter says the objects for which the Council is established and incorporated are:

- a) to promote and support, by any means, high-quality basic, strategic and applied research and related postgraduate training in the social sciences;*
- b) to advance knowledge and provide trained social scientists that meet the needs of users and beneficiaries, thereby contributing to the economic competitiveness of the United Kingdom, the effectiveness of public services and policy, and the quality of life;*
- c) to provide advice on, and disseminate knowledge and promote public understanding of, the social sciences* (Elizabeth the Second, 1994).

NERC is approximately twice the size of the ESRC. Between 2010 and 2015 its allocation was circa £300 million per year (BIS, 2010). Its mandate is also set by Royal Charter and has a focus on the natural and environmental sciences. It sets out a detailed and specific list of subjects that are included and industries with whom the Council is expected to work:

- (a) to promote and support, by any means, high-quality basic, strategic and applied research, survey, long-term environmental observation and monitoring and related post-graduate training in environmental and related sciences including: terrestrial, marine and freshwater biology and Earth, atmospheric, hydrological, oceanographic and polar sciences; and in Earth observation and the Earth's system;*

- (b) to advance knowledge and technology (including the promotion and support of the exploitation of research outcomes), and to provide services and trained scientists and engineers, which meet the needs of users and beneficiaries (including the agricultural, construction, Earth observation, energy, environmental services, fishing, forestry, hydrocarbons, financial services, minerals, process, remote-sensing, water and other industries), thereby contributing to the economic competitiveness of Our United Kingdom, the effectiveness of public services and policy, and the quality of life;*
- (c) in relation to the activities as engaged in by the Council under (a) and (b) above and in such manner as the Council may see fit: to generate public awareness; to communicate research outcomes; to encourage public engagement and dialogue; to disseminate knowledge; and to provide advice (Elizabeth the Second, 1965).*

The way RCs are set up is designed to support the Haldane principle. Each Council is an independent Non-Departmental Public Body established by Royal Charter, sponsored by the Department for Business, Energy and Industrial Strategy (BEIS) and funded with an allocation from the Science Budget. The senior decision-making body in every RC is called the Governing Council, with members drawn primarily from the academic community but also including business and user communities. The Governing Council is responsible for setting policy, strategy and priorities. It is also accountable for budget and meeting targets and objectives set by government. The Governing Council is supported by structures of advisory boards and groups to identify and prioritise opportunities for research, training and knowledge transfer, and to provide external advice on the development of strategies and policies (BIS, 2010).

Between 2002 and 2017, the Councils were assisted in their work by Research Councils UK (RCUK). This was a strategic partnership designed to champion the work of the RCs, assist with training and knowledge transfer, and help them work together more effectively. RCUK was established in 2002 and was replaced by UKRI in 2018. UKRI was created following a report by Sir Paul Nurse, who recommended the seven RCs be merged into one non-departmental body alongside HEFC and Innovate UK in order to promote integrative cross-disciplinary research, among other aims. This major change to UK research funding is beyond the scope of this contextual review that is focused on the period 2005-2017.

A crucial term of art defining how the RC's function is the distinction between 'directed' and 'responsive' mode funding. Responsive mode describes researchers being asked to put forward proposals in areas of their choosing. Directed mode uses pre-set themes to limit the scope of what can be proposed and steer it towards particular societal objectives. The Governing Council of each RC is responsible for deciding the split between these modes and to achieve the balance between *"supporting and encouraging multidisciplinary research in themes that address major global and societal challenges and safeguarding the health of the entire research base"*(RCUK, 2009:1). The research themes are to be decided in consultation with the research base at all times as well as with government and industry. This means that *"the areas of research and the ideas to be investigated are defined primarily by researchers, either by submitting a proposal in responsive mode or by informing the thematic priorities"* (RCUK, 2009:1).

Although the distinction between 'directed' and 'responsive' is important, the RCs operate on the same basic principle whether funding through responsive or directed modes. This principle is that they will fund on the basis of research excellence that has been assessed through detailed peer review. Peer review is central to the reputation and legitimacy of the RCs. As Sir Paul Nurse noted in his review, *"the RCs rightly have a prestigious reputation, built on a dedication to excellence through high quality and rigorous peer review"* (Nurse, 2015:10). The Triannual Review of the RCs found that government support for them was on the basis that their primary focus must be distributing funding through peer review on the basis of research excellence. The report states:

"The case for Government supporting research via the Research Councils rather than other means is therefore based on the characteristics provided by Research Councils which allow them to effectively deliver the function of independently identifying excellent research in such a prospective manner. The core characteristics of the Research Councils are built around what is needed to support excellent research". (BIS, 2014:22)

As it is a central function of the RCs, the principles and practice of peer-review are outlined below.

4.1.1.2 Principles and practice of peer review in the RCs

The peer-review process of the RCs is shaped by a set of principles that are designed to promote objectivity and removal of bias. The main principles are:

- anonymity: reviewers' identities are not known to applicants;
- avoidance of conflict of interest: there should be no direct, or indirect, personal, academic, financial or working relationship between the reviewers and applicants;
- review should be non-biased and provide equal opportunities: all steps should be taken to avoid any bias in the assessment of proposals and final reports due to gender, disability, age, racial or ethnic origin, sexual orientation, or religious belief;
- reviews should be based on true information: there should be no tolerance of research misconduct or misrepresentation in research proposals;
- the process should be transparent: the process and scoring methodology should be made clear and the reasons for the decisions should be provided to the applicants (NERC, 2013).

Peer review as practiced by the RCs is unpaid. It is considered part of the service to the community and part of the role of being an academic member of a research community and discipline (BIS, 2014).

There are many different variants of the process across the seven councils and across the many types of research proposals they assess. However, there is a basic structure that is followed⁸, consisting of two stages. The first stage is expert review where internationally recognised experts with expertise relevant to the area under review are invited by the RCs to undertake a written review and scoring of the documents; they are also asked to provide comments on all aspects of the proposal. Applicants will generally then have an opportunity to respond to the comments. The second stage is the moderating panel that considers the proposal, the reviewer comments and the proposer's response to those comments. After discussion of each proposal they assign scores, prioritise the proposals and make recommendations for funding.

4.1.1.3 Assessment criteria for strategic programmes

Strategic Research Programmes are one of NERC and ESRC's *responsive* mode funding delivery channels. They support "*research into environmental areas of major economic and societal importance and aims to address key science challenges and priorities for the 21st century*" (NERC, 2018). Both the case studies were classed as strategic research

⁸ The basic structure is taken from RCUK (2009) and the NERC website assessment process page accessed on 26th November 2017: <http://www.nerc.ac.uk/funding/application/assessment>

programmes. These programmes have a specific set of criteria for judgment in peer review.

The first criterion is research excellence where the panel is asked to consider the reviewer scores and assign a score out of 10 for each proposal. NERC recognise that “*there is no simple definition of Excellence*” (NERC, 2017:4), and they list a set of characteristics that may apply: “*novel, ambitious, timely, exciting, at the international forefront, adventurous, elegant, or transformative but need not demonstrate all of them*” (NERC, 2017:4). The scoring criteria make clear that excellence relates to advancing the scientific field. The highest score of 10 is “*The proposed work is outstanding and represents world-leading standards in terms of quality, significance and scientific impact. Highest priority for funding*” (NERC, 2017:7), while the lowest score of 1 is “*The proposed work is of an unsatisfactory quality and is unlikely to advance the field. Not suitable for funding*” (NERC, 2017:8). Under excellence they will also consider if the proposal is adequately resourced and realistic, and will consider the track record of the proposer and team. The second criterion that is specific to strategic research programmes is ‘fit to scheme’. This in turn is split into scientific factors relating to the scheme and non-scientific factors, and panel members are asked to assign a score of fit between 0-6 for scientific and non-scientific elements. These criteria will be specific to each scheme.

Who sits on the moderating panels is dependent on the research mode. In directed research mode the panel will be drawn from the RCs peer-review college. Peer-review college members are active researchers within the environmental science community, who are familiar with the NERC funding assessment process. The majority are academics based at universities; however, it also includes members of the research user community who are active in environmental science research from a policy or applied perspective and have strong interests in NERC science and its use and impact⁹. For the strategic research programmes, a commissioned panel will be created consisting of peer review college members and external end-user members.

4.1.1.4 Increasing the accountability and efficiency of scientific funding

This section describes high level trends that have affected the UK research funding landscape and, in turn, the practices of the RCs in recent decades and during the period

⁹ Information from NERC website accessed on 10th May 2021:
<https://nerc.ukri.org/funding/application/peerreview/members-details/>

of the case studies. The trends are broadly under the same movement that started in the 1970s and took hold in the 1980s under the influence of ideas of New Public Management (NPM). NPM is a major and sustained development in the management of public services that was adopted on a wide-scale fashion by the UK government in the 1980s and has continued being influential ever since. The NPM reform narrative includes “*the growth of markets and quasi-markets within public services, empowerment of management, and active performance measurement and management*” (Ferlie, 2017:1).

In the research funding field the key event marking the shift to increasing prominence of NPM principles was the publication in 1971 of a government Green Paper, known as the Rothschild report, that recommended the application of a customer-contractor principle to be applied to the public funding of research (Rothschild, 1971). Henkel (2004) notes that at the same time the Brooks Report for the OECD (1971) laid down very similar principles at the international level, that governments rather than researchers should set the overriding research principles and that the goals of science should be the achievement of social and economic goals. These reports marked the start of a trend that has never been reversed (Henkel, 2004; Kogan et al., 2006). This high level trend is broken down into two linked sub-trends below that are relevant to the experience of the stake-holders in the case studies.

4.1.1.5 More measurement and more impact

A key implication of the move towards a customer-contractor relationship in research funding is that the government needs more sophisticated tools to measure academic and non-academic outcomes in order to assess its value. This is the case for the block grant and for the RCs, both parts of the dual support system.

In terms of the block grant, the government has introduced increasingly sophisticated, far reaching and consequential rounds of assessment of universities’ research performance. The first was the 1986 Research Selectivity Exercise that was the first time universities were requested to submit information for purposes of financial assessment. They were asked to submit their research income and expenditure, planning priorities, the five best publications per unit or department from the previous five years, and up to four pages of information about their links with industry. Based on this material, ‘subject committees’ ranked the departments and generated a formula that was used to allocate funding in the next few years. This was followed by the Research Selectivity Exercise of 1989 that

provided a formalised peer review system for the first time. These were followed by increasingly elaborate Research Assessment Exercises in 1992, 1996, 2001 and 2008. Then in 2011 the government announced that it would be running a new ‘Research Excellence Framework’ exercise in 2014. The REF had three stated purposes (HEFCE, 2011):

- Inform the selective allocation of research funding to HEIs: By rewarding HEIs based on excellence in research, the funding bodies aim to contribute to the development of a dynamic and international competitive research sector and ensures that the research infrastructure at top-level research institutions is well protected.
- Provide benchmarking information and establish reputational yardsticks: the outcomes of the exercises are publicly available and used by prospective students, industry, charities and other sponsors of research to shape their judgement of the quality of research throughout the UK.
- Provide accountability for public investment in research and demonstrate its benefits: a new focus in the REF was to highlight and incentivise the importance of demonstrating impact in relation to research excellence by the introduction of the impact case studies.

The criterion of non-academic impact was introduced into the REF 2014 and is arguably the single biggest change in the scope of the performance assessment exercises. Impact assessment in the 2014 REF was based on peer review of case studies that describe social, economic or cultural impact or benefit beyond academia. Impact was given a weight of 20%, while research ‘output’ had a weight of 65%, and ‘environment’ 15%.¹⁰

The size and impact of the REF in the UK funding system is difficult to overestimate. It is an exercise that involves almost all the active researchers in UK universities in either collating, producing or reviewing REF submissions. The total cost to the UK of running REF 2014 was estimated at £246 million, with an estimated cost of £212 million to the UK higher education community (Technopolis Group, 2018). Other countries use performance assessment systems to allocate core university funding, but the UK stands

¹⁰ ‘outputs’ refers to the research publications that are assessed, and ‘environment’ refers to the institutional environment in which the research is done.

out in the amount that is distributed in this way. The Technopolis Review of the REF 2018 finds:

“The UK is one of the few countries where institutional funding comprises less than 50% of universities’ research income, so it is already much more strongly competition based than others. The UK funding formula selectively allocates almost all the institutional funding for research to the best performers. This leads to a degree of concentration of institutional funding not seen in other systems” (Technopolis Group, 2018:v).

The Research Excellence System and its predecessors have been shown to have a profound impact on the behaviours and experiences of researchers working in the UK academic system. James Wilsdon et al.’s report *The Metric Tide* summarises the range and depth of effect it has been shown to have. First, *“UK publication patterns between 1985 and 2003 suggest that specific publication patterns emerged in the years before three RAEs in that period (1992, 1996, 2001), depending on whether the RAE limited the number of publications submitted per academic FTE”* (Wilsdon et al., 2015:83). Second, it has also been shown to have affected institutional hiring arrangements and strategies, increasing mobilisation and a ‘transfer market’ in talented, highly-ranked researchers. Some universities focused their strategies on early-career staff with research potential, while others have opted to focus on more established researchers (Wilsdon et al., 2015). It had such a profound effect because, in addition to the monetary ramifications of the assessment, it also had a strong effect on the reputation of departments and feeds into national level ranking exercises, such as the *Guardian* and *Times University Rankings*, which in turn have an effect on recruitment of students.

In addition to the REF the period since the 1990s has seen a growth in a range of other metrics. Bibliometrics attached to journals and individual researchers have become increasingly prominent since the 1990s. The Journal Impact Factor was developed by Eugene Garfield in 1955 but was used infrequently until it became widely available in 2001 when the Web of Science became easily available, later re-enforced by Scopus and Google Scholar. Following this, Hirsch invented the Hirsch index in 2005 (aka the h-index); this measures individual scholarly output and citation rate. The h-index can also be adapted to department or university level (Wilsdon et al., 2015).

Another element of the increased measurement of academic life is the rise of university rankings. Again, it is the case that the ranking of universities has existed for a long time

with national rankings existing since 1959. However, it was in 2003 that global rankings of universities became established and multiplied.¹¹ As of 2015 there are 10 major global rankings and 150+ national/specialist rankings. Universities increasingly use rankings as part of their performance management systems, incorporating their rank as one of their organisational targets. For example, Wilsdon (2015:73) cites the first performance indicator in the University of Manchester's '2020 Vision' strategic plan is "*To be in the top 25 of the Shanghai Jiao Tong Academic Ranking of World Universities by 2020*". Other universities link senior management remuneration to university ranking results.

In addition to this 'metric tide' affecting universities, the second part of the dual support system, the RCs, have also increased their measurement of academic and non-academic impacts from their funding. The Science and Innovation Investment Framework 2004-14 was a watershed moment in focusing the RCs towards increased measurement of outputs, and particularly an increased focus on greater responsiveness of public funding to societal objectives. The framework provided an extra £1 billion for science funding over the next three years from 2004 aiming to put the funding of university-based research on a more financially sustainable setting. In return, the government wanted more evidence of the effect the research was having on society and the economy. The framework was underpinned by a range of new indicators building on the 2006 report: *Increasing the Economic impact of the Research Councils, a report of the Research Council Economic Impact Group* chaired by Peter Warry. Known as the 'Warry Report', this report required the RCs to make "*strenuous efforts to demonstrate more clearly the impact they already achieve from their investments*", while also recognising the difficulties of tracking impacts that may materialise after the research is completed, with that impact perhaps being linked to multiple pieces of research (Research Council Economic Impact Group, 2006:5). RCs were required to provide an annual performance report to Parliament as stipulated in the Science and Technology Act 1965. In 2008/09, following the Warry report, new metrics were added to the performance report to measure social and economic impacts of the outputs (Sá et al., 2013).

In response to this agenda, the RCs introduced a number of measures. In 2011, AHRC, BBSRC, ESRC and EPSRC introduced a Research Outcomes System with NERC joining

¹¹ Presentation by Professor Ellen Hazelkorn "The Obsession with Rankings" accessed on 25th May 2021 from: https://hepru.files.wordpress.com/2015/01/the-obsession-with-rankings-in-tertiary-education_wb_0115.pdf

in 2013 (BIS, 2014). In 2014 all seven RCs implemented a harmonised online reporting system using the company Researchfish Ltd. (Clements et al., 2017). Researchers could add their outputs and outcomes throughout the year and had to submit their reports during funder collection periods. They are required to report for five years after the end of their award. In 2009 the RCs introduced the Pathways to Impact requirement as part of the grant application process. The Pathways to Impact statements are commented on by review panels, and an acceptable Pathways to Impact was made a condition for funding¹². If the applicant's description was unsatisfactory then the grant was postponed. The statements had to be project-specific, include user engagement and demonstration of their needs, and include detail on the planning of the impact activities (Langfeldt and Scordato, 2015). The two components of Pathways to Impact and Researchfish were not joined up. In other words Researchfish was not used to measure whether a specific pathway to impact had been achieved or not. The introduction of Researchfish and Pathways to Impact was seen as a compromise to increase the measurement of output, but in a way that would maintain flexibility and autonomy in how grants were expended by individual research teams (Kearnes and Wienroth, 2011). The combination of Researchfish, Pathways to Impact and the general increased focus on reporting impact represented a major shift in the level of emphasis put on societal impact by the RCs over the period from when ESPA was designed in 2007-2009 and UPGro's design and formation period in 2011-2014.

4.1.1.6 More competitive

In addition to the competitive nature of the increasingly prominent REF exercise, over the period of the case studies, there was also a rise in competition for research grants. As cited above, the Science and Innovation Investment Framework 2004–14 provided an initial boost for science funding for the RCs. However, this was derailed by the financial collapse of 2008. The science budget was frozen in the spending review of 2010, meaning that it did not keep pace with inflation and led to a real terms decrease of 14% by 2015 (Jump, 2013). A HEFCE report of 2010 states:

“The economic landscape in 2009 was very different to what we had experienced over the previous 10 years – with the world economy experiencing the first global recession since World War II. The likely consequent reduction in overall public funding and the changes in the global economy mean that the period of growth in

¹² Pathways to Impact were later removed as a requirement for funding but this was after the period of focus of this thesis.

public funding enjoyed by Higher Education over the past decade is over and unlikely to return for some time. The Government's 2009 Higher Ambitions framework suggests that there will be more competition between universities for funding, with the winners being those universities who can best respond to the evolving economic difficulties" (HEFCE, 2010:11).

This decrease in available funds was joined by an increased incentive for a continuous increase in the volume of research applications to the RCs. The RAE and REF have increasingly come to underpin hiring and promotion in universities and emphasise research performance and the winning of research grants, meaning that more and more universities are focused on these aims and more research grant applications are submitted. Grove reports that this *"has inevitably resulted in intense competition and success rates becoming extremely low.. as well as stretching funders' administrative capacity, the volume of applications has also placed a great strain on the peer review system"* (Grove, 2017:39).

4.1.1.7 Rise of interdisciplinarity

Another trend is the rise of interdisciplinarity in the UK research funding landscape. In 2016 the Science Policy Research Unit and Technopolis Group completed a landscape review of interdisciplinarity research in the UK based on a series of stakeholder workshops and a large survey. The study found that the growing interest in IDR and greater funding opportunities for IDR in recent years were acknowledged by many participants across the stakeholder groups (Davé et al., 2016). Underlying the trend is an increasing recognition that the so-called 'grand challenges' of the 21st century require mixtures of approaches from across the natural and social sciences. This has been backed up by analysis of the impact case studies 2014 REF that found that the majority of the research underpinning societal impacts is multidisciplinary (Grant et al., 2015). UK public research funders such as Government departments, RCs, and charities are increasingly funding interdisciplinary programmes both individually and through collaborations. This is a longstanding trend, with historic programmes such as the Rural Economy and Land Use programme (ESRC, NERC and BBSRC from 2004-2013), the Climate Change Research Programme at the Tyndall Centre (multiple funders 2000-ongoing), and the Quantifying and Understanding the Earth SysTem programme (NERC 2003-2011) setting the trend. The most recent and most high profile of this type of programme have been in the field of sustainable-development. These have included the list of DFID/RC collaborations of which the programmes in this thesis are included and,

more recently, the Newton Fund and the Global Challenges Research Fund. In the medical field “*several funders have come together to establish centres such as the Francis Crick Institute (biomedical research) and the Farr Institutes (health informatics research) to provide an interdisciplinary environment for research*” (Technopolis Group, 2016:8). The introduction of cross-research council funding mechanisms in 2007 was a major shift in enabling cross-council interdisciplinary programmes. The creation of UKRI has also signalled further focus on interdisciplinary programmes. Most prominently the Strategic Priorities Fund which is an £830 million investment in multi- and interdisciplinary research across 34 themes.¹³

4.1.1.8 Summary of the key relevant contextual changes to the UK public funding system over the case study period

The funding system of public research in the UK has been steadily shifting since the 1980s towards greater emphasis on measurement of academic and non-academic impact and an increased level of competition within and between universities. During the period of the case studies, 2007-2017, these changes have gained pace and significant events have changed the dynamic of research funding.

Particularly important was the decision in 2011 that the next REF would include impact case studies. The REF is a very important influence on academic behaviour and making impact 20% of the criteria for the REF has significantly re-oriented academics and institutions towards impact thinking in their behaviours. The RC response to the Warry report of 2006, by implementing Pathways to Impact and ResearchFish, is also significant in requiring researchers to think in advance and in detail about the kinds of impacts their work might have. This shift to greater focus on impact will be returned to in the findings section 6.1.1 when discussing the evolving relationship between the RCs and DFID and how the impact agenda has brought their interests closer together.

The effects of the increasing measurement and competition in academia has caused widespread concern about the effect on academics in terms of their job satisfaction and in terms of becoming overworked as the pressure mounts to improve their performance against a multitude of internal and external targets. Ben Martin has likened the experience of academia over the previous two decades to that of ‘boiled frog’ “*if a frog is placed in*

¹³ See UKRI website accessed on 10th June 2021: <https://www.ukri.org/our-work/our-main-funds/strategic-priorities-fund/>

a saucepan of cold water that is then very gradually brought to the boil, the frog will not jump out but remain until it is eventually boiled” (Martin, 2016:22). He puts this feeling down to:

“the search for ever greater ‘efficiency’, the rise of ‘the audit society’, the continuing development of ‘new public management’..., the escalating international competition in which all universities are now drawn, the growth in the numbers of administrative staff, and a number of other factors such as the growing reliance on ‘head-hunters’ to help fill senior university positions” (Martin, 2016:2).

A Times Higher Education survey from 2015 provides analysis of the experience of academia in 2014 UK. In 2014, 4,150 higher education staff from 140 institutions were surveyed. More than half of academics thought their work responsibilities did not allow them to have a healthy work-life balance, and only 41% thought their workload was reasonable.¹⁴ This was backed up in 2019 when Wellcome commissioned a survey and round of interviews about research culture based on a survey of 7,646 academics. They concluded that:

“there was real concern about the future of research professions and the high personal cost for individuals. Factors identified as disruptive to research culture included chasing impact, increased competition, proliferation of metrics, job insecurity and rigid career pathways... The research ecosystem is characterised by increased levels of competition, lack of job security and insufficient career flexibility” (Moran et al., 2020).

This context of greater measurement of academics and more competition and pressure for grants is important context to the description of Northern researchers experience of the programmes in section 5.1.3, where I recount how Northern researchers are balancing multiple demands on their time.

4.1.2 DFID: history, how it works and the role of research

This section describes the evolution of DFID over the relevant period. The key context for the case studies is the significantly increasing political pressure on DFID during the period to show results and the evolving Results Based Management agenda. The section also describes how DFID is a highly multifaceted organisation that contains multiple

¹⁴ THE Best university workplace: results and analysis accessed on 13th July 2019: www.timeshighereducation.com/features/best-university-workplace-survey-2015-results-and-analysis/2018272.article

visions of what research for development means. These themes are very important context for the section in the findings, 5.1.1 which describes the DFID programme staff viewpoint on the programmes.

In 1997, the incoming labour government led by Tony Blair set up the new Department for International Development (DFID) and gave it responsibility for the aid budget and other elements of development policy. It was led for the first time by its own Cabinet Minister. It replaced the Overseas Development Administration that had been housed in the Foreign Office since 1979 and had experienced a steady decline in the amount of aid funding going to it (Barder, 2005). The setting up of DFID followed a number of reports in the 1980s and 1990s by NGOs and consortiums, such as the Independent Group on British Aid (German and Randel, 1995; Independent Group on British Aid, 1982) that had argued that aid should be focused on poverty reduction and not tied to British commercial interests. At the same time, an international consensus was forming that identified poverty reduction as the central challenge of aid and was crystallised when the Development Ministers and Heads of Aid Agencies adopted the statement ‘Development Partnerships in the New Global Context’. This started a process that culminated in the Millennium Development Goals being adopted at the UN Millennium Summit in September 2000 (Barder, 2005).

In this context, the 1997 Labour Party manifesto included:

“Labour believes that we have a clear moral responsibility to help combat global poverty. In government we will strengthen and restructure the British aid programme and bring development issues back into the mainstream of government decision-making. A Cabinet minister will lead a new department of international development. We will shift aid resources towards programmes that help the poorest people in the poorest countries. We reaffirm the UK’s commitment to the 0.7 per cent UN aid target and in government Labour will start to reverse the decline in UK aid spending” (Barder, 2005).

Although this is a decade before the period most relevant to ESPA and UPGro, it is worth highlighting the characteristics of aid policy here because they set the tone of aid policy for following two decades. These characteristics are the focus on poverty reduction as the fundamental *raison d’être* of DFID, and the commitment to the 0.7% of GDP UN Aid

Target. This became a cross-party consensus in all general elections since¹⁵ and set the context of DFID being one of the best resourced departments in the government during this period.

After the new department was established, Clare Short was made Secretary of State for International Development and she oversaw the putting into effect of the manifesto pledges, with poverty reduction being identified as the overarching objective of aid, and development policy measured against quantifiable and measurable global targets being identified based on the International Development Targets (which later became the Millennium Development Goals). This focus was further solidified in 2002, when Parliament passed the International Development Act that enshrined in law the single purpose of aid spending: *“every development assistance project or programme must by law either further sustainable-development or promote the welfare of people and be likely to contribute to the reduction of poverty”* (Provision 1, International Development Act, 2002).

Error! Reference source not found.Figure 4.2 below shows the development of the 0.7% of GDP policy over the time from DFID’s creation up to 2017. It shows a steady increase in the amount of money being spent on ODA from around £2 billion in 1997 to almost £14 billion in 2016. This increase spanned seven different secretaries of state and four general elections. The year 2005 was a highpoint for commitment to aid. The general public were engaged in the issue through the Make Poverty History campaign, and Hilary Benn as Secretary of State for International Development and Gordon Brown as Finance Minister set a timetable to increase aid to 0.7% of GDP by 2013.

¹⁵ This consensus has recently broken down with the conservative party deciding to reduce the target to 0.5% following the Covid-19 pandemic. However, this development is outside the scope of the thesis as the period relevant to the two programmes is 2007-2018.

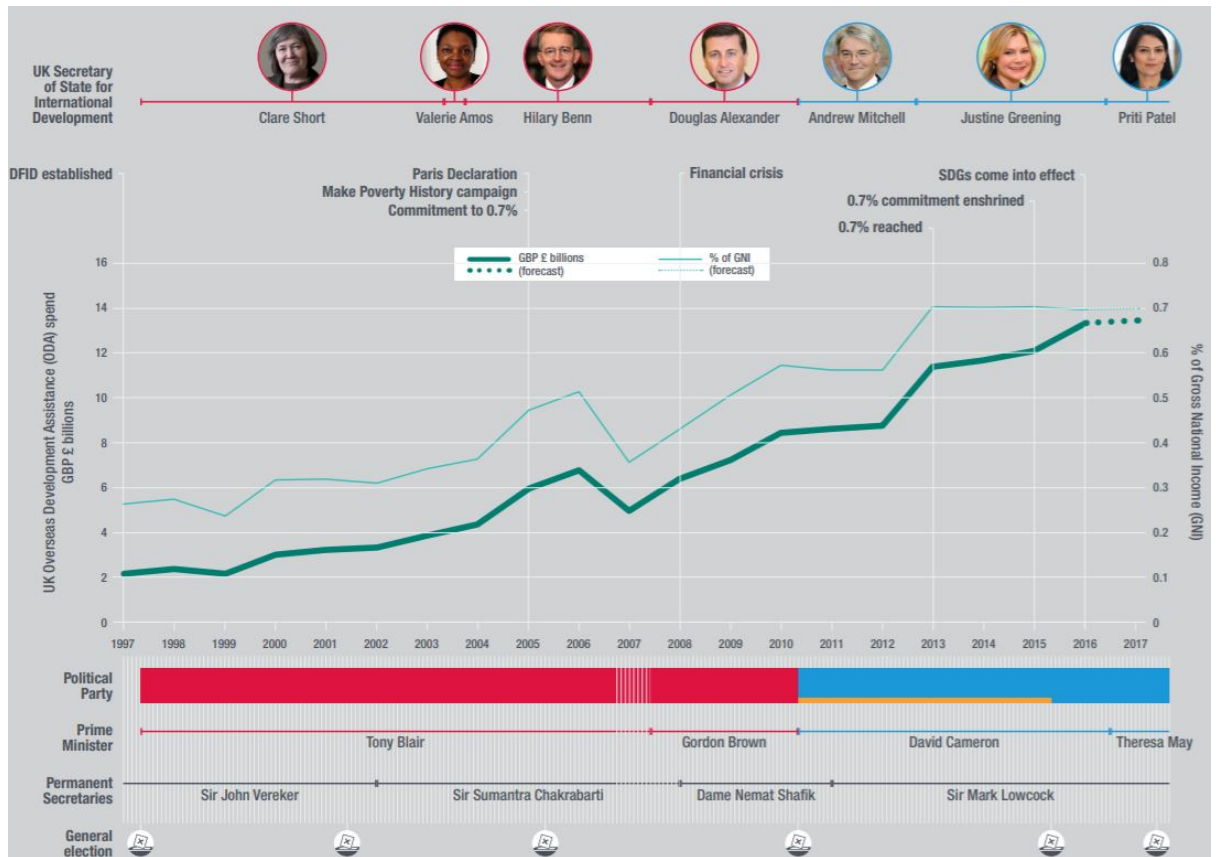


Figure 4.2: Development of DFID funding and political leadership 1997-2017

Source: Valters and Whitty (2017:12)

In addition to the poverty focus and the steadily increasing funds of DFID, the third element of its recent history that is most relevant to the stories and experiences of the stakeholders in ESPA and UPGro is the development of the results agenda over the period 1997 to 2017. Valters and Whitty (2017) completed a detailed study of the development of this agenda based on 60 interviews with key civil servants in the department. The study provides a useful summary of the political climate, policies and management reforms split into four periods. It is worth outlining these periods in some detail as the development of this agenda had a profound effect on DFID and subsequently, as will be shown in the later chapters of this thesis, impacted the development of the case study programmes.

The section below draws on the findings of Valter and Whitty's study and the historical accounts of Barder (2005) and Currie-Alder (2015) in addition to Independent Commission for Aid Impact (ICAI) reports and DFID's publicly available strategies and guidance on processes and procedures, particularly their 'How to Note' series in 2009-2011 that established many procedures relating to the Results Agenda. The Results Agenda is defined as "*A political agenda focused on implementing results based*

management” (Valter and Whitty, 2017:16). Results Based Management means “*Using measurement and target setting to drive improved performance*”, and value for money (VFM) is defined as “*optimal use of resources to achieve intended outcomes. In the UK, ‘VFM audits’ grew in the 1980s.. since 2010, it has been widely used in the UK international development sector and linked to the wider results agenda*” (Valter and Whitty, 2017:16). Valters and Whitty explain that “*Results, evidence and value for money overlap and entwine with each other in different ways in practice, even if they have different historical and philosophical backgrounds*” (Valter and Whitty, 2017:16).

4.1.2.1 1997-2007

As explained above, the election of the Labour government with its renewed aid agenda had given international development a new lease of life in the UK with the focus on poverty reduction. However, within a short period, Claire Short was requesting budget increases and there was pressure from the Treasury to provide an improved results system to justify the increase. The agreement reached was to measure achievement against the MDGs. Claire Short believed this would provide a high level vision that would help motivate staff.

The approach put in place by Claire Short is described by Valters and Whitty (2017) as contribution and partnership. The focus was on working with developing country governments and NGOs to achieve the high level targets. This was in line with the Paris Declaration on Aid Effectiveness in 2005 that had an emphasis on partnership with developing country governments. Specifically, it relied on the two concepts of ‘use of country systems’ and ‘managing for results’: the beneficiary country was to be accountable for tracking the results achieved. There was a Performance Reporting and Information System for Managers (PRISM) that established that all projects above £500,000 were to be evaluated and given a rating, but it did not require strong attribution of results to DFID funds. There were Logframes for projects but they were more qualitative and based on the views and experiences of programme managers. One DFID economist interviewed by Valters and Whitty said “*in a surprising number of log frames the only number was the page number*” (Valters and Whitty, 2017:21). The general view in DFID during this period was the nature of aid work, with multiple partners collaborating to attempt to solve complex issues, meant that attribution was very difficult. Value for money was conceived at a higher level in terms of increasing the scrutiny of

which countries received aid, increasing the amount of aid going to low income countries and focusing it on poverty reduction (Barder, 2005).

The key point is that during this period there was not a strong requirement for direct attribution of results to particular research programmes.

4.1.2.2 2007-2010

This period is defined by two contrasting realities. First, DFID's budget was steadily climbing after the 0.7% commitment coming into effect. Second, in 2007-2008 the bankruptcy of Lehman brothers following the sub-prime mortgage crisis triggered the start of the financial crisis and a period of increased scrutiny of DFID's activities. When Gordon Brown became Prime Minister in 2007 he put Douglas Alexander in post as Secretary of State for International Development, who started a long process of increasing relevance of the results agenda in the Department. The Department became increasingly aware of the public's views of aid in a time of financial belt tightening. It spent a significant amount of money on a communications campaign around global poverty and rebranding in the UK and abroad. Valters and Whitty (2017:23) explain that a former Sun journalist was hired to produce stories that could pass what some called 'the Granny test'.

This was a time when the partnerships and contribution model of Claire Short's tenure began to come under strain and mixed with the movement towards results-based management. In 2008, DFID produced a Results Action Plan (DFID, 2008b) that retained the commitment to the MDGs and acknowledged the principles of the Paris Declaration, but also articulated a set of priorities that undermined country ownership and partnership (Valters and Whitty, 2017).

The first and most important reform was a revised Logframe and annual review guidance: there was an increased focus on measuring results with quantitative indicators. This involved the creation of a new language of Objectively Verifiable Indicators, including baselines, milestones and targets; this made the annual review process more significant. Previously it had just asked if projects were likely to achieve their targets. Now they were designed to be used to measure year-on-year progress against project milestones. This reflected the desire of government and senior DFID staff to know what would be achieved in advance and to be able to measure the progress on ongoing basis (Valters and Whitty, 2017). The economic appraisal process was also revised. It required that new projects

contain pre-planned costed options linked to quantified results, based on Treasury guidance.

4.1.2.3 2010-2012

In 2010, following the general election, the coalition government was formed with Conservatives as lead partners with the Liberal Democrats. This is the point at which the results agenda became the central organising principle affecting DFID reforms. The new Secretary of State for Development, Andrew Mitchell, had been shadow minister for five years and had a strong agenda based on developing results-based management and value for money at DFID. In his interview with Valters and Whitty (2017:27) he said *“I saw that this space was occupied by Labour, not the Tories. I said what does a centre-right development policy look like? It was clearly the results agenda”*. This was at a time of increasing media and public scrutiny in DFID as austerity measures took hold in other departments while DFID’s budget was steadily increasing. The Daily Mail and Mail on Sunday became particularly vociferous critics of DFID and repeatedly called for the aid budget to be cut. Valters and Whitty (2017) conducted a search of the number of articles by the Daily Mail or Mail on Sunday about DFID between 1997 and 2017. There were no more than 11 articles a year from 1997 to 2009. In 2010 the number doubled to 20 articles and by 2012 it was 36 articles in that year alone.

In a landmark speech in 2010, Mitchell set out the context of increased austerity and what this meant in his view for the aid budget:

“today’s fiscal landscape is radically different from what has gone before. There is a massive deficit, which it is our number one priority to tackle. Against this backdrop our protected aid budget imposes a double duty to ensure that for every pound of taxpayers’ money we spend, we demonstrate 100 pence of value” (Mitchell, 2010).

In this context Mitchell committed to closing any programmes that were not performing. He sponsored the creation of the Independent Committee on Aid Impact as an independent body to evaluate the impact of aid spending and specifically to forensically investigate the value for money of major aid programmes (DFID, 2010a). Lastly, he committed to much greater transparency and publishing programme documentation to the public including Logframes and Annual Reviews.

4.1.2.4 2012-2017

In 2012, Justine Greening replaced Andrew Mitchell as Secretary of State for International Development. This period saw a continued relentless emphasis on results, transparency and value for money (Greening, 2012) as media attacks continued to grow. However, this period also saw a counter-movement within the Department against Results-Based Management. There was an end-to-end review that found that many staff believed that results-based management was leading to an over-bureaucratisation of aid spending. The conclusion of the review was that DFID's programme management system needed to change to reduce bureaucracy and increase accountability for individual programmes. It led to the creation of Senior Responsible Officers that attached accountability to specific advisers to specific programmes. It also led to the introduction of the "Smart Rules": a set of 37 rules that provided the operating framework for DFID programmes and designed to substantially streamline and simplify programme processes to enable them to be more adaptive and flexible to real world conditions, avoid 'projectisation' and focus on short-term results (Vowles, 2013; Wingfield and Vowles, 2014). These principles were led by a new 'Better Delivery' team that provided training on context awareness and flexible programming (Valters and Whitty, 2017).

This period recognised that Logframes that establish clear goals at the beginning could be clumsy instruments, and that DFID needed more long term adaptive processes but for a decade had been putting a whole system of management in place that was focused on predictability and short-term results: these are the only management tools they have. Valters and Whitty (2017:21) explain "*The Smart Rules themselves were clearly a product of the tensions within the department on the best way of planning, managing and evaluating impact. For example, while at times log frames appear to be no longer required, the rules fail to suggest alternatives and in places proceed with the same blueprint planning logic*".

In 2015, ICAI (2015) also wrote a critical report on the use of results-based management in DFID that summarised the nature of this tension in DFID. Their review 'DFID's approach to delivering impact', argued that while the results agenda had established processes for transparently reporting where, when and how money was being spent, it did not produce a full understanding of what the spend was really achieving; it was prioritising economy and efficiency over sustainable long-term impact.

“This emphasis on aggregate results, however, has not been without cost. It has resulted in priority being given to the kinds of result that can be measured and delivered within short programming cycles. It has focussed attention at the lower end of the results chain – on spending, activities and outputs – at the expense of long-term and sustainable impact” (ICAI, 2015:iii)

They also highlight that the focus of the results management tools being focused at programme level failed to reflect that complex changes occur from many programmes working together over a long period of time. They recognise that staff were finding ways to work around the rules, often to achieve results and respond to complex dynamics of real life situations:

“This is not to say that DFID and its staff are not genuinely focussed on achieving real impact for poor people. DFID remains a highly committed organisation with a strong sense of mission. We suspect, however, that DFID staff increasingly achieve impact in spite of the tools and processes established to manage results, rather than because of them” (ICAI, 2015:40).

They suggest DFID be more focused on long-term impact:

“With programmes averaging three years in length, transformational impact will often occur only over several phases of programming. DFID programmes should be designed around the achievement of long-term impact, helping to prepare the ground for future interventions and linking with other programmes operating in the same space. Business cases need to do better at addressing the ‘missing middle’ between programme activities and their intended impact” (ICAI, 2015:42).

Other critics have also highlighted this loss of a sense of purpose particularly that, although the funds going through DFID have massively increased, it is less clear what the funds are for. DFID pivoted from being a “development powerhouse” with a clear strategic focus, to “being a department preoccupied publicly with defending its funding, and privately with seeking out sufficient viable projects to spend its entire budget effectively” (Ilott et al., 2016:28). The most critical proposed that DFID was now “shovelling money out of the door” (Ilott et al., 2016:28).

Although there was clearly a flux of ideas and practices in DFID during this period about the practice and effects of Results-Based Management, it has in practice remained front and centre of DFID (Valters and Whitty, 2017). This is in the context of value for money and results being the central defence to DFID’s critics in the Conservative party and in the elements of the press hostile to the organisation. In 2016, when Theresa May took

office, the prospect of re-merging DFID with the Foreign Office was discussed in earnest. DFID avoided this at this point but the new Secretary of State, Priti Patel, was reportedly unconvinced by the need for DFID's existence (Ilott et al., 2016).

4.1.2.5 Summary of DFID's core management practices

Before concluding the section on DFID, an interlude will be taken to explain the core institutional arrangements of DFID that, as explained above, have grown in importance over the period and became cemented in around 2009-2011. DFID has taken on increased importance as the backbone of delivery of a results-based agenda and transparency that has, in turn, become the core defence against increased public and media hostility against the backdrop of austerity and reduction of other department's budgets.

It is worth briefly explaining the core mechanisms in the management practices as these play an important role in the dynamics of the two programmes. The system starts with a Business Case. This includes an appraisal of a set of dimensions of a proposed intervention covering five interdependent cases:

- Strategic Case, which makes the case for DFID intervention;
- an Appraisal Case, which explores how the need identified in the strategic case will be addressed in a way that optimises value for money;
- the Commercial Case, which outlines the approach that delivers value for money through procurement;
- the Financial Case, which sets out issues of affordability and the sources of funding; and
- the Management Case, which sets out the appropriate arrangements to ensure successful delivery of the project/programmes.¹⁶

Part of the Business Case is to design a Logframe. The Blue Book establishes:

“Fundamental to our approach to monitoring is the setting, at project design stage, of realistic results we actually expect to achieve through the project. The DFID Business Case underpins this approach. Annual scoring now measures what we have actually achieved over the last year, compared to what we expected to achieve” (DFID, 2013:part B1).

¹⁶ This description was taken from the DFID, Blue Book, updated 2013. The DFID Blue Book was later withdrawn in 2014 when it was replaced by the smart rules. But the Blue Book was in place when the UPGro Business case was drafted.

The DFID 2011 Logframe, How to Note, provides a detailed description of the purpose and elements of the Logframe as used by DFID. It is designed to bring together “*in one place a statement of all key aspects of the project in a systematic, concise and coherent way*” (DFID, 2011:11) The Logframe is an expression of the “Results Chain”, which traces inputs through processes, outputs, outcomes and impacts.

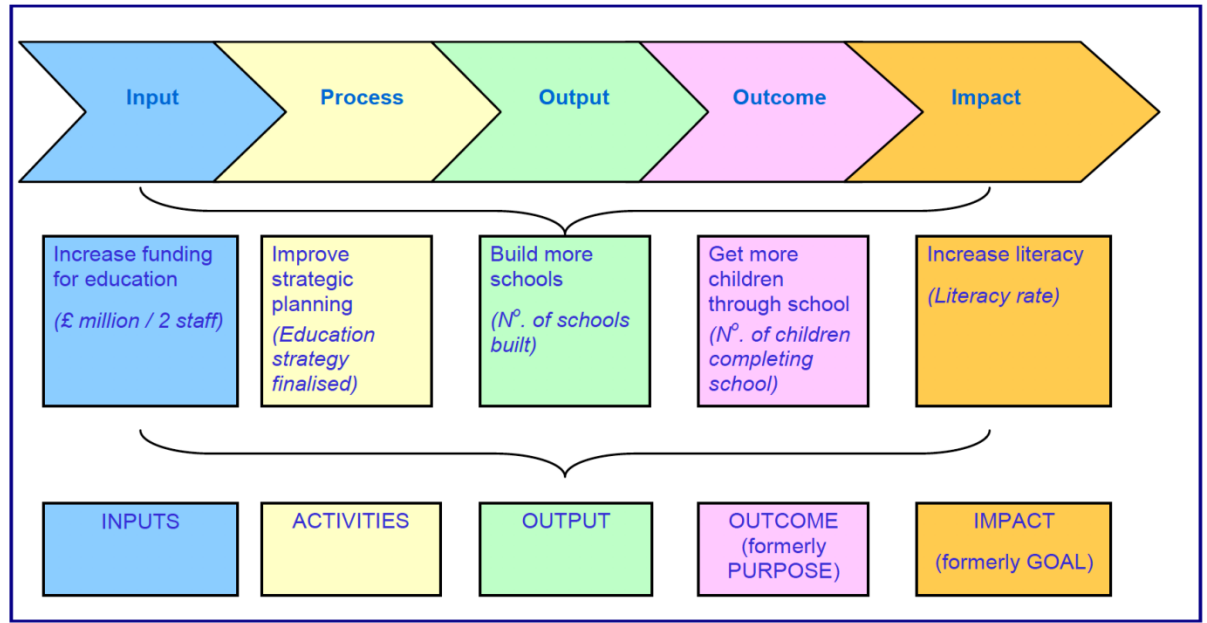


Figure 4.3: Representation of DFID results chain

Source: DFID (2011a:11)

The impact is not supposed to be attributed solely to the project or programme. This is a higher-level effect to which the project will contribute. However, DFID wants to keep track of overall progress towards the desired impact, monitoring steps in the results chain. The outcome should identify what will change, and who will benefit. Outputs are the specific, *direct* deliverables of the project that provide the conditions necessary to achieve the outcome. Once the outputs are defined, a percentage of the contribution each is likely to make towards the achievement of the overall outcome is required, therefore establishing how important each output is seen to the overall achievement of the Logframe goals. Outputs and outcomes should have indicators that are measurable; also impacts should if it is possible and realistic. Finally, baseline milestones and final targets are set to allow for annual progress to be measured and appraised.

The Logframe is the foundation of the Annual Review and End of Project review. The Annual Review and End of Project review used a five point scale of A++ (outputs/outcomes substantially exceeded expectation), A+ (outputs/outcomes

moderately exceeded expectation), A (outputs/outcomes met expectation), B (outputs/outcomes did not meet expectation), C (outputs/outcomes substantially did not meet expectation) (DFID, 2011b). At the project completion stage, the final outcome score is assessed. The Annual Reviews are published on the DevTracker website and so are prepared as public facing documents.

4.1.2.6 The story of research for development in DFID

Interwoven with the story of how DFID developed between 1997 and 2017 is the wider story of research for development in the UK research system. This section will weave in the connected story of the increasing prominence of research for international development during the relevant period to help make sense of the story of development research within DFID and the RCs.

The UK has a long history of funding research relevant to developing countries, starting with the Colonial RCs that provided financial support for local scientific institutions abroad. It also supported scientific units at home, such as the London School of Hygiene and Tropical Medicine. This context section will start with the 1997 period when DFID was formed.

In 1997 the place of research was linked to the new departmental priorities and was seen as a source of practical solutions for assisting with poverty reduction. The Surr Report observed that DFID had moved to a much stronger focus on poverty reduction and on outcomes, and had also adopted a greater focus on commissioned, in place of responsive mode, research (Surr, 2002). The 1997 White Paper cited many examples of practical research impact, such as work on microcredit, deploying low cost water treatment, pest control techniques and designs for wood burning stoves. It also had an emphasis on understanding social, economic, political and physical environments (Currie-Alder, 2015). This focus on practical applied research directly related to poverty reduction immediately sparked a concern that research at DFID was becoming too applied and was becoming a low status area at DFID. In 2003 a new Central Research Department was established within the policy division to start addressing these concerns.

The year 2004 was a landmark year in research for development in the UK. DFID's use of science was the subject of an inquiry under the House of Commons Committee on Science and Technology. Parliament was worried that DFID had become disconnected

from the RCs and other government departments responsible for science, was under-resourced to fully participate in research partnerships, and in need of scientific staff (Sivadasan, 2003). The other primary concern driving the inquiry related to DFID's decision to 'untie' overseas aid including research, meaning that DFID was funding less UK research. The terms of reference of the committee state:

“Commendably, DFID has taken the lead in untying overseas aid from the granting of contracts to UK companies. Other countries, however, have not been so magnanimous and there are signs that DFID's approach, which also extends to untying research contracts, may inadvertently be damaging the UK's own capacity to provide development sciences expertise. The current erosion of the UK research base in development sciences is now endangering the future ability of the UK to sustain this leadership role” (House of Commons, 2004:ToR).

This inquiry made a number of findings that had a major impact on how research was organised in DFID and on the trajectory of research for development funding in the UK over the coming decade.

First, the inquiry established the term 'development sciences' to refer to the wide range of disciplines across the social and natural sciences that have relevance to issues faced by developing countries; it was seen as distinct from development studies. The inquiry set the trend that went on to influence research for development over the next decade, that research for development should be carried out across a wide range of subject areas in the UK. A strong science lobby, supported by David King, the government's chief scientific adviser, successfully argued for the participation of the wider domestic research community within foreign aid. This argument was already gaining traction in government. David King had already commissioned a scoping study to explore how scientific capacity building in developing countries could be progressed in an integrated and strategic way across Whitehall. The UK Science and Innovation Investment Framework 2004-2014 also identified international development as one of five key policy priorities for government R&D (House of Commons, 2004).

Second, the inquiry gave great prominence to capacity building in developing countries, arguing that the UK had an obligation to support capacity building for development. The report states *“We firmly believe that the UK has an obligation to support capacity building in science and technology for development and welcome the fact that the Government has now affirmed its commitment to do so”* (House of Commons, 2004:45).

Third, it established the principle that the research for development budget should rise in line with the wider rises in the aid budget to help establish the UK as a world leader in research for development. Finally, the inquiry reported on the widespread perception amongst scientific stakeholders, and amongst some in DFID, that there was a lack of a scientific culture in the department. They found a lack of “*widespread appreciation amongst its staff of the true worth of science and research for international development*”(House of Commons, 2004:89).

The inquiry served to bring together the leading actors in research for development, raise the profile of the area of research and set an agenda for the coming years. It led to the establishment of the UK Collaborative for Development Sciences (later renamed UK Collaborative for Development Research) that sought to bring together the main funders, co-ordinate their actions and provide mapping and research on the subject to help inform decision-making. It also strongly encouraged the RCs to engage with this agenda fully.

The year 2008 was also crucial for changes to how research was treated within DFID when they produced a new research strategy: *DFID Research Strategy 2008-2013*. In line with the desire to raise the profile of research at DFID and in line with the wider increase in aid spending, the strategy committed DFID to double its investment in research to £220 million a year by 2010. It retained a strong focus on using research practically to fight poverty and achieve the MDGs. It had a dual focus both on producing new knowledge and technology “*that is cutting-edge, relevant and usable*” (DFID, 2008a:18) and getting that research into use. It committed to spending up to 30% of the research budget on research communication activities to make it “*available, accessible and useable*” (DFID, 2008a:19). It also had a very strong focus on strengthening capacity to produce and use high quality research in developing countries.

The same year also saw the creation of the new Research and Evidence Division to replace the Central Research Division. It had a high profile within DFID, with a new Chief Scientific Adviser post, held by Professor Chris Whitty, that was a highly senior role just two levels from the top of DFID management, reporting to the Director General of Policy and Research, who reported to the Permanent Secretary. The title of the division included the word Evidence to signify an increased focus on delivering evidence internally to within DFID about what works in international development. Currie-Alder (2015:52) explains “*Under the new division, research was not only for reducing poverty, but for*

doing more with available funds to avoid developing expensive ideas that do not work". Part of this agenda was to increase the use of systematic reviews within the department, borrowing heavily from Chris Whitty's background in clinical medicine. This sparked some controversy with the development community arguing that development issues were highly complex socio-environmental issues less amenable to categorical statements on the evidence to which systematic reviews tend.

Another connected part of Chris Whitty's agenda was to try to increase DFID's engagement with the research community in the UK. There was a widespread concern that DFID's research and research processes needed to improve in quality to help fill evidence gaps. There was a perception that researchers were not engaging with DFID because DFID funding was too focused to allow them the freedom to explore their academic interests and produce the publications they needed to progress their careers (Currie-Alder, 2015).

Bruce Currie-Alder provides a summary of the different currents of thought and policy around research during this period:

"In summary, during this period the performance regime re-emphasized ties with UK science, including notions of scientific excellence, and witnessed rising scrutiny of foreign aid, including downward pressure on operating costs. The program theory guiding funding decisions embraced the potential for generating technologies to change the lives of poor women and men, as well as the potential for research to inform an evidence-based approach to policy. Correspondingly, grantmaking expanded to include partnerships with the UK research councils, continued rise in average project size, and renewed consideration of how research informs the value for money of growing aid investments" (Currie-Alder, 2015:55)

There was a further major shift in Research for Development funding that occurred in 2014-2015. This was the decision by the then Chancellor George Osborne to combine the ring-fenced science budget with the ring-fenced aid budget to fund a series of very largescale funding schemes; these would be largely directed at the UK science base but also count as ODA. These schemes, the £1.5 billion Global Challenges Research Fund and the £735 million Newton Fund, would not be run by DFID but rather by the Department for Business, Energy and Industrial Strategy. This was a major shift in research for development funding in the UK, representing both a substantial increase and a new direction. However, it will not be elaborated on in detail in this thesis as it occurred after both the case study programmes had started running. It was mentioned a few times

by interviewees but largely just as background to their comments. It did not significantly affect the formation and implementation of the ESPA and UPGro programmes.

4.1.2.7 Conclusions on trends in DFID

In hindsight, the period from DFID's formation in 1997 through to the financial crisis represented a time of relative political freedom to operate for DFID. Claire Short oversaw a radical Labour vision for international development that was focused on partnership and poverty reduction above all else, and was backed up by the decision to increase aid spending to the 0.7% target. The financial crisis of 2008 and then the election of the Conservative led coalition government brought into play political forces that steadily undermined Labour's vision for international development over the following decade. Before the coalition government came to power, there was already an increasing focus on results-based management; after 2010, however, this became *the* central focus of the department. The commitment to increase aid spending came before the 2008 crisis but the coalition government continued to protect it due to an uneasy cross-party commitment to aid spending. The contradiction of domestic departments going through austerity while the aid budget grew led to very high levels of political pressure and scrutiny from the press and parliament. The Conservative response was to increasingly emphasise Value for Money.

In 2012 Justine Greening replaced Andrew Mitchell as Secretary of State for International Development. This period saw a continued relentless emphasis on results, transparency and value for money (Greening, 2012) as media attacks continued to grow. However, this period also saw a counter-movement within the department against results-based management. There was an end-to-end review that found that many staff believed that results-based management was leading to an over-bureaucratisation of aid spending. This period recognised that Logframes that establish clear goals at the beginning could be clumsy instruments and that DFID needed more long term adaptive processes but for a decade had been putting a whole system of management in place that was focused on predictability and short-term results; these were the only management tools they had.

During this period there were also important interconnected developments in the specific research for development policy space. The 2004 inquiry was a key moment that set in place the ideas around research for development over the next decade. This included a focus on engaging the UK science base more in research for development, improving the

quality and standing of research at DFID, with a stronger focus on developing the capacity of Southern researchers. Within DFID there was an increased focus on scientific excellence at the same time as an enduring focus on highly applicable research. The new Research and Evidence Division was also not immune from wider shifts in the landscape and was under the same increasing pressure to demonstrate and attribute impact from their work.

The key point to take away from this section is that DFID is a large and diverse organisation that has been through a tumultuous first two decades. There are different strands of thinking that have developed out of different periods for the organisation. It consists of multiple disciplines and is probably more diverse than any other government department (Valters and Whitty, 2017). This means that DFID staff are operating in an environment with different competing visions that are not resolved and can be drawn on by them to give some leeway in how they implement programmes. This context is crucial to understanding the viewpoints of DFID staff that will be outlined in section 5.1.1.

4.1.3 Context of research systems in the global South

Section 5.1.6 of the findings section below outlines the viewpoint of Southern researchers involved in the programmes. The Southern researchers came from multiple geographies and it is, of course, impossible to summarise the research system context for all lower income or lower-middle income countries, and there will be huge variation in the sophistication of funding systems. However, there is a body of literature that provides some broad characterisations of research systems in the context of lower economic development that can be summarised to give broad background context for the findings section 5.1.6 on Southern researchers experience of the programmes.

The geographical focus of ESPA was “*four regions of the world that experience significant challenges in managing their ecosystem services in the context of poverty reduction. The regions identified are South Asia, China, SSA, and the Amazon basin and its Andean catchments*” (ESPA, 2009): UPGro focused on SSA. Although ESPA did include a number of countries in the upper-middle income category, the majority of

partners were from lower-middle income or low income regions¹⁷, mainly in SSA and south-Asia.

Fosci et al. (2019) conducted a rapid review for DFID on research capacity strengthening in Lower Middle Income Countrys (LMICs) that assessed the evidence base on the strength of research systems in those regions. The following paragraphs draw on this review and the underlying research that it cited to provide a high-level summary of the key points most relevant for this thesis.

The most fundamental point about these systems, and of which there is strong evidence in the literature, is that there is chronic underfunding of research systems in LMICs following decades of public spending cuts under structural adjustment programmes. This has profound effects on both individual researchers and the research environment. Researchers have low wages and a lack of high quality facilities to work with including libraries, laboratories and information technology (Fosci et al., 2019; Ghaffar et al., 2008; Van Vught, 2008; Vogel, 2011). LMICs tend to lack sophisticated national funding ecosystems and well established RCs. Most funding to universities is through a block grant and goes to funding teaching rather than research (Cloete et al., 2015; Jacob, 2011). For many researchers in LMICs the only significant source of research funding is through joining international collaborations and gaining international sources of funding.

In addition to the lack of funding, the research environment within institutions can make it difficult for researchers to pursue programmes of research. Many university systems in LMICs have undergone ‘massification’ in the last two decades, whereby huge and unsustainable numbers of students are enrolled in universities. This has led to more intense workloads for academics and pressure to hire young under-professionalised staff (Cloete et al., 2015; Sifuna, 2010; Tessema, 2009; Zeelen, 2012). Fosci et al., (2019:25) explain:

“Although research may be a stipulated requirement for promotion, the teaching function remains the clear priority for many institutions. Therefore, academic

¹⁷ The classifications are used by the World Bank to classify countries and are based on GNI per capita. For the current fiscal year Low income is \$1,035 or less. Lower-middle income is \$1,036 to \$4,045. List accessed on 29th May 2021 from: <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>.

staff often carry large teaching, administrative and consultancy workloads which means that the time available for research is minimal”.

Researchers will often lack attractive career pathways because of poor salary structures and non-transparent promotion systems (Fosci et al., 2019). In addition, many institutions lack effective research governance structures and well-functioning bureaucratic systems. Even when plans are in place, their implementation may be limited (Clemeña and Acosta, 2007; Cloete et al., 2015; Marjanovic et al., 2013).

The final key point is the significant lack of adequate ICT infrastructure, meaning that access to publications and research information systems are often lacking. It also limits their ability to access distant scientific infrastructure, such as ‘big data’ research projects, modelling and simulation equipment and telescopes. This significantly hampers research production, management and dissemination (Holmner, 2008; Mutula, 2009; Semali et al., 2013).

4.2 The development of the two programmes in context

This chapter gives a descriptive account of the two programmes in context, describing their genesis and the core features of how they were set up. The background to ESPA and UPGro is foregrounded above in the section on the developing research for development landscape in the UK in the 2000s. The 2004 inquiry by the House of Commons Science and Technology Committee was the moment that laid the groundwork for the collaborations. DFID were motivated to collaborate with the RCs for several reasons. First, to access the scientific excellence associated with the RCs and their high quality peer review processes that could rely on the large and prestigious peer review colleges and their wider contacts in the research communities. They also wanted to work with the RCs because working through their management systems enabled them to fund smaller, higher risk projects. Reporting on Chris Whitty’s evidence to the 2013 House of Commons Science and Technology Committee, ‘Building Scientific capacity for development’ the committee explains:

“Professor Whitty explained that unlike some organisations, such as the Wellcome Trust or the Research Councils, DFID did not have sufficient resources to effectively peer-review the number of grant proposals that might be generated by a larger number of centrally funded small programmes.⁴³ The channelling of funds through different organisations therefore allows DFID to take advantage of

the skills of others and indirectly fund many smaller programmes thereby complementing the larger programmes supported by its own central funding stream” (House of Commons Science and Technology Committee, 2013:13).

It also represented good value for money for DFID because a large amount of the management costs would be absorbed by the RCs as part of the contribution in kind.

The RCs were also strongly influenced by the 2004 inquiry. The inquiry had questioned whether there should be a new Development Research Council created to lead in this area. In the end it was decided to create the UK Collaborative on Development Research (UKCDR) instead. However, the RCs were then under pressure to show that they could pivot towards development research successfully to help re-enforce the strength of the research base in this area. From the creation of RCUK, they also needed to demonstrate to the government that they could work together across the piece, with different RCs working together in an interdisciplinary way with DFID to deliver a joint programme (member of ESRC staff (ESRC1) interviewee conducted for this thesis). For the RCs, these programmes were classed as ‘strategic’. This means they are in a specified area identified as needing research and with high potential for impact, but they are clear that (a) it is the researchers who have largely defined this area in consultation with the council, and (b) the programmes can only set a broad framework to which researchers respond flexibly.

Currie-Alder (2015) provides a useful summary of the situation and identifies key tension that would, as the findings chapters will show, come to play a major role in the ESPA programme:

“Such partnerships were a win-win for DFID: it was perceived to be commissioning high-quality science, and doing so by buying into the existing peer review process, rather than setting up and running such competitions itself. Consequently, part of DFID’s portfolio moved toward more upstream research, including plant genomics and human vaccines. The pool of potential grantees grew from the former development studies community interested in poor countries abroad, to take in a wide community with skills in lab-based sciences at home that could be applied abroad. In the words of one respondent, it widened the field to “anyone who can slice in a salt tolerant gene.” Yet a new tension emerged: proposals with the best science did not necessarily have the greatest relevance to development” (Currie-Alder, 2015:47).

Error! Reference source not found.Figure 4.4 below shows the wide range of collaborations DFID was undertaking with the RCs during this period. However, ESPA and UPGro were the only programmes that brought DFID, NERC and ESRC together.

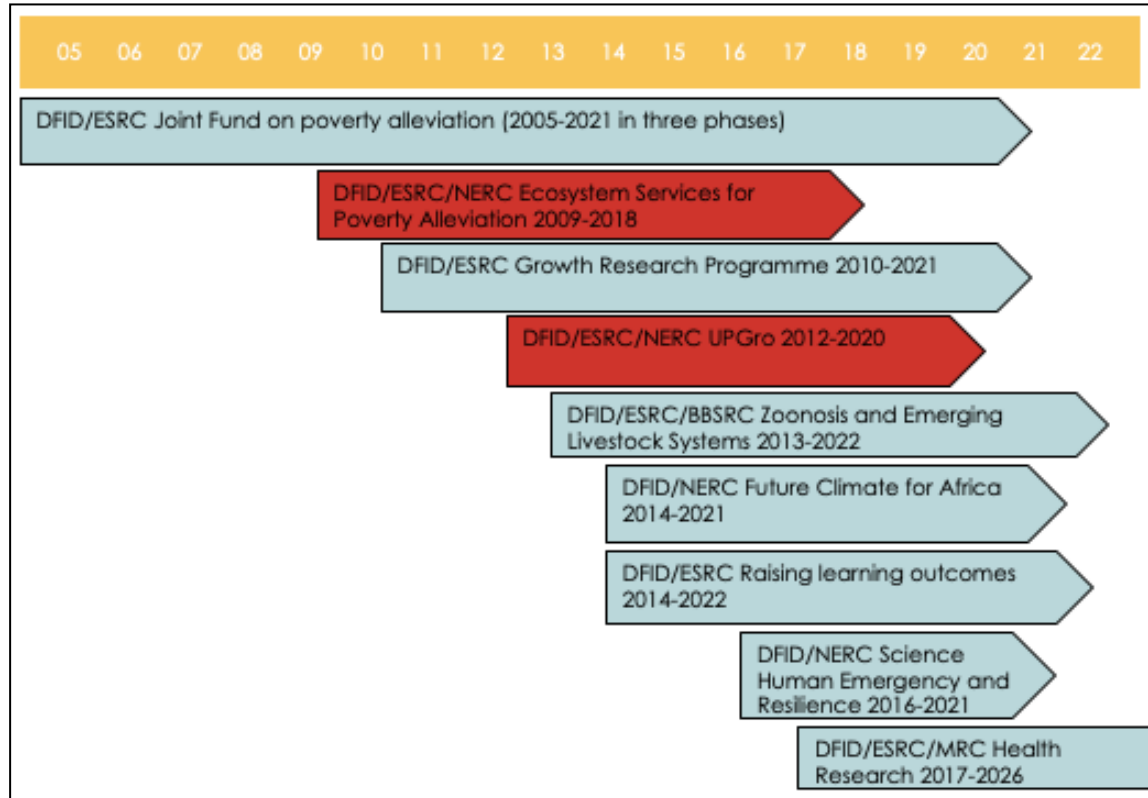


Figure 4.4: DFID/RC collaborations

Source: Author's own

ESPA was the first collaboration in a research programme between DFID and NERC and the two partners were initially almost unknown to each other. DFID had historically provided funding to NERC research centres but this had stopped in the 1990s; there was no collective memory of working together amongst the participants in designing the call. It was also one of the larger, most ambitious and high profile of the RC/DFID programmes. For NERC in particular it was particularly innovative and large-scale at the time (DFID, 2018). The joint design process started in 2006 and included the commissioning of the scoping calls in 2008. The ESPA programme memorandum (ESPA, 2009) describes how the scoping phase cost £1.5 million and involved the commissioning of four regional and two thematic analyses from research consortia, led by institutions from the region where the research was to be conducted, and in partnership with Northern institutions. These were designed to ensure that the programme was demand-led and policy relevant from the outset. However, these studies do not seem to have been used

extensively in designing the programme or the calls. In fact, one of the interviewees suggested the sheer amount of information may have made it more difficult to design the call: *“there was this absolute mass of information. again all fair and well but what does this mean for a tight design that’s going to meet our objectives and the research council objectives.... so we kept bumping around”* (DFID 5). Eventually, the appointment in 2009 of Professor Chris Whitty as DFID’s first joint Chief Scientific Adviser and Director of Research & Evidence gave the ESPA discussions the final push. As explained above, Professor Whitty’s appointment was in line with the new emphasis on evidence-based, policy-relevant research within DFID, and staff were instructed to get ESPA started as a matter of priority because it was seen as a flagship large investment promoting the kind of excellence driven, policy relevant science that could raise the profile of research in the organisation.

In line with the aim of achieving value for money and access to high quality science, the decision was made to use NERC selection and management institutional arrangements. The idea was that the PEB would retain the final choice on applicants to be funded; in reality, however, the project decisions did not deviate from the rankings provided by the peer review panels (DFID, 2018).

The Millennium Ecosystem Assessment was the most influential factor in defining how the ESPA programme was framed conceptually. It was the bedrock on which the ESPA programme was built, with many of the programme’s key findings and influential frameworks building on and/or challenging assumptions in the MEA.

After the programme had already started, the Directorate was created and was charged with developing and refining the framing of the programme through the collaborative development of a Knowledge Strategy and Research Framework. The End of Programme review reports:

“Mirroring the [MEA], this framework emphasised the role of ‘enabling conditions’ such as socio-economic factors, political economy, demographic change and long term environmental processes, such as 23 climate change, in influencing the relationship between ecosystem services and human wellbeing (see Figure 3). However, although the Knowledge Framework introduced the notion of some key concepts such as dynamic pathways and, in later iterations, non-linearities and trade-offs, these were not unpacked in any great detail and the resultant framework remained at a fairly high-level” (DFID, 2018:23).

In terms of its ambitions to achieve an impact greater than the sum of its parts, there were two main ways it sought to do this: first, through the creation of the overarching framework that would help guide researchers to maximise the potential of their work and direct it towards important policy problems; second, by working to facilitate links with other programmes (DFID, 2018).

To implement these goals, the ESPA programme opted for a Directorate model. It was an externally-housed Directorate contracted through a tender process managed by NERC. The Directorate was responsible for knowledge management, capacity building and driving the intellectual development and communications of the programme. It was a model that put significant authority in the Director themselves as overall head and spokesperson for the programme. The terms of reference of the programme made them the *de facto* head of the programme, working under the authority of the PEB. The Directorate started in 2010 and was in place until the end of the programme in early 2019. The Directorate's term can be split into two halves, with the original Director and management team in place from 2010 to 2016, then in 2016 the Director chose to leave the programme and was replaced with a new Director and a largely new team around the same time. This second Directorate was in place until the end of the programme in 2019.

The first Directorate team used a number of mechanisms to undertake its responsibilities. They hired external consultants to work on producing key framing documents, such as a theory of change for the programme and strategies, such as a research into uses strategy. They also conducted bi-annual catch-up calls with projects where they would get quite involved in the detail of management issues with different projects. They ran a series of workshops on different issues and hosted an annual conference of ESPA participants.

UPGro was developed shortly after ESPA started running. UPGro as a programme followed on from ESPA, used many of its operating procedures, and was able to implement a number of lessons. It used the same structure, with NERC providing the use of its peer review and management systems. As explained above in the section in the methodology introducing the programmes, it had the same broad governance system with a PEB leading on strategic matters and the NERC secretariat leading on day-to-day management.

It is important to note that UPGro was much smaller than ESPA and not as high profile. UPGro was an eight-year £12 million investment also funded by DFID, NERC and ESRC, compared to the £40.5 million invested in ESPA. For this programme, the split of contributions was £8 million from DFID, £2 million from NERC and £2 million from ESRC. The overall aim of the programme was to improve the evidence base around groundwater availability and management in SSA to enable developing countries and partners in SSA to use groundwater in a sustainable way in order to benefit the poor. Three themes were identified under the programme call, at least two of which had to be addressed by every programme. The first theme was titled *Understanding the Resource* and related to natural science questions. The second theme was called *Governance, Institutions and Access* and aimed to “enhance evidence and frameworks for understanding the social, economic and political dynamics surrounding groundwater use. The third theme was titled *Impacts of Future Trends* and focused on the interaction of both natural and social science factors.

The approach taken to programme integration and building the greater than the sum of its part impact was very different from ESPA. The way UPGro was set up was influenced by the experience in ESPA. It was a conscious decision to make the programme more ‘bottom up’, drawing on NERC experience of using groups of researchers organised into programme co-ordination groups. It was designed so that programme level activities should be strongly informed and shaped by the researchers in the programmes.

An external organisation, the Skat Foundation, was contracted to deliver knowledge brokering activities. They were also responsible for overseeing the monitoring process, working with the projects to collate the annual reports for DFID while also working with the NERC secretariat. The programme of work of the knowledge broker was informed by working closely with the Programme Co-ordination Group. The PCG was made up of senior researchers from the five consortium projects. There was also a programme co-ordinator who was employed by the programme to help all the stakeholders work together. After the PCG was formed, its first task was to work with the knowledge broker and co-ordinator to create a work plan for the programme’s integrative activities and decide how the budget would be spent.

4.2.1 Conclusions to the context chapter

This chapter has set out the broad trends in research policy and within the funding organisations during the relevant period, as well as setting out a high-level picture of the context of funding within developing countries. It also explained the genesis of the programmes within this context. The next two chapters will outline the findings of the thesis drawing on the context set out above.

Chapter 5: Identifying the interpretive communities

5.1 Summary of the identified interpretive communities

As explained in the methodology section 3.2.1, a key stage in IPA is identifying interpretive communities and analysing what the programmes mean to them. Through a process of interaction, members of a community come to use the same or similar cognitive mechanisms, engage in the same or similar acts and use similar language to talk about thought and action. These communities are not necessarily based on shared location; they can be based on a wide range of characteristics, such as race, professional training and background, and membership, sex and gender, and myriad other possible dimensions. The measure of whether a grouping has become an interpretive community is whether the shared sense has become more common than not. In this thesis, the subject is the “ESPA/UPGro programme”, so it is about asking what does taking part in the ESPA or UPGro means to the individual in question.

Based on the analytical approach, the sections below present a summary of the values, beliefs, attitudes and key interpretations of seven interpretive communities:

- DFID programme managers;
- RC programme managers;
- UK researchers comfortable combining excellence with impact;
- UK researchers who maintain a separation between excellence and impact;
- Southern researchers;
- Critical programme actors;
- Neutral programme actors.

To maintain interviewee confidentiality, quotes will be attributed using a numbered acronym system, e.g., for an NERC staff interview they will be identified as ‘NERC 1’, ‘NERC 2’, etc.¹⁸

¹⁸Key to interview identifiers: NERC: member of staff at NERC. DFID: member of staff at DFID, ESPA-NR: Northern researcher on the ESPA programme, ESPA-SR: Southern researcher on the ESPA programme, ESPA-PS: a member of the programme level team on ESPA, UPGRO-NR: Northern

5.1.1 DFID programme managers interpretive community

I interviewed five programme managers in the DFID Climate Energy and Water (CEW) team within the Research and Evidence Division who all knew each other and worked closely together (or knew of each other in the case of one interviewee who had left the organisation some time ago). Together they had been responsible for ESPA and UPGro for most of their active periods.

To build an understanding of the frame through which the DFID programme managers viewed ESPA and UPGro, this section will start by giving a set of attitudes the interviewees described about working at DFID. The next section will describe how these attitudes translated into what they value about the ESPA and UPGro programmes, mixing with other interests and motivations specific to this group of research managers. It will conclude by describing how the particular environment at DFID and the interests and motivations of the interviewees combined to create a set of internal tensions in how they framed the programmes.

5.1.1.1 Interviewees' attitudes to the working environment at DFID

The interviewees described how they operated in what they felt to be a politically volatile environment with limited stability. One interviewee said: *“if you go back 15 years perhaps people were a bit more confident that their current budget was going to remain. You must be aware that DFID over the last few years, there's been some uncertainty as to whether our budget would be retained and whether the department itself will be retained”* (DFID 1). They were very aware of the scrutiny DFID was under during this period and how they needed to show value for money and impact on poverty reduction in everything they did. Following the focus on poverty reduction that has been the centre of DFID's mandate since 1997, the interviewees said that this was the starting point for their thinking about research at DFID.

One interviewee said:

“We have to be able to say ‘This is value for money. Look how many millions of people we've helped here’. And unless you can get some kind of handle on it, however tenuous it is, you can make as many assumptions as you want, and that's fine if you're clear about them, but you have to be able to say, in a really clear

researcher on the UPGRO programme, UPGRO-AR: researcher from SSA on the UPGRO programme, UPGRO-PS: a member of the programme level team on UPGRO

way to a non-expert, who probably wants to spend money on the NHS, this is why it's worth doing" (DFID 4).

They recognised that they are defending the research aid budget against elements of the media, and fighting to defend the importance of research within DFID itself. This was in the context of the rising aid budget and austerity described in section 4.1.2. They experienced DFID as an organisation with many internal divisions and types of approaches, meaning that what approach they are asked to follow can depend on a new minister coming in or even just a new manager. One interviewee said:

"I also see the other side, which is a minister who has a limited budget is up against the Daily Mail. I put a business case up the other day and the question was, 'Why research, why can't we just put this into WASH programmes?' And actually that's the decision. So you're not just defending research within the research evidence division, you're defending it from ministers who really want to see stuff they can print" (DFID 4).

They recognised that they have become detached donor managers at DFID rather than focusing on the details of implementation. They talked about feeling a sense of disconnection from the programmes. One discussed how they felt as if the partnerships with Southern researchers were working well but they had no way of really knowing or investigating because they did not have the time to do this; they are under pressure to be as efficient as possible and focus on high level management. Another interview discussed feeling as if they could not really learn what was happening in the programmes and they were losing their knowledge base.

One said: *"You know we're not doers, we're funders at DFID. We monitor, we evaluate. but we don't have the capacity to actually get in there"* (DFID 5) Another reported: *"the question is how much money can you put out the door for the minimum overhead? How much spend per FTE post"* (DFID 2).

5.1.1.2 What do they value in ESPA and UPGro?

First, they valued factors of ESPA and UPGro that flowed from the entailments of their institutional environment described above. The primary motivating factor of forming the collaboration with NERC and the ESRC was described as a way to move funds that was perceived as good Value for Money. It enabled access to the high quality peer review and management processes of NERC. This enabled DFID to fund a large number of smaller,

high quality research projects with a low management burden on them. They valued the set-up as providing free, reliable management. One said:

“Yes, we can’t fund small projects, we have to get large amounts of money out of the door. The idea of using a collaboration with the RCs was quite favoured, because it cuts down our administration and transaction costs. So we’re very tight on programme management, we don’t have many people for a lot of budget. So channelling our money through others is a way of spending money, basically, without us having to be managing it” (DFID 4).

However, it was not just the favourable management costs. It was the combination of reliable management alongside the access to the different community of researchers who work closely with NERC. One said:

“So why we do work with the RCs and why we want to continue is that, given our interest in getting that top academic excellence, there is a certain kudos associated with having a NERC grant, I think it counts more in your REF thing or whatever. It’s certainly a different kind of research application that comes in than when we do it directly. When we do it directly we tend to get far more of the think tanks and consultancy firms” (DFID 1).

This access to high quality researchers with low management fees was seen as a good deal for DFID by the interviewees, who had an increasing budget and a desire to keep management costs low. The interviewees valued low risk, predictable flows of money with a strong audit trail and they deplored over- or under-spend.

Second, they highly valued being able to provide a strong account of the positive impacts from the programme, as it unfolds. When asked what would help you to get promoted when managing these programmes, one interviewee replied that it was a few good press articles and an A+ scored programme. They valued stories of impact that were easily understandable and easy to communicate to ministers and the press. Also, they strongly valued providing strong accountability and audit trails in everything they do due to the level of scrutiny they are under. The focus on value for money came up repeatedly in interviews and in the PEB minutes. DFID attendees are recorded as repeatedly asking for value for money statements and clear statements about the impacts the projects are having. In the ESPA minutes from July 2014, for example, DFID say they are under increasing pressure to show value for money.

As well as these values described above, that flow directly from the DFID core values during the period, there were also a set of values described by the interviewees that flowed

from their expertise and experience in managing research programmes and experiences of working with researchers in the global North and South.

The interviewees strongly valued capacity building and strong partnerships in their programmes. They expressed the belief that building capacity of Southern research institutions was the ultimate goal of the whole endeavour in which they were involved: *“In an ideal world we wouldn’t fund western scientists, would we? But it’s the kind of way of doing it is to try and focus on ... and I suppose that’s the argument for having a significant capacity-building component, to try and get away from that”* (DFID 4). Another explained that although they were pleased with the way UPGro was set up, the one element they felt still needed reform was that Southern researchers were not involved enough. They said *“The thing that’s missing from the current set up in UPGro is that their developing country partners are not able to participate as much as they can in these kinds of coordination team, knowledge broker activities”* (DFID 1).

A number of the interviewees expressed the value that interdisciplinarity was important to them. The focus of interdisciplinarity to them was interpreted as bringing more social science insight to bear on problems of the environment and development. They recognised that interdisciplinarity is difficult for researchers and that it can take a long time to create truly interdisciplinary partnerships. One interviewee said *“You almost need a more iterative process to think this is where a social science perspective could be integrated to create something quite interesting and different”* (DFID 4).

The meaning of excellent research to the DFID programme managers encompassed a broad range of factors. They did primarily say that excellence is associated with peer review processes and publications. However, they also introduced the notion of relevance to policy issues as a component of excellence. One interviewee said *“Quality has as much relevance as it is publications. The issue is not that we are arguing against high quality science, we always want high quality science”* (DFID 5). A repeated point made was that excellence was differentiated from the kind of operational research that DFID also commissions and, again, the factors of peer review and journal publication were cited as what marked this type of research as unique.

The DFID programme managers had a nuanced understanding of development impact from research. They believed it could be a long, indirect pathway with uncertain

outcomes. They believed that one off research projects do not change policy but that bodies of knowledge get built up that throws up an evidence base that brings about change in the longer term. They believed that researchers alone do not bring about change but rather have to work with other agents. One said *“I mean, it was never about the fact that we actually have to have people lifted out of poverty. Research can’t do that. Research can work alongside agents who do make changes”* (DFID 5). Another finding was that they conceptualised research to impact as a continuum: *“you go from action research where you are there working with communities to find solutions to your mangrove right down to sort of more pure science which may only deliver an impact after 10 or 20 years”* (DFID 5). They recognised that although the first type of research may be more predictable and likely to produce an impact, the long term research should not be deprioritised because this can mean losing riskier but more transformative change. They said: *“you may forego some of the biggest wins, because some of the bigger wins, if you look at things like the vit-C rice or the orange fleshy potato, those are 20 year time horizons, delivering the biggest impacts, because research happens in phases and stages”* (DFID 4). They recognised that the unpredictability of research to impact and that it is difficult to know in advance the numbers of people that would benefit. *“It may indirectly affect people if it gets its impact pathway right. We weren’t saying we are giving you this money because we want x number of people benefitting”* (DFID 5).

5.1.1.3 Internal tensions within the DFID programme manager’s frame

The frame through which DFID programme manager’s viewed the programme was defined on the one hand by the institutional requirements and environment of the organisation, and on the other by their knowledge and beliefs around the goals of these types of programmes gained through their experience of designing and managing research programmes. They recognised that impact takes time and is built from many projects. They valued excellence and peer review. They saw themselves as defending the value of research within DFID.

However, they are required to use the institutional arrangements they have and are under increasing pressure to demonstrate, or at least provide a compelling narrative of, impact during the programmes. This tension was summarised by one of the interviewees:

“because of the pressures we work under, we operate under, we may be a little bit ... I don’t think we’re naïve so much as we can’t just take that approach. Whereas probably a lot of us would say, ‘Obviously that’s where research contributes to

change, it's not a sort of one-off project that changes a policy; it's an ongoing body of knowledge that throws up an evidence base that changes things in the longer term'. But we don't have the timescales or the tools to manage, to monitor that really" (DFID 4).

The interviewees were clear that they had got used to creating and using Logframes that could accommodate longer term and less predictable pathways to change. One interviewee reported *"I don't think there is necessarily a conflict. If Results Based Management is done in an holistic way it can incorporate a wide range of results"* (DFID 3). In ESPA and UPGro, the way this was accommodated was to require evidence from the research projects of engagement with potential users of their research; e.g., objective three of ESPA (ESPA, 2009) was "High uptake of research outputs and synthesis by early and on-going engagement and communication with policy-makers, practitioners and decision makers". The way it was framed is about researchers being required to demonstrate how they are maximising the chance of impact occurring rather than evidencing the actual impact.

Despite this approach, it is clear from both programmes that the amount of pressure DFID staff were under to demonstrate immediate impact on poverty means that this approach could slip at times, and requirements for more immediate impact could find their way into programme documentation and the messages to researchers, leading to mixed messages on what is expected. This tension will be explored in detail in section 6.1.1 on the tension between the RCs and DFID in the next chapter of the thesis.

5.1.2 RC programme manager interpretive community

I interviewed six RC staff, three from ESRC and three from NERC, who collectively had been responsible for ESPA and UPGro for most of the programmes' duration. I did not find a significant difference in how the staff framed the programmes between the ESRC versus the NERC staff or between those involved in ESPA or UPGro (except for one nuanced difference concerning interpretation of impact described below). The framing of the programmes by RC programme managers was largely defined by the nature of the RCs place in the research system, the implications of the Haldane principle, and the consequent focus on selection and administration procedures.

The interviewees framed their involvement in the ESPA and UPGro programmes in line with the Haldane principle, explaining that they should not be making decisions on the

content or implications of research, i.e., the Haldane principle. The interviewees quoted the Haldane principle specifically and, in line with the definition, that it means that government agencies can set the scope of research but not make individual funding decisions. One interviewee said *“So government, NERC and DIFD and whoever else we’re partnering with will decide what the scope of the activity is, but we don’t decide which individual projects are funded, that’s independent to peer review”* (NERC 2). They were also clear that the setting of the scope of the research was also largely done by the research community. They understood UPGro and ESPA programmes to be ‘strategic programmes’, meaning they are in a specified area that has been identified as needing research and with a high potential for impact. However, they are clear that (a) it is the researchers who have largely defined this area in consultation with the council, and (b) the programmes can only set a broad framework that researchers respond to flexibly.

They were very aware of the need to avoid being seen as influencing researchers in the peer review process and had the attitude that researchers would not tolerate them having an opinion. One interviewee said *“people get very grumpy if they sense that you as an official are trying to express an opinion. Once I got in a lot of trouble because there was a project just below the funding line in one programme on longitudinal data sets. This is an area where ESRC spends a third of its money... Oh I was terribly out of line and that sort of thing”* (ESRC 1).

The peer review institutional arrangement was central to how they thought about their role in the programme. To them, if you put the focus on the peer review and it is run well following principles of transparency and objectivity and with a suitably qualified panel, then this sets the programme on course to meet its objectives. They relied on the researchers to be incentivised to produce academic excellence and apply a hands-off management approach. One said *“You have to rely on what comes in and what comes through the peer review process. And the overriding criteria are the best research that’s going to deliver the goals of the programmes”* (NERC 3). And *“Yeah, I’m probably too biased to answer that because I believe firmly in the peer review system and that approach. Yeah, it’s got its flaws but it’s the best that we’ve got. I think in the end, it means that you invest in the best things”* (NERC 1). The peer review process is not just relied upon to ensure delivery of research excellence. The interviewees also reported that they trusted peer review to pick up good partnerships and potential for impact.

Interviewees spoke about how many programmes they were running at the same time. One said *“From my perspective, I run maybe about 70 different programmes and projects, maybe 100 – it varies in size and scale”* (ESRC 2). Interviewees talked about high staff turnover and movement between projects during the period. They explained that this means that these programmes have to be designed so that they can be run in a way that would enable handover to a member of staff trained in a set of bureaucratic core competencies.

One informant observed:

“Yeah, it’s essentially time and skills that people who sit in Polaris House, depending on where they are, don’t necessarily have. Particularly within the particularly disciplinary demands... so it’s designed in a sense as something you can manage just with a bureaucratic set of core competencies” (ESRC 1).

The interviewees did not see ESPA and UPGro as particularly unusual. As explained above, they understood UPGro and ESPA programmes as ‘strategic programmes’ run with government departments in these cases, meaning they are in a specified area that has been identified as needing research and with high potential for impact. One of the NERC interviewees explained:

“So ESPA and UPGRO are both one of a large number of strategic programmes we run. So these are in partnership with DFID, others are in partnership with other UK Government organisations like DEFRA ... all of them have similar measures of success, measured half by excellence and half by impact. ESPA and UPGRO from our perspective are not that different from any of our other strategic programmes” (NERC 2).

The key insight about RC staff from the interviews is that they saw these programmes primarily as bureaucratic endeavours. They had a set of core competencies that relate to running peer review processes and distributing flows of money: they do not have the systems in place for active management of the projects. The management style of the RCs is hands-off. The interview evidence showed that they rely on the academic incentive system to make sure the researchers produce what is necessary.

5.1.2.1 What do they value in the ESPA and UPGro programmes

The interviewees described how they primarily valued excellent research. Excellence to them meant *“research that pushes forward the frontiers of knowledge, results, and highly cited academic papers”* (NERC 3). The interview evidence showed that it is associated

strongly in their minds with the process of peer review. Another term used was research that breaks new ground. It is associated with creating new research areas and with moving new research areas forward.

An associated value with the focus on breaking new ground and developing new areas of research is that the interviewees repeatedly talked about the programmes in terms of developing and nurturing research communities in the UK. To a number of the interviewees this was the mark of success of a programme.

An ESRC interviewee said:

“From my perspective, I want the researchers to come out with improved careers off the back of working in this research. I want them to have publications that they can use to move forward to further their research careers. I want capacity to improve in that research area ... So from my perspective, I think we’re actually quite encompassing with what we want out of a successful programme. What makes me really happy, is when the researchers from that successful programme come back and apply for another programme ... and if they’re successful in that, that’s really, really lovely to see because you can see how their career progression has been directly affected by the funding that they got” (ESRC 3).

The NERC interviewees expressed a similar sentiment:

“Yes. I mean, what would be really great... I haven’t followed through, but it would be really great to see where that community is now ten years later. Have they moved forward with that kind of interdisciplinarity and able to move that research area forward? To me, if the answer to that is yes, then ESPA was a big success” (NERC 1).

This focus on nurturing the UK researchers and building relationships with them over their careers, framed how they thought about capacity building of Southern researchers. They were very clear that this is not a priority of the RCs. They were interested in the issue of funding and building capacity of Southern researchers largely because they saw it as beneficial, in the ESPA and UPGro research areas, for UK researchers to be working with them. When asked about Southern partnerships, one NERC interviewee involved in the early days of ESPA explained:

“I don’t know how else to describe it. It’s obviously not a priority for NERC and in the way NERC is set up; NERC is there to fund UK researchers. Having said that, the kind of research that needed to be done, those UK researchers needed to work with people outside the UK so you wanted to find a way to facilitate them to do the job they needed to do” (NERC 1).

This was also the view of the interviewees working on UPGro:

“although a lot of the call wordings reflect different priorities in and around capacity building of those researchers, our researchers also gain a lot from working with African researchers, learning more about issues on the ground and developing solutions that would actually work in that context” (NERC 3).

The interviewees explained that impact from research was starting to become more of a priority during the development of ESPA and continued to grow in importance over the period. However, it was valued in a way that did not detract from the core values of excellence and the Haldane principle. What was clear was that they believed the RCs had become much more focused on impact over the time period, and that they required more co-production with stakeholders than before.

The interviewees involved in the early days of ESPA described how they saw impact emerging later, after the programmes had ended. They saw ESPA’s role as creating this new community and body of knowledge around ecosystems and poverty interlinkages that would eventually lead to impact when that body of knowledge was picked up by policy-makers and others.

“What we, at least from the RCs perspective, were trying to achieve was developing a new community with all the breadth that we could manage and then it could basically become self-sustaining. For a long time, RCs just invested in research and, of course, over time the impact of research had become more important, and so NERC was itself trying to move in a direction that made sure that they invested in research that had impact. Now, that didn’t mean the impact had to be tomorrow, but it was clear that the research was heading in a direction that would have impact” (NERC 1).

With UPGro, the ideas of impact expressed by the interviewees were slightly different. They maintained that impact is unpredictable and can take varying lengths of time depending on the context. However, the difference was that there was more focus on co-production of research with users as the way to achieve impact, also, asking researchers to demonstrate that they would be working with users of the research during the research process.

“As we said, it varies from project to project and we don’t define what we expect to see in terms of impact. We ask the proposers, the project team to step forward in the context of the research they’re doing, what type of impact they will have, and then we measure them against that. So we don’t have preconceived ideas of what kind of impact we would expect on what timescales because it varies

dramatically from context to context or country to country. Delivering impact from research, a lot of the impact is beyond our control to an extent; they can't control the Government changes or these sorts of aspects, so it's around setting out realistic pathways and opportunities will come up" (NERC 2).

One of the ESRC interviewees involved in UPGro described how they believed, that the changing landscape in research now required researchers to ensure that users have gained some kind of benefit by the end of their involvement with the project:

"But then moving forwards through the very different changing landscape in research, I think one of the things we would hope to get is now impact and having this evidenced and being actually utilised by the end user. So whoever that end user is, making sure that they actually have a useful tool at the end of it, a piece of research document that they can actually move forward with and will change the way that they actually act and (inaudible) their understanding of how (inaudible)" (ESRC 3).

However, it is important to emphasise that the core ideas around impact did not markedly change. The interviewees were clear that if you have an excellence driven research programme that is focused on pushing the frontiers of knowledge, then you cannot have predictable and measurable attribution of impact in a quick timescale. The interviewees discussed a timescale of around seven years, from the start of a project, on average to start seeing impacts. This view of impact is mirrored in their monitoring system 'Researchfish' that, the interviewees explained, continues to monitor impact for five years after the funding period ends.

The last element of the programmes that the RC staff strongly valued was the focus on interdisciplinarity. One NERC interviewee said *"I think NERC wanted to see research that was truly interdisciplinary. We worked really hard on that and we worked really hard on helping researchers with that interdisciplinarity"* (NERC 1). They saw ESPA as trying to make a leap forward in terms of building an interdisciplinarity community to address this issue of ecosystems and poverty that crossed the borders of social and natural science. One of the interviewees from ESRC explained about ESPA that:

"its real value in terms of interdisciplinary programmes was that it had a really clear and easy to articulate purpose with these two objectives, one of environmental sustainability and one of poverty alleviation, and often they were presented as in conflict with each other and that's problematic. So how do you develop the evidence base and research frameworks that tells you ways to make policy decisions to actually bring the two goals together. And that requires an

integrated understanding of the social and natural sciences and policy environment” (ESRC 1).

5.1.3 Northern researchers

I interviewed 20 researchers based in the UK, 13 from ESPA and 7 from UPGro. This section summarises how they framed ESPA and UPGro.

I identified two interpretive communities within the Northern researcher interviews:

- Northern researchers comfortable combining excellence with impact;
- Northern researchers who maintain a separation between excellence and impact.

This issue is a fundamental point in terms of the framing of the programmes and I chose to separate two Northern researcher interpretive communities in the analysis. However, there was also a lot of common ground in how the researchers interpreted the programmes, in terms of the experiences of the running of the research projects and how the research projects fit into researchers’ personal programmes of work. The section starts by explaining this common ground before explaining the two distinct groups on the specific excellence/impact issue.

5.1.3.1 ‘Massive monsters’

The phrase ‘massive monsters’ was an evocative term used by one of the interviewees to interpret the experience of running a large interdisciplinary, impact-oriented, multi-party research project based in a developing country. An interviewee in describing one of their ESPA projects said “*As I told you, the lesson I had had from the first one was that it was this **massive monster**, with so many people, and almost impossible to manage*” (NR4, emphasis added). The phrase captures the sense of the difficulty experienced in trying to keep control of these projects. The projects typically involved a wide range of partners, working across multiple interlinked work-packages across many different geographies, time zones, cultures, and disciplines. For example, in the UPGro consortium project there were between 5 and 11 partners involved in the projects, including universities in the UK and SSA, government departments in SSA, companies running water services (or in one case a mining company) and multiple NGOs. They were working in typically between two-three countries but in one case seven countries. They all had a number of interlinked work packages, some of which were mono disciplinary and some of which were

interdisciplinary. The different elements of how the interviewees described running these ‘massive monsters’ are given below.

Difficulties in communication were described by many of the interviewees. First, in terms of communicating across different cultures interviewees identified that varying cultural norms in different countries could lead to misunderstandings and tensions. One interviewee said:

“sometimes it could be a cultural thing, i.e., what I have observed is that if you don’t have a definitive answer to a question, some people don’t really feel obliged to respond to it because they don’t have anything to say, rather than – I mean, as a project manager, I would expect them to at least say, ‘Sorry, I can’t help’. So these are the sort of things, you have to kind of read into their mind actually if someone is silent then why are they actually silent” (UPGRO NR5).

Other interviewees described the challenges of communicating across disciplines. This comes down to comprehending each other’s disciplinary terminology and ways of working. One interviewee explained *“one thing we discovered in our launch workshop was there’s a problem of terminology of at least speaking the same language, or at least language that the others can understand in terms of concepts”* (ESPA NR1). Interviewees explained that it can take time to build up enough background understanding of terminology in each area to be able to communicate effectively. The challenges associated with interdisciplinary working were seen to make it a time-consuming activity that could be difficult to fit in to a project and could be difficult to fit in amongst the other challenges of running the programme. One said:

“I would like to have more time to actually sit down with [the other researchers] and talk through the issues more, but often we’re overcome with administration. So we set aside time to talk about something and then somebody’s NERC grant has been frozen and we have to sort that out, the burden of the administration on the project” (ESPA NR1).

Interviewees described how it could be difficult and time consuming to build up the trust and effective working relationships when faced with such differences across geographical and disciplinary boundaries. The process of building trust, creating relationships and finding the language needed to interact was described as taking up a large portion of the project. In a blog piece describing their ESPA project, one researcher explained that the process followed *“the phases of group formation proposed by the psychologist, Bruce*

Tuckman: forming, storming, norming and performing". These stages took up the whole project and it was only at the end that they were "performing". They described how:

"This really only happened in the final period, and at our last workshop – last week at London Zoo – we could really say that we were 'performing'. This final stage, where groups genuinely work together, came too late. We already had a nine-month no-cost extension ending next month, and the money had run out".¹⁹

The communication challenges could also be more basic and related to technical difficulties of communicating across geographies. Multiple interviews discussed the difficulties caused by poor wi-fi connections in many regions of SSA making it difficult to communicate and maintain participation. The complexity of managing flows of money across multiple systems was also highlighted as a major difficulty that could potentially slow projects down.

The unpredictability of the environments in which the projects are based was another factor making projects difficult to manage. Events recounted to me by interviewees included floods, epidemics, coups, civil unrest and security concerns relating to militias. More prosaic sources of uncertainty emanated from bureaucratic hurdles, such as moving equipment through customs or obtaining the relevant permits to conduct research. The unpredictability of project partners was also raised as a complicating factor. A number of interviewees described how turnover of staff in key partners could present major difficulties if the new personnel were less committed to the project. Another recounted a story of a department of wildlife they had been working with who did not deliver the research data that they had promised and funds went unaccounted for. Others described how in most projects you had at least one partner 'not playing ball'. This creates very difficult decisions of how to manage the situation because the partners are often powerful and able to create problems if simply removed from a project.

One interviewee described a situation of this type:

"anyway, the only significant criticism I had from my 360 degree review in that project was that I should of actually gone through a formal process of kicking this particular person out of the consortium, because we tried absolutely everything. But my judgement was that this was not the appropriate thing to do because of the way this guy was positioned it could of created a lot more problems, but not for

¹⁹ Blog piece "Research Collaboration for Global Challenges: why it's really hard" by Ian Scoones accessed on 10th May 2021: <https://steps-centre.org/blog/research-collaboration-for-global-challenges-why-its-really-hard/>

me personally but for the other partners, the other Indian partners, so even if he was a kind of a sleeping partner and it was a pain in the neck because it created more work for other people” (ESPA NR2).

Interviewees described how any one of the types of issues described above could slow down or stop a piece of work in the project. They described how difficulties are compounded by the fact that the different work packages are most often closely intertwined and dependent on each other so that an issue in one part of the project can have far reaching consequences. The challenges associated with the projects are a mix of technical/administrative challenges, such as distributing money to institutions abroad, poor wi-fi, or getting equipment into a country with deep conceptual tensions between disciplines and cultures. There are many components that could go wrong at any time and the projects are run on tight timescales with interconnected work-packages. The interviewees described how the interconnectedness and fragility of these projects meant that they need very active management.

5.1.3.2 ‘Busy as hell’

A crucial contextual point to understand in how Northern researchers experienced and framed these programmes is that they are working on these projects whilst being under great time pressure in their academic roles. One interviewee used the evocative phrase ‘busy as hell’, saying, *“I am not abnormal in the level of commitments I have. Someone says can you review this massive proposal in two weeks. No chance. Have to tell my wife I am working again or you work till 2am not I am”* (UPGRO NR6). Similar sentiments were echoed in the majority of the interviews. Several interviewees referred to the fact that there is an incentive to understate PI hours on the project; this is because PIs are very expensive and take up a lot of the project budget that could go to developing country researchers or younger colleagues. Many of the researchers described working outside office hours. They also described how almost as soon as they have won a grant they have to start thinking about and planning for the next one. One interviewee said *“almost at the moment that you’ve got a project you have to start thinking about the next step. That is part of academia”* (ESPA NR13). This is also how it appeared to programme actors who were observing researchers. One said *“researchers are trying to do so many things in parallel. What I see from the outside is researchers who are running multiple programmes, plus teaching, plus writing papers, plus management commitments in their institutions”* (UPGro PS5). In this context, many researchers talked about how highly they

value their time and how they are instrumental and strategic in how they think about using their time. One interviewee said *“I am someone who values my time extremely highly and other people’s time. I would never waste someone else’s time”* (ESPA NR6).

5.1.3.3 ‘Putting together the jigsaw’

For Northern researchers, the ESPA and UPGro programmes are part of their individual research programmes of work. Each researcher has their own personal research strategy and set of topics that they have been building. This also allows them to demonstrate how their personal programmes of research are having non-academic impact over a long period of time.

One interviewee from ESPA explained this in detail:

*“you set yourself scientific goals and you can continue ... you establish a research programme, a research vision, and try to have coherence and use projects as a way to get continuity. Once you are in the game for long enough you can show that there is longer term impact... so you’ve got your research programme and pasted on top are these projects which inject money into your research programme. **You have to constantly put together the jigsaw...** that is indeed the way it works. You try to find... you piece it together, make sure you have continuity that allows you to build on what you did previously”* (ESPA NR13).

Another described how they use a number of different funding agencies to piece together their personal research programme over about 10 years, often focusing on a particular country *“my broader reflection is that, in general, research takes a long time. Most people would talk in decadal timeframes for work. Working on different aspects for many years. In it has been a decade of plugging away building relationships, particularly with government. It does take time. It takes an investment of time and resources. To bring people together regularly, to have enough budget. Often having ECR and PhDs really driving those relationships and building capacity”* (UPGro NR6).

Another theme was talking about how the individual projects in a programme are only possible because they build on existing work and networks in the countries in which they are operating. This is in terms of just being able to realistically get a project up and running, relating to the kind of challenges described above in terms of relationships and administrative issues. However, it also relates to the issue of realistically being able to have some kind of non-academic impact. This is about how previous projects of work have enabled the long term building up of trust. One explained *“if you want to fit the*

research project into a longer term government process then you just need a much longer vision than this kind of three year research project” (ESAP NR1).

The researchers were clear that they were not saying that the research programme terms set by funders do not influence their individual programmes or that they do not shape their proposals to make sure they fit with the programme’s goals. They described having a rough outline of a project that they want to work on and then they adapt it to the programme’s terms. They are rarely coming to it with a clean slate. One researcher on ESPA explained that they had a longstanding interest in bringing together two topics and described having ideas “bubbling around” and existing relationships in place, and then the ESPA window provided a good opportunity to pursue them (ESPA NR11). They described a reasonable fit although did not particularly like the term ‘ecosystem services’. The proposal they submitted built on a catalyst grant from another RC. They said “*we certainly wrote a new proposal for ESPA, I mean the consortium we put together was wholly new and designed to respond to the ESPA programme, it’s just that some of the ideas ... and some of the partners and probably two of the case studies had already been things that we were wanting to work on*” (ESPA NR11).

5.1.3.4 Motivations

The Northern researchers described a range of underlying motivations for why they wanted to work on the ESPA and UPGro programmes. First, the interviewees were clear that they needed to get high quality publications from the programme. Several mentioned the Research Excellence Framework and the primacy of publishing in leading journals to make progress in their careers. However, a strong theme from the interviews was that this was not why they were doing the kind of work they were doing. The majority talked about being personally motivated to contribute to solving development challenges through their work. As described above, almost all the researchers had long term programmes of work based in developing countries and had extensive networks of contacts and colleagues in academic roles; they also had contacts amongst decision-makers and communities in those countries. Many of the Northern researchers talked about being motivated to help build capacity and work in partnership with Southern academics, and described actions they were taking to promote Southern leadership in their projects. They also talked about wanting to help younger colleagues.

Another motivation in taking part in the programmes, although less prominent, was to interact and learn from others in the programme. This was often framed in terms of building a community of interdisciplinary researchers working in their area. This building of networks and relationships was an important motivation. In general, researchers were positive about the interdisciplinary character of the programmes and were keen to pursue interdisciplinarity in their projects.

The descriptions above are common to all the Norther researchers. Below I describe the two communities I identified based on their interpretations of the relationship between academic excellence and development impact.

5.1.4 Excellence *with* impact interpretive community

This interpretive community is defined by being comfortable with combining the pursuit of scientific excellence and development impact, at the same time, in one research project. It is a fundamental and defining characteristic because it means that they believe the programmes are, in essence, workable and non-contradictory. Within the group there was a great diversity of ways in which they interpreted and sought to combine scientific excellence and development impact. The ways that they do this depends largely on their specific disciplinary background and the types of scientific fields in which they are attempting to publish. Three ways that scientific excellence and development impact are combined are described below.

5.1.4.1 *Breaking down distinction between scientific quality and development relevance*

One approach to this issue found amongst the interviewees was to break the distinction between excellence and development impact. For example, the idea of ‘engaged excellence’ developed by IDS (described in the literature review chapter) was used by one interviewee to interpret this challenge.

“It was a combination of [excellence and impact] and very much within the ethos of the Institute of Development Studies and the STEPS Centre, which I was part of at the time, which is about the connection ... well the application of academic research and theory to real world challenges and taking an approach that these days, in IDS, I refer to as engaged excellence, where one’s combining really rigorous, robust research with co-constructing knowledge, with partners, with mobilising evidence to have impact and working in partnership. That’s always been a very important ethos to everything I’ve done, over a long period and that certainly lay behind the project” (ESPA NR11).

In this view the scientific quality of the work is dependent on it being relevant and co-produced with users. The interviewee explained that this interpretation is related to their background field of research, development studies, which is a normative academic field that it is driven by wanting to make positive change in the world. This means that:

“theory and practice go together and each drive each other, and often to influence policy we need to study policy processes, often to influence knowledge about the world and change it; we actually have to be able to understand the politics of that knowledge. To me, that’s a connection between theory and practice, so the idea of pure academic and applied work doesn’t, I think, have very much of a place: maybe development studies is quite unique in that way” (ESPA NR11).

5.1.4.2 Crafting opportunities to combine excellence with development impact

This group was focused on intentionally identifying research problems that would be both scientifically productive and of high relevance to a development issue. They search out particular, relatively discrete problems where there is potential to generate demand, both for research publications in high impact journals (including leading natural science journals), and for the research amongst user groups. One said *“I’m very driven by both. I think that some of the best groundwater science can be done to try and answer very practical development questions ... you have to be intentional about it, you have to have your eyes open and look for your opportunities” (UPGRO NR1).*

They use articles in highly prestigious journals to add ‘heft’ to their findings, which they believe helps to get the research taken up into policy. They recognise there can be a slight tension between the focus on the two when running a project and needing to decide what to focus on in terms of writing publications or impact activities. However, they like the ‘tensioning’ process as they believe it keeps the research relevant to policy problems.

5.1.4.3 Demand-led excellence

This group take the approach that if you start with being driven by demand to solve a development challenge then, in the long run, interesting scientific questions will arise that will allow you to publish in prestigious scientific journals.

“What we have learned is to be risk taking and start at the other end, start where the demand is and it can go both ways. Sometimes you can think, gosh what they need help on is really easy stuff to do. It’s a very small entry point but you’ve kind of got to have faith because what happens because you’re there for the long term, and then programmes come up. What we’ve found is that those small entry points usually turn into something very interesting that go straight back to the research

bench, which develops into something that enables that research excellence stamp” (UPGRO NR7).

Another talked about starting with looking a particular policy rollout in a particular country and that, because of the nature of the field (in this case human ecology), the results of analysing applied case studies would be acceptable in high quality journals as it is an applied field. They said *“I think in general this is because it is an applied field. Quite concrete theories. All the journals will accept applied work. You can generate papers that are more theoretical but applied fine too”* (ESPA NR7).

5.1.5 Excellence *separated* from impact interpretive community

The majority of UK researchers fell into the community above, that had found a way to reconcile producing scientific excellence and development impact at the same time. All of the interviewees in UPGro had found a way to reconcile the two. However, in the ESPA programme there were four interviewees who maintained that doing both at the same time in the same project was not possible.

The first step in this way of thinking is that interviewees categorised research into two types. On the one hand there is a scientific mode of production that is focused on scientific excellence and publications. This type of knowledge production is concerned with “fundamental” scientific questions associated with generalisable, theoretical knowledge. One said:

“We do science, which means we are trying to find more generic solutions to generic problems rather than specific solutions to specific problems. We are always keeping in the back of our heads, is this simply looking for a solution, or something that a consultant could do?” (ESPA NR13).

The second mode is a mode of research in relation to problems where there is already a solid understanding of fundamental processes; there is just a need to apply it to specific situations. This is seen to be done by *“the kind of brokers, NGOs, consultancy companies and others that take the science and catalyse it into local solutions”* (ESPA NR13). Another explained *“It’s the difference between fundamental research and just applying known interventions on the ground that you know to work”* (ESPA NR8).

The second step in this framing of excellence and impact is that interviewees expressed the opinion that if you try to combine the two at the same time it will have a negative

effect. One interviewee reported *“in fact it is very rarely possible to do those things simultaneously, and probably if you have a project that does one very well it is probably not going to do the other very well”* (ESPA NR9). It was interpreted as potentially damaging both the impact and excellence goals of the project. First, on the ability to produce high quality “fundamental” knowledge, one interviewee explained:

“you’re trying to cobble together imperfect knowledge into something that’s not necessarily fit for purpose. It’s like saying you can have a programme to try and deal with an area of medicine and a particular set of conditions or a disease where you don’t allow anyone to do any new fundamental science” (ESPA NR8).

It was also seen to be negative in terms of the types of impacts the knowledge would have. The concern is that researchers who are still answering their research questions and who possess imperfect knowledge will be pressured into starting to give advice before they can be confident of their results. One explained:

“It’s very difficult until you almost get right to the end of your research until you’re really confident in some of the results you’ve got. You can then go out and talk to those people about what those results mean. Particularly, for example, if you’re giving advice to organisations that advise farmers about farming and then being wrong. That’s a serious problem” (ESPA NR8).

Another explained this in terms of a metaphor of a body of knowledge being like an oil tanker. In the same way it would be dangerous for an oil tanker to be pushed by just one smaller boat it is dangerous for one research programme to push a body of knowledge towards policy work. Research programmes should just feed into a larger body of knowledge that will, at some point, be synthesised and have policy recommendations based on it with confidence in its veracity.

It is important to emphasise that this group saw no problem with purposefully doing “fundamental” research in areas that they know are of high interest to policy-makers or other users of research. The point is that they see the processes of generating the knowledge about fundamental processes and the work of translating that knowledge into policy advice as distinct phases, often done by different people. *“You spend money on doing fundamental science and you say let’s now translate that into a way that key user groups can use it. That’s another piece of work. The same is true in medicine. It’s always been true in medicine”* (ESPA NR8).

The explanation for the increased diversity of motivations in ESPA is probably related to the more diverse group of academics involved in the programme. As explained above in the context section, ESPA included a very wide range of disciplines.

5.1.6 Southern researchers interpretive community

I interviewed four senior researchers from the ESPA projects and nine from UPGro (representing four of the five UPGro Consortium projects). I did not find any major differences in how the Southern researchers in ESPA and UPGro viewed the programmes so they are presented together below in two parts. The first details what this group value from the programmes and their motivations to take part. The second describes how they viewed their experience of taking part and particularly details the frustrations they have in engaging with the programmes.

5.1.6.1 Motivations of Southern researchers to take part in the programmes

The first point to make in considering how Southern researchers frame these programmes is that they primarily viewed them as a chance to get funding for research. They reported that there was very limited funding domestically and so the main way they got a chance to do research was from international collaborations. A number made clear that while their governments and universities require them to do research to progress in their careers, the primary source of funding was international collaborations. One said, *“funding for research is essentially international funding, international projects. To be able to research, to be able to publish, it is essential that you access this international network of research funding”* (UPGro AR9). Another reported that *“The Tanzanian government does not give a penny for research. They bring money for salaries, for funding some of the students who cannot pay the fees”* (UPGro AR1).

Beyond this fundamental value to them, the interviewees described a number of motivations for engaging in these projects. They described how capacity building is a very important aspect to them. However, it was not general skills building that they referred to as the primary motivation. The two elements they referred to most were PhDs and equipment. They talked about a lack of PhD qualified students and that this provided real value to their departments and universities. One said *“we really need to build the capacity of young people. They need to be mentored; they need to be recruited. Fund more PhDs! We need that”* (UPGro AR1). They also really valued equipment being funded. They felt it was the lack of equipment and resources that often meant they were

not on a level footing to participate in the project, including computers and lab equipment; this hindered their ability to do analysis and take leadership in projects. A number of interviewees linked the lack of equipment to the feeling of being patronised, that they were the ones who needed their capacity built. One said:

“There is always that indication that the flow of knowledge and capacity building is from the north to the south. Even if you know 90% of the researchers have studied in Europe. And really the capacity building they need is actually equipment, or PhDs. But it is the idea that we need our capacity built more than the Northern researchers” (UPGro AR5).

Having additional equipment also means they can use it in their teaching, providing extra value to their departments. One said:

“so for [this project] that was very limited, and this is one of things we look forward to. So when a project like this comes, maybe one of my motivations among others would be to get that piece of equipment that we can add on to our profile, teaching practicals for students and also for research” (UPGro AR7).

The Southern researchers also highly valued the access to international networks of knowledge from taking part in the programmes. By entering into international collaborations they could access wider pools of knowledge than were available at the national level in their countries. This helps inform their understanding of issues by providing information about what has worked or not worked in other countries. One said *“if it is just in Tanzania then it is localised and it looks a bit narrow. It’s limited, it’s localised. But if you have an international collaboration, you get the knowledge this was done here, it didn’t work, this was done in south Africa it didn’t work”* (UPGro AR1).

The Southern researchers also valued these programmes as a chance to develop publications. Publications were seen as important by almost every interviewee in this group, but there was a lot of nuance around the way in which it was important to them depending on their institutional setting. In different settings in particular, the question of lead authorship or where you appeared on the list of authors was interpreted in varying ways.

In Tanzania, for example, the government has implemented a points-based system for promotion but it is interpreted in different ways in different academic institutions. In one institution to proceed from being a research fellow to a senior research fellow you needed five points; papers are the source of most of the points for the research fellow pathway.

On this pathway teaching gives you only one point; the other four points come from publications. They are marked internally by professors and awarded A, B or C and you need to get A or B for the paper to be worth a point. This point is then divided by the number of authors on the paper. So if there are five authors you will get 0.2 of a point. To judge if it is A, B or C they look at the quality of the paper: it has to provide new knowledge. They also get recognition for the paper being targeted towards policy-makers. It does matter where it is published as it needs to be a peer-reviewed journal; they also prefer international journals. If the professors marking the promotion application see that most of your work is in 'local' journals they may reject some of the papers, so this particular interviewee said they prefer to publish only in international peer-reviewed journals. The journals should have high impact and be related to the candidate's chosen subject area. They also have to be lead author on at least four of the articles you are putting forward, so for this interviewee being lead author is highly valuable, if they are not lead author, however, then it does not matter where they are in the list. For another institution in Tanzania they had a system that was broadly the same. However, first and last author were given more points because their system presumed that a Professor would tend to be last author and deserved more because they are supposed to have more insight on the subject. So for this interviewee they valued very specific placement on the author list.

In a leading Ugandan university there was not a strict points system in the same way. Publications were reviewed by university professors and it did not matter if you are one of many authors, but there was some emphasis on lead authorship. Academics are also rewarded for resource mobilisation and relevance of work. The interviewee explained

“to become a lecturer you need a PhD, that is enough, the thesis is what counts. Now to move to senior lecturer you need to have supervised three MSc students to completion, you also need to have three publications where on one of them you are the lead author. Now moving to associate prof, you need four pubs where on two of them you are the first author, and then you should have supervised at least two PhDs to completion. So it is key to actually be a lead author, it contributes a lot. So we discussed this openly and made clear that we all need to lead at least one publication on this project”.

In this university it mattered more where papers were published. They explained:

“they assign weight based on your publication, so they can give it maybe 10%, 100% or 20% or 50%, depending on how good the journal is and how good the research is. So if you are published in Nature, for example, the impact factor is a little bit higher, so of course then you know if they are assessing you for the next

level of promotion, you will get full marks under that section of assessment for publications” (UPGro AR8).

It varied slightly for every different institution from which I interviewed researchers, although what did not change was that publications were important to the Southern researchers.

Another value that was repeatedly referred to by the Southern researchers was achieving impact for the local community. Many of them talked about wanting to achieve something that made a difference to the communities they were working with, like a demonstration or providing capacity building for them. A key experience they have is that their contact with the community does not end when the research project is over. They become close to the community and may still get phone calls, etc., when the projects are over. One explained:

“Yes, because we were constantly with the people, and all of their hopes, all of their expectations, it’s not so easy to handle their expectations, especially in communities that are ... well, they have a lot of needs. So, they hope you could do something” (ESPA SR4).

Another said:

“you should also have an intervention for the local people because they feel they give a lot but they don’t see benefit. Even if you just have some training programmes this is better than nothing, for example, how to create awareness of how to site a well, that kind of information is very important for them. That should be formal, there should be training” (UPGro AR2).

A third said:

“So I don’t want to do this type of research where you just go and study people and leave and publish in a journal. It’s nice for development of the knowledge but for us that live here it is difficult” (UPGro AR6).

5.1.6.2 Experiences of taking part in the programmes

The first thing to say about the interviewees’ reports of their experiences of and attitudes towards the ESPA and UPGro programmes was that there was a lot of positive accounts of the ways in which the programmes had benefited them. As explained above, in general, these programmes are an opportunity for them to progress their research careers and they gain from taking part in international knowledge networks.

A number reported positive experiences of meaningful partnerships and co-operative working. One said:

“you start at the beginning together. You make your input, they make their input. They co-ordinate it but you also make your input and you can continue sharing all these things, and then you wait. And all through the process you are being informed because the UK actually are the leading side. But also you keep in touch, so to me I have not seen any difficulties. It becomes difficult if you have not been involved at the beginning, you don’t know how it was initiated. For all these projects we started from scratch so things are quite smooth...we exchange emails until we come to a compromise” (UPGro AR3).

Another described the multiple benefits they received from taking part in the project:

“it has been a very positive experience for me to be part of this big project, multinational, multi country, managing different expertise locally, handling the finances, the research teams, spending time in the field over a period of 6-7 months. It has been a very exciting experience, very positive experience. especially that the project came at a time when I am joining research as a junior academic, it has even lifted my status and my profile” (UPGro AR4).

However, despite these positive experiences, the majority of interviewees I spoke with expressed frustration at their role in the projects and their relationship with their Northern research partners. A number expressed frustration that they felt they were not on a level playing field with the Northern partners. They described lacking the equipment and the time to participate equally in the analysis and publication writing in the way they would like. They felt overwhelmed by a combination of high teaching load and being responsible for the time-intensive community and stakeholder engagement elements of the projects. They did not feel they could switch off from the stakeholder communities they were working with and there were few professional boundaries; they often received phone calls from the communities even after the end of the project. In addition, some talked about extensive personal responsibilities they have towards families and communities, meaning they could often be distracted with responsibilities or crises. This prevented them from focusing on publishing.

One explained:

“These projects are being implemented in the partner university... so anything to do with the implementation of the activities and the work is on our shoulders. And because the partners are from Europe, they are like – how do I say it – just overseeing activity. ‘Okay ... why is this not done? Why is this not done? Why is this not done? Do this, do this, do this’, but they don’t know the dynamics here,

so that has been a challenge. So for us... we have been doing a lot of work, and that's the reason why we've not been able to publish, and the partners, they get information from us and analyse... So for publications really we are doing so badly. We have the data but we don't have the time" (UPGro AR8).

This is compounded by the fact that they could often not access the research assistance they needed on their projects because of a lack of a qualified pool of researchers, meaning that more senior staff had to do more of the work that would be carried out in the North by a research assistant or post-doc.

A number reported feeling patronised and dictated to by the Northern researchers. A particular issue was the feeling that they were implementing a research agenda that had been decided in the North. Several reported believing that the conceptual approaches of the research they were being asked to use were not appropriate to the settings they were working in and they felt they had been forced to use them. Several reported that they felt that leadership for the projects was in the North.

One said:

"I have loads of experience in this type of work but it is being dictated to me that I should follow these sequences. I know how the basin authorities work. They know to come to me for knowledge. But then someone comes with this idea and wants to tell you what to do. But because of this idea that the knowledge is in the north I have to follow their ideas. You need to listen to me rather than me listening to you more often. But it is the other way around... I will give an example of one case. It started off ok, but then all of a sudden we were being directed. And we had this discussion about a publication. This person went to Ghana and spent a couple of weeks there and then boom she had a publication. And there is nobody from this country involved. For me that is wrong. It basically turns the people in Africa into research assistants or field guy. So I am very critical of that" (UPGro AR6).

When asked if Northern researchers were leading the work another said:

"I would say about 90% yes ... I was thinking that they would at least ask for more input, the input they requested from us was few. So there could be a lot of problems along the line but we have managed up to this time. The African researchers, we are mainly used to locate where project will take place. We lead with the land acquisition, we help them to identify the appropriate basin, then when basin located it is down to local team to acquire land. We have to see to the installation. We also have to be in the field all the time to download the data so we can be sure that all the data they need from the equipment they have installed, we have to make sure is sent to them appropriately at the appropriate time. Anytime they need

to come for a meeting we have to organise the workshop and the right people to come and sit in and contribute” (UPGro AR5).

The last area where there was some frustration was that they would have liked to have been involved more at the programme level. To many of the interviewees, the programme level of the programmes was very remote from their reality. A significant number of them were very unclear about the titles of the bodies that had been set up at the centre of the programmes. When I asked them about what they thought about the programme level activities, many instead thought I was talking about the other country sites within their project. Several did not feel part of the wider project in which they were involved, let alone connected to the larger programme. Several were limited in their interaction to passively receiving materials through newsletters or webinars, although many did appreciate receiving these. Several reported that they would have liked to have had more opportunities to network with and organise with fellow Southern researchers in the Global South. ESPA had an emphasis on this towards the end of the programme with the establishment of regional hubs in East Africa and India, but the Southern researchers I spoke to on ESPA had not engaged significantly with them. This is inconclusive as I only spoke with a small number.

An UPGro researcher said:

“I think it would have been nice to get involved since we are talking of north south partners as well. There should have been a group that maybe had a mix of the PIs and the co-PIs. Maybe not every meeting but I think it would have been a good idea because otherwise it still keeps it up there in the North” (UPGRO AR7).

Another UPGro Co-I was slightly stronger in their criticism:

“I thought the PCG should have been more than PIs, I think it was a missed opportunity. I was never invited to attend, I haven’t seen their plan. It was poorly organised. I only met other African researchers at the later workshop” (UPGRO AR9).

5.1.7 Critical programme actor interpretive community

I interviewed seven programme actors in ESPA and five in UPGro. The first interpretive community I identified I have labelled as critical, reflecting the generally critical framing they have of the programmes. This was the larger group amongst the programme actors. I noted with the critical group that they were slightly removed from the programmes and

not involved at the PEB level. They tended to be senior international development practitioners who had a lot of experience as consultants working for development organisations. They had mainly been brought in to assist with the work to turn research results into impact, drawing on their experience and links to African NGOs and African policy-makers.

The key starting point in understanding their perspective is that they took the programme titles as a guide to their judgement of the programme's success or failure. They were focused on the *for* poverty alleviation in ESPA and the *for* the poor elements of the UPGro title. They started with the question of how do you spend research money, investigating ecosystem services and groundwater services, in a way that will help poor people in developing countries? Their interpretation of the meaning of 'greater than the sum of its parts' was that the projects within the programme should collectively solve a problem closely connected to poverty alleviation in a way that they would not be able to do as single projects. They saw both programmes as a missed opportunity to produce research focused on poverty alleviation. The rest of this section will detail the entailments of this viewpoint.

5.1.7.2 Values and meanings of the critical programme actor community

Starting from the point of asking how the programmes can be run and designed to promote poverty alleviation, this group questioned whether the programmes were too focused on scientific excellence. They saw a trade-off between the goals of excellence and development impact and believed that excellence was given too much focus in the programmes. They valued the other goals of the programme more highly and would be happy for the standards and procedures associated with scientific excellence to be applied more flexibly in order for the programmes to have greater impact.

In terms of the standards of excellence, they used notions of 'robust' and 'good enough' knowledge. They believed that if knowledge production were focused on producing robust knowledge then it could be done much more quickly, allowing for the programme to focus on the activities of translation of that knowledge into impact. One interviewee reported:

"You can go on asking the why question forever. Maybe this is a personal bias, but I would want to get through that why question relatively quickly, so as to be able to move on within the duration of the funding rather than taking so long to

answer why that you never get to the question or the issue that really would have impact... but I think it's an inherent difficulty with an academic research programme or academically led programme, which has a requirement for publication in high impact peer review journals. Perhaps that's more of a requirement from NERC. My bias would be to be putting more importance on the ultimate impact and therefore asking the question, what's good enough science to enable me to achieve significant impact? There might be some sort of graph you could draw conceptually between those two variables" (UPGro PS3)

Linked to this point is the belief that, to have impact, you do not necessarily need further ground-breaking knowledge development. They believed that in ESPA and UPGro the contours of the problem were well enough understood to enable the knowledge to be put to good use in addressing the main issues. They are happy to consider other modes of knowledge production beyond major investments in scientific teams doing original research. They believed activities such as knowledge synthesis and translation and backfilling of specific research questions would produce a programme likely to have a greater effect on poverty alleviation.

One explained in relation to the issue of groundwater in SSA:

"the issue is about investment. The water is there. We may not know exactly where it is and exactly what its quality is, but we know enough. If the investments were made and the resource was developed in terms of good practice, meaning that we search for it and site wells according to best practice, use reputable drilling contractors and supervise their operations properly, we could extend access without, I think, a huge additional body of research understanding. Perhaps we need some political economy, management, financing or both capital investment and post-construction financing. What I'm saying in very simple terms is we know how to develop groundwater to extend access to the poor. If we made the investments and had the appropriate management arrangements, institutional legal arrangements, then those services could be sustained and they could be equitable. They could address the needs of the poor and the wealthy, not disproportionately flow to the wealthy" (UPGro PS3).

Another also highlighted that getting knowledge into practice may not need more new research, *"I am not convinced that 5 four year research programmes are value for money. If they are interested in getting knowledge into practice, I don't think that knowledge needs to be derived uniquely"* (UPGro PS2).

They also believed the focus on excellence in the programme detracted from interdisciplinarity because, if the excellence is interpreted as the production of highly ranked publications, then this can lead to researchers retreating to their disciplinary siloes

because within this space they know how to produce science that will pass peer review and gain citations. One interviewee said:

“people know what excellence means in either the social sciences or the natural sciences. When you try to talk about what it might look like in the interdisciplinary mix, it’s not at all clear because you’ve got to sit down together and generate the conceptual frameworks and the shape of what that research would look like. You don’t know until you’ve done it” (UPGro PS4).

Related to this attitude towards scientific excellence, they also had a highly ambivalent attitude to the Northern researchers in the programme. They believed they could have a tendency to be quite myopic and focused on their particular research issues and in progressing their career. They were concerned that researchers are still quite driven by academic impact factors and that their way of considering scientific excellence could crowd out other ways of thinking about knowledge production. They believed that with this type of programme drawing strongly on the UK research base that:

“unless there is a wider, stronger scoping of what DFID want to fund then I think the skills base and interests in universities will take it into the narrower where the interests of the universities lie... rather than forging new consortia around new dimensions where perhaps knowledge is weakest. Somebody who is a senior researcher is interested in what will get them to professor level, and the universities like it because it gets them large amounts of money on pretty favourable terms into the system” (UPGro PS5).

Another said:

“One of the problems is that academics obsess about research questions in light of their own academic histories, their own promotion prospects, and personal interests, and when you start asking them to consider demand side opportunities they have to be willing to start asking different questions and provide evidence to answer slightly different questions. Because what they might be interested in from an academic perspective, but if actually no one in the real world gives a shit then maybe they should be asking a slightly different question. Not always, sometimes they might be creating demand for some things because it’s very new. But often you can see if they phrased things in a different way or asked something additional rather than different, they will provide something with more utility” (ESPA PS3).

They also had the attitude that researchers are not very good at thinking through how their research will realistically have an impact. The phrase that came up repeatedly was that researchers talking about impact tends to be “motherhood and apple pie” referring to the way they talk in generalities about research impact that generally sounds good and everyone would be in favour of but that is not fully thought through, researched and

realistic. One said *“you will hear it’s a buffer to water shortages and one of the first weapons against tackling climate change. It’s very motherhood and apple pie. It’s so general that it doesn’t actually really mean anything”* (ESPA PS5).

They also do not hold the peer review mechanism in as high esteem as other actors, such as the RCs. They see this as another mechanism through which a focus on excellence can detract from development impact. They believe that having excellence as the primary criteria in peer review means you get the most scientifically strong projects but that this has a number of consequences. First, it means that the projects can be highly disparate and not cohere together in creating the impact that is greater than the sum of its parts. Second, it is likely to mean that the locus of the programme will be in the Global North with its higher propensity of leading academic establishments. This will then set up a division of labour where Northern researchers lead and Southern researchers are enlisted to strengthen the dimensions that the Northern researchers may be weaker at, such as impact focused work in developing countries.

They talked about Value for Money in a positive light, but they had a specific vision of what Value for Money should mean. They talked specifically about an ‘outcomes based approach’ to Value for Money. They said *“if you take an outcomes based approach from the outset ... then you are more accountable for outcomes. Then you get a better display of Value for Money”* (UPGro PS2). They think the programmes are too focused on producing high quantities of outputs, whether publications or instances of interactions with policy-makers. They believe that if these outputs are not strategically linked to creating specific outcomes then you do not get true Value for Money because you are not able to trace whether the outputs actually added up to any significant change at the outcome or impact level. They criticised UPGro for:

“not scaling to basin or national or wider, that scaling up that takes you from the relevance of particular findings to wider audiences, that’s what I think is lacking with UPGro ... you can have stories of change, you can have it at community level but how do you go beyond it... you can get the A+ programme but has it actually added up to anything... it should be turned on its head and you ask what are going to be our measurable achievements in delivering outcomes relevant to poverty and groundwater at scale” (UPGro PS2).

A key element of understanding how this group interprets the programmes is that they take a strong moral position on the programmes. They do not think that it is justifiable to

have a programme that is framed as assisting poverty reduction to be focused on long, diffuse Pathways to Impact from excellent science. One said:

“If we put all the emphasis on the rigour of the science and too little on the ultimate impact, and I would only say this in a research programme which has as its explicit aim some aspects of reduction of poverty and human suffering. To my mind, the only justification for studying, for researching poverty and what keeps people in poverty, is an objective which is to somehow reduce that level of suffering. It’s an ethical dimension. I just don’t think it’s ethically defensible to study poverty unless there is intent to reduce that poverty, putting it simply” (UPGro PS3).

This group put forward an alternative vision of how these programmes should be designed to maximise their potential to create impact on poverty that is greater than the sum of the parts of the programme.

They think it should be:

- Demand driven

They believe it should start with close consultation with decision-makers in developing countries to construct a programme wide articulation of the issues on which to focus.

- Designed by people with research for development expertise

They believe that part of the problem is lack of research for development expertise amongst those designing the programmes. They identify research for development as a particular skillset. One said *“I think research for development is a distinctive area of expertise, and there are a number of groups out about how do you do research for development and there are methodologies and guidelines and tools and techniques that aren’t discipline specific”* (UPGro PS4).

- Based around more strategic and focused Logframe impacts and outcomes with a detailed theory of the processes between outputs and outcomes.
- Using more guided and selective peer review processes that pick projects that can fill knowledge gaps strategically
- Using more social science

This group valued social science highly. One said *“what I think is lacking is the social economic aspect, that is the weaker part of the two because that really needed to*

accompany the physical science, and it is only with that socio-economic research that you really start getting into the development impact and the developmental relevance” (UPGro PS2).

- Providing more funding to African researchers
- Using more active management processes

This relates to the belief that researchers can have a propensity to go off on tangents related to their specific interests. They believe more active guidance and steering from the centre is required as the programme develops. One of the programme actors on ESPA explained:

“to help them work together, so if one of them has a promising line of research, that I think the other one could benefit from, then they might try to bring them together. But also if they felt that the researchers were heading off in a, they’d found something relatively interesting, like eco-system services, but they’d ended up finding out something much more interesting about ocean currents or something, you know, as part of their research, from NERC’s point of view, that wouldn’t really matter, because the ocean current thing if it’s going to give you a couple of science nature papers, fine. But if you really wanted those ocean currents to be helping you with poverty alleviation, you might say, ‘Okay, no sorry guys, we really want you only to do this if it happens to affect delta flooding or something” (ESPA PS4).

5.1.8 Neutral programme actor interpretive community

This group of programme intermediaries see the programmes as being much more successful, as being a good ‘marriage’ of different elements. The changes they would make are minor and technical in nature. Generally, they thought the programmes were directed enough and they were happy with the outputs that were emerging. For this group, research “for the poor” in the context of a RC programme meant funding excellent research in an area broadly related to poverty. Greater than the sum of its parts meant optimising learning opportunities, building communities of researchers, and taking opportunities to collectively maximise impact when they arise. They valued open, competitive peer review processes that led to the highest quality science. They were happy to see what comes back from the research community and work with the researchers to integrate it.

They adopted a kind of realist view that if it is the RCs leading the management then it is going to be focused on academic excellence and competitive peer review. Within this

context you can then craft a successful programme of this kind by delineating an area of research that is broadly related to poverty reduction, bringing in a knowledge broker/director that can add value to the projects by helping to link them with appropriate decision-makers and enable cross-project learning. The amendments they would make related to more technical or administrative elements. One said:

“I think UPGro has been very good. The only notable thing, the thing we have been asked to report back for feedback has been on the procurement side. and that’s kind of a minor technical procurement thing... the only other thing was that we started our knowledge broker role in 2013 and the catalysts were already running, so we were playing catch up to begin with ... in theory the way the programme is designed is that we should have a year overlap at the end of the programme so that once all the researchers are finished and done, we still have the mandate and resources to continue those knowledge brokering activities. One of the things I need to raise at the next PEB is that if there are no-cost extensions, what does that mean for us because we might need an extension but it won’t be no cost” (UPGro PS5).

This realist view was expressed in another way by another interviewee, reflecting their view that it is difficult to get these programmes right in a complex world they said *“in a grey world where it’s really difficult to know what are the best approaches to these things, I think UPGro is an example of a lot of good practice” (UPGro PS1).*

5.1.9 Conclusion to the chapter on interpretive communities

This chapter has described the findings from the first step in the IPA analysis, addressing the research question *What different interpretive communities can be identified at programme level?* It has identified and described seven distinct interpretive communities who have brought different framing to the programmes. The next chapter will extend the analysis of the dynamics of the programmes by considering the tensions between the different groups and the underlying differences in interpretation that drive the tensions.

Chapter 6: Tensions and their sources and insights from the analysis

6.1 Tensions and their sources and effects

This chapter will describe five tensions identified between the different interpretive communities described in the previous chapter. Following Yanow's approach, tensions are identified between communities (as opposed to between ideas/discourses). For each tension, the conceptual source is studied by analysing the differences in interpretation between the groups. How the tension has manifested and been ameliorated (or not) over the two programme timelines will also be described. Included here will be analysis of the effects of the tension. Did it cause blockages? Was it overcome/ameliorated? How?

6.1.1 Tension between NERC and DFID programme manager interpretive communities

A serious tension in the ESPA programme was between the NERC and DFID programme manager interpretive communities around their interpretations of development impact. As explained above, DFID recognised that impact takes time and is built from many projects; they valued scientific excellence and peer review processes. However, they were required to use their current institutional arrangements and were under intense and increasing pressure and scrutiny to demonstrate, or at least provide a compelling narrative of, impact during or immediately after the programmes. They needed to have a strong story and some evidence to demonstrate short-term poverty alleviation impact. They were used to designing programmes around set outputs, outcomes and impacts demonstrating this poverty relevance.

On the other hand, NERC primarily valued excellent research, provided through the mechanism of peer review. They had a much less pressured expectation of development impact being demonstrated in the short term. The way they designed strategic programmes was to use consultations with the research community and users of research to identify areas where there was potential for impact. Within this broad area they would give researchers much more freedom with fewer checks and no setting of pre-defined impact objectives. They had a more sequential view of impact, that the research would

happen first and then at some point it would be translated into policy relevant materials – but not necessarily by the researchers themselves. They were happy with the pathway to impact being cumulative with other research programmes and over a much longer period. As summarised by one of the interviewees, they set up so they could be confident “*the research was heading in a direction that would have impact*” (NERC 1).

The sections below provide a narrative of how this tension of interpretation developed in the ESPA programme and was then alleviated in the UPGRO programme. They go on to analyse the underlying sources of the tension and the effects of the unresolved tension on the ESPA programme.

It is described as a tension between NERC and DFID rather than between the RCs and DFID because the interviewees described it this way. ESRC, with its lesser stake in the programmes and longer history of working with DFID, was not described as being in tension in a significant way with DFID by interviewees.

6.1.1.1 Description of the tension over the two programmes

The issue of defining impact and how to achieve it was a central discussion point during the design of ESPA. An interviewee said:

“I just remember so many conversations about development impact. ‘We don’t build wells!!’, and I was like I know the Research Councils don’t build wells, we are not asking you to build wells. We are asking you to make the research relevant to the people who build wells. I think a lot of the time we were talking about the same thing but talking cross-purposely. That’s a sort of slight paraphrase of what was a very long conversation” (DFID 5).

The participants interviewed in this discussion were clear that the issue was not fully resolved in the design phase and tensions remained throughout the programme. One interviewee who was engaged in these discussions and observed the funders said, “*I don’t think NERC understood at the time how different DFID’s motivations and measures of success were to NERC’s and that was clear at the outset, but there was a lot of kind of denial on both sides, that if you just worked on this together it would come out in the wash*” (ESPA PS4). One of the DFID interviewees felt that it would probably have helped to have an expert in facilitating these types of conversations to assist with articulating the position on impact. They said “*I think the discussion veered on the generic and the general and probably needed some facilitator to come in with specifics*” (DFID 5).

Despite these difficulties, the ESPA programme memorandum shows how they reached a compromise that was reflected in the Logframe wording. The outcome in the Logframe, which was expected to be starting to be evidenced towards the end of the programme, was an intermediate impact stage of influencing end users of research and decision-makers. It was *“To positively influence end users and decision makers through the generation of cutting edge evidence on ecosystem services, their full value, and links to sustainable poverty reduction ”* (ESPA, 2009). This was to be measured through a survey of end users at the end of the programme.

The largest component of the weighting for the outputs at 45% impact weighting was *“A strong research and evidence base on the interface between ecosystem services, their dynamics and management, human use and pathways to sustainable poverty reduction”* (ESPA, 2009). For this output, the main indicator was publications and citations. Finally, there was an output of *“High uptake of research outputs and synthesis by early and on-going engagement and communication with policy makers, practitioners and decision makers”*. Co-production was also prevalent in the programme memorandum document itself as one of the guiding principles is *“ESPA projects will support the co-production of knowledge and the sustained and ongoing engagement with key stakeholders throughout the research process, beginning at the proposal development stage”* (ESPA, 2009).

This means that one reading of the programme memorandum suggests there was a coherent framing of what type of impact was expected, with the focus on demonstrating that projects were co-producing research with users and decision-makers and that they would be expected to show examples of policy influence at the end of the programme. However, other parts of the document used language that suggested that there was some expectation of more direct impact and it was expected that higher level policy influence would predominate. One part reads:

“It is vital that all ESPA research is able to demonstrate strongly its developmental impact. This may be through generating knowledge that benefits poor women and men directly. ESPA is more likely, however, to generate findings that are more applicable at a higher level, i.e. for policy and decision-making that can benefit the poor and/or contribute to sustainable and inclusive growth at a wider scale” (ESPA, 2009).

The programme memorandum suggested that the programme was leaning more towards DFID’s interpretation of impact. It appears that there are clear expectations on researchers

to co-produce research and demonstrate policy influence by the end of the programme period.

This leaning towards the DFID framing of impact was carried through to the drafting of the calls. The first large consortium call in 2010, budgeted for £16 million of funds, emphasised that “*all research programmes must deliver both development impact and excellent science*” (ESPA, 2010), And:

“ESPA aims to maximise uptake of its research outputs by early and on-going engagement and communication with policy makers, practitioners and decision makers... In order to maximise likelihood of uptake, the funders of ESPA expect researchers to identify the potential impacts of their research on policy, practice and stakeholders and actively plan how these can be maximised and developed. Uptake and impact is usually best achieved when research questions are directed to a clear target audience and informed through stakeholder engagement” (ESPA, 2010).

However, the call also contained language that was more in line with NERC’s framing of research impact, that was more passive and talked about how research *could* or *can* have impact, emphasising that research to impact processes are unpredictable.

Overall, the call documents have a slight leaning to DFID’s approach, reflecting the fact that the PEB was responsible for overseeing the writing of these call documents and DFID took an active interest in trying to shape these documents to reflect their interpretation of impact. However, the underlying tension in the programme was that they had chosen at the beginning that the programme would use NERC’s selection and management processes, a decision based on the Value for Money of being offered a free service that was of renowned high-quality in commissioning excellent research through their rigorous processes and access to quality peer reviewers. The NERC system is designed to produce excellence in research with its scoring devoting most of its criteria to whether the research is world leading and at the forefront of knowledge (see section 4.1.1.3 above). They also assess for fit to programme objectives, including impact objectives, and are able to draft-in users of research to sit on the panel; however, the system’s emphasis remains on choosing the best science.

In addition, the projects were signed up to the RCs’ general terms and conditions (with a small number of ESPA specific clauses). These institutional arrangements are focused on management and reporting issues rather than on deliverables. This is the case even where

revisions to applications have been made during the assessment process as a condition of the grant being awarded, meaning that the ESPA projects could not be held accountable for delivery of specific outputs. Both the peer review system and the management system are designed to operate together to produce a situation where the best science is chosen; projects are then given a high amount of freedom in order to encourage innovative, and avoid prejudging of, scientific results or Pathways to Impact.

The combination of these open systems premised on scientific excellence and autonomy of researchers, and widely framed calls around ecosystem services and poverty going out to a large and diverse community of researchers, led to a great variety of responses. Although the DFID-backed co-production model of pro-active impact-oriented research production was included in the ESPA programme memo and research calls, the responses included a wide variety of approaches, including more traditional sequential models of impact delivery where the research takes place before impact is considered. The ESPA Independent End of Project Review completed an analysis of the approaches to development impact taken by projects with a sample of 18 of the larger ESPA projects. They found that 11 projects took the approach of working with stakeholders in a co-production type model from the outset, but that 7 followed a more traditional approach of focusing on the science first, although with some conception of where it might have impact. This was also reflected in my finding in sections 5.1.4 and 5.4.5 that, in ESPA, the researcher interpretive communities were split between those who were comfortable doing research and impact work at the same time and those that maintained a stronger division between the two.

From DFID's perspective, interviewees emphasised that to fund this type of 'excellence' oriented research with a longer impact pathway was always difficult to justify internally. Although the individuals in the CEW team at DFID expressed understanding that this type of approach could produce large gains in the long run, their systems required more certainty that the research would have an impact in the shorter term. When they looked at the projects they were not assured that they were achieving Value for Money. Interviewees reported that this made DFID nervous throughout the whole programme that impact was going to be side-lined compared to academic excellence. This was compounded when new staff came in and they then asked for more impact. This meant

that DFID would put considerable pressure on the RCs and programme actors to provide evidence of impact to justify the programme.

This tension was a pervasive and unresolved tension in the whole lifetime of the ESPA programme. The Independent End of Project Review noted that:

“Differences between ... RCUK and DFID in how ‘impact’ was to be understood and interpreted was perhaps ESPA’s most significant challenge. This is a complex issue that ESPA has struggled with at a programme as well as a project level, and to some extent it remains unresolved” (DFID, 2018).

UPGro was not affected by this tension to the same extent. In UPGro, the parties managed to construct a shared narrative around impact that was carried through to the calls and to the types of projects that were successful through those calls. The UPGro Business Case set out how researchers would be expected to engage with research impact in the programme. Researchers would be required *“to understand both the demand for their research outputs and the intended beneficiaries of their research and how they can increase the opportunities for them to benefit through the research [and] ... to include a Pathways to Impact plan and a theory of change”* (UPGro, 2012), which would be evaluated during the peer review process. Researchers would also be asked to describe how they would involve local stakeholders and other users in the project.

DFID placed great emphasis on making sure that the Logframe of the programme had a strong focus on monitoring projects to ensure they were engaging strongly with users of research throughout their projects: participation of users was given a 25% weighting in the Logframe. The Logframe monitored:

- Number of stories where users have participated and influenced the methodology and results of the UPGro research;
- Cumulative number of face-to-face events and activities that give feedback on the research progress;
- media coverage; and
- number of stories of changes to groundwater use that have affected the poor in SSA, which were influenced by UPGro or where UPGro research has influenced policy, the institutional framework, practice, groundwater monitoring and research (UPGro, 2012)

NERC worked with DFID and the knowledge broker the Skat Foundation to develop the Logframe; the Skat Foundation was tasked with collating information from the project leads on an annual basis. As the programme progressed, the projects were able to report multiple instances of working with groundwater users and policy communities in SSA, and DFID felt they could feel confident that it was a highly impact-oriented programme.

A number of other factors helped DFID to feel confident that their needs were being met in the programme. First, UPGro had a clear narrative around impact; this was based on the intuitive and clear proposition that there was currently limited evidence around groundwater resources in SSA and how the resource was being managed, and that additional evidence would be useful for policy-makers and groundwater users. One DFID interviewee described *“UPGRO’s fairly tangible stuff, isn’t it? I wouldn’t really say it was blue skies ... I think you can pretty categorically say that if you produce some groundwater data, that’s going to be useful to somebody somewhere along the line”* (DFID 4). UPGro was also much smaller than ESPA, and interviewees reported that it was much more straightforward to understand and monitor and feel confident that it was following a pathway with which DFID were happy. The funders reported knowing the main researchers involved in the large consortia grants and felt confident that the researchers were broadly impact-oriented and understood research funded by DFID. This is backed up by my finding that all researchers in UPGro that I interviewed were comfortable with combining excellence-oriented and impact-oriented work at the same time in a project.

The second factor making DFID more comfortable during UPGro was that they had the sense that the research community in the UK and the RCs had both been moving towards a more impact-oriented perspective. One interviewee said *“it’s changed now. So the RCs do look for impact of their science now. And so our interest has become more closely aligned, I guess, as the years have gone by”* (DFID 4). At this point, the UPGro large consortia grant process Pathways to Impact had bedded down in the RC grant-making processes. In the background the first REF assessment was taking place and researchers were being asked to submit impact case studies. DFID interviewees perceived that researchers were increasingly comfortable with the ways of working that DFID were used to.

6.1.1.2 Summary of the source of the tension

The tension originated from a conceptual difference in how the two funders interpreted research to impact processes. DFID needed to have a strong story and some evidence to demonstrate short-term poverty alleviation impact. They were used to designing programmes around set outputs, outcomes and impacts demonstrating this poverty relevance. On the other hand, NERC primarily valued excellent research, provided through the mechanism of peer review. They had a much less pressured expectation of development impact being demonstrated in the short term.

In ESPA, the tension was not resolved during the programme design phase. Neither funder provided a clear framing for the programme with appropriate selection and management procedures that allowed them to move past this tension and feel comfortable with the direction of the programme. A great deal of the tension can be understood as a tension between the funders' institutional arrangements. DFID were required to use the Logframe model with an emphasis on measurable results and predictable outcomes and impacts. However, NERC's selection and management processes were geared towards a model of producing scientific excellence and not requiring clear deliverables. UPGro showed that it was possible, with the funders working together and supported by a Knowledge Broker, to create a Logframe and monitoring process that balanced the needs of the funders. In ESPA, however, the pressure to move forward quickly and the inability for the funders to conceptualise a working compromise meant that the tensions were set into the institutional arrangements of the programme from the beginning.

Another important factor raised by the interviewees in both DFID and the RCs is that, during the period of these programmes, the RCs became more focused on encouraging and demonstrating impact in their programmes. As explained in the context section above, from 2009 onwards they introduced Pathways to Impact. They also used outcomes monitoring systems from 2011 onwards. All this was also against the backdrop of the REF assessment that required academics to report case studies of the impact their work was having as part of the exercise to determine how much core grant their department would receive.

There were a number of additional factors that were a part of the source of this enduring tension in ESPA. An important factor was that observers and participants in the discussions around this issue found it difficult to understand exactly what DFID's position was in terms of whether it would require very direct evidence of impact or was happier

with longer cumulative Pathways to Impact. As explained in the section 5.1.1. on the DFID programme manager interpretive community, this can be understood as a consequence of the different framings of research within DFID and the variety of views held within the department combined with the considerable and rising pressure they were under during this period to demonstrate value for money. On the one hand DFID research programme managers had a nuanced understanding of development impact from research. They believed it could be a long pathway, indirect and not that certain. They believed that one off research projects do not change policy, but that bodies of knowledge get built up that throw up an evidence base that brings about change in the longer term. This framing drew on the context of DFID during this period trying to raise the profile and quality of research within the department, as a response to the criticism from the 2004 Science and Technology committee report (described in section 4.1.2.6). On the other hand, they did not have the tools to demonstrate the value for money of this approach and were under strong pressure to demonstrate short Pathways to Impact.

A factor in maintaining the tension in ESPA that was cited by many interviewees was turnover of staff responsible for the programme. There was only one constant presence at the programme executive level, the independent chair of the PEB; otherwise there were a number of new responsible officers. Interviewees explained that because there was no clearly articulated narrative written down around the programme's pathway to impact, and partly due to the size and complexity of the programme, this would cause repeated conversations, going over similar disputes.

Another important factor in explaining the tension in ESPA was the role of individual personalities, attitudes and interpersonal relationships at the PEB level. In ESPA interviewees explained that there were issues around trust at the start of the funding partnership and a sense of defensiveness between the protagonists that did not help with negotiating a settlement that worked for both parties, whereas relations were said to be easier in UPGro. One interviewee said *"It's a lot about individuals, everybody works nicely together"* (DFID 4). One of the ESRC interviewees described the importance of individual attitudes in detail:

"yeah I suppose it is particularly when you have particular individuals... because I think generally speaking there are two approaches to the management role. One is that you start with the objective of the programme and you buy into that in a sense and you say, 'how do I then promote the programme and its objectives

within the constraints and working environment of the institution I come from'. Or you can come from the direction of 'I am representing this institution and how do I impose its priorities on this programme' and depending on which... you can get tension when people are coming at that differently and the trust comes around when people say ok let's buy into this programme recognising that we are all under different constraints and have different things to answer to and figure out how we collaboratively work through that. It's sort of the attitude of collaboration is really important" (ESRC 3).

Another factor that led to greater tension in ESPA than UPGro was the amount of money involved in ESPA. There was more at stake, not only for DFID with its large investment, but also for NERC who were investing a significant amount. ESPA was a flagship investment for the CEW team in RED at DFID, meaning it was under extra departmental scrutiny. This context gave the discussions an extra dimension and importance to the partners.

Linked to the financial value of ESPA was the size and complexity of the programme in terms of subject areas covered and the number of different rounds, projects and individuals involved. As the EPR reports, *"ESPA covered multiple research questions, several research themes, a number of major regions of the world, a requirement both for scientific excellence and for development impact capable of responding to local political economy, geography and context"* (DFID, 2018). As explained above, UPGro was a much simpler programme in terms of size and subject areas covered, and this made it easier for the programme managers to develop a shared vision of the programme's impact pathway and to feel re-assured that the projects were broadly delivering in line with expectations.

6.1.1.3 Summary of its effects on the programmes

The effect of the enduring tension between the funders in ESPA around the meaning of impact reportedly had major negative effects on the programme. The inability to resolve tensions and present a coherent and consistent articulation of how ESPA was intended to lead to development impact meant that there were enduring mixed messages and switches in the programme. These negatively affected the ability of researchers, funders and programme actors to work together to achieve the programme's aims. There are numerous examples in the programme's history of unresolved tensions leading to incoherent actions and communications.

A key example of this is the first large consortia research call in 2011. As explained above, this call combined language that suggested short Pathways to Impact with more

demonstrable impacts on poverty related issues, with a more passive impact language, emphasising how any impacts would be conditional on how the research developed and may not materialise. The EPR reported that

“Many researchers struggled to understand the kind of language that DFID had inserted in the calls and to satisfactorily describe how they would achieve impact through their project. The need to balance both a demonstration of scientific excellence and potential for development impact was also challenging, made more difficult by the confusing and sometimes conflicting messages sent out by the funders. At a final 2012 workshop for the ‘preferred bidders’, the lead PIs were instructed by the funders to rebalance some proposals with more science and less development impact, apparently contradicting guidance up to that point” (DFID, 2018: 15).

The result was that the proposals they received fully satisfied neither funder, only three proposals were funded, and only £8.7 million out of the planned budget of £16 million was used. It was also a major reputational problem for the ESPA programme for the many applicants who had gone to significant effort to produce full proposals only to be told they were not suitable by the funders.

The issue of a lack of a coherent programme vision amongst the funders arose periodically after this first major problem around the 2011 call. There was a persistent idea amongst the programme funders that the programme was not delivering to their expectations; this led to repeated attempts to steer the programme towards more impactful research or research focused on moving the frontiers of knowledge forward. The EPR reported that the development of ESPA science themes over the various calls was characterised by a kind of ‘random walk’ that was influenced by the effects of what were seen as successful projects from earlier rounds, or research themes that were seen as of strategic interest, topical and/or with potential for high impact. A good example was the inclusion of urban and peri-urban contexts as a key research theme in the 2013 calls that had not featured in the earlier calls, although it was one of the six situational analyses in 2008. A further example of the lack of coherence in the programme was the decision to launch a ‘blue skies’ research call in 2014. A call of this type, asking for innovative and ground breaking research on frameworks for linking ecosystems and poverty alleviation, would seem to have made more sense at the beginning of the programme rather than towards the end when the focus would be expected to be on synthesis on considering how the integrated results of the programme could be communicated for impact.

6.1.2 Tension between senior researchers and programme actors

The core of the tension is that senior researchers are focused on their individual long-term programmes of work, in addition to other important motivations, whereas programme actors are focused on the research programme they are employed by. Programme actors are tasked with creating a programme that is greater than the sum of its parts through leading integrative activities. The tension described in this section relates to how researchers react to efforts made by the programme actors to create this added value. This tension is compounded by researchers' experience of being under a multitude of pressures and valuing their time very precious. The tension arises where researchers feel that programme level activities are not producing value. The challenge for programme actors is to find activities that are both in demand from researchers and that progress programme level 'greater than the sum of its parts' results.

The interviews with ESPA senior researchers suggested that this tension was strongly present for large periods of the ESPA programme, but that it was largely resolved in the closing stages of the programme; in UPGro it was largely alleviated.

6.1.2.1 Description of the tension over the two programmes

As described in the context section above, the ESPA programme opted for a Directorate model for the programme level integrative functions. The programme's terms of reference made the Director the *de facto* head of the programme, working under the authority of the PEB. The Directorate started in 2010 and was in place until the end of the programme in early 2019. Its term can be split into two halves; one from 2010 to 2016 when the Director chose to leave the programme. They were replaced with a new Director and largely a new team around the same time; this second Directorate was in place until the end of the programme in 2019. This section will start by describing the tensions around the first Directorate, and then describe how the second Directorate alleviated the tension.

The first Directorate used a number of mechanisms to undertake its responsibilities. They hired in external consultants to work on producing key framing documents such as a theory of change for the programme, and strategies such as a research-into-uses strategy. They conducted bi-annual catch up calls with projects where they would get quite involved in the detail of management issues with different projects. They ran a series of workshops on different issues, and hosted an annual conference of ESPA participants. A number of interviewees found the Directorate helpful in many ways. Many of the

workshops were greatly appreciated for bringing researchers together to share and develop new understandings around the interlinkages between ecosystem services and poverty alleviation. Many also found the bi-annual catch-up calls helpful, garnering useful advice and using them to help manage their own projects and keep themselves on track.

However, there was a strong sense amongst interviewees that the Directorate was perceived to be run in a top-down fashion, and it was felt that they did not draw on the researchers' experience to co-produce ESPA outputs and frameworks. There was also a perception that the Directorate fell into a micro-management mode at times. One researcher said *"you would expect the programme to be more facilitating. Kind of creating, facilitating dynamic, facilitating interaction and bringing people together"* (ESPA NR13). Another said they *"didn't take on board at the beginning that some of the researchers involved early on were already quite experienced and already had experience in that area of work, which was why we were successful in getting proposals"* (ESPA PS5).

This sense of the Directorate being top-down led to a perception amongst researchers that the events, outputs and frameworks of the ESPA Directorate were of highly varying levels of relevance to their work. As explained above in section 5.1.3 on Northern researchers' motivations, there is a complex range of motivations driving researchers. They are highly driven to progress their personal research programmes and produce the outputs required for career progression. However, they are also driven by a sense of mission in developing other researchers' capacity and solving societal problems. This means it is not as simple as to say that researchers are only interested in Directorate activities if it advances the project on which they are working. Many ESPA researchers expressed a strong motivation and interest in what ESPA was trying to do in creating a community of practice around the subject area and furthering a new interdisciplinary research agenda.

However, the interview evidence made clear that researchers do need to feel that the activities they are taking part in are worthwhile in some sense, even if not in purely individualistic terms, and they are likely to want a strong component of the activities to have a degree of relevance to progressing their own research programmes. As explained section 5.1.3, researchers feel under a high-level of time and resource pressure to complete the complex projects together with all their other responsibilities. This context

means that they have highly limited patience for activities that are not well targeted or responsive to the research community's needs or interests.

A related element of the tension was that if the activities are not guided by the researchers' interests and needs it can lead to a sense of researchers feeling undervalued in the programme. By their position as senior researchers with deep expertise in their subject areas, there was a strong sense from the Northern researcher interviews that they should be having a significant say in the types of activities and nature of subjects being proposed as they are the ones who have the best understanding of the academic topics. A further factor in the tension in the ESPA programme was that there were reportedly some internal issues within the Directorate around high staff turnover and working relationships which meant that the effectiveness of the Directorate was at times limited.

In 2016 a new Directorate team came into post; Northern researchers perceived that this team adopted a different approach to running the Directorate. Key members of staff in this new Directorate were respected members of the ESPA research community who had previously been involved in research projects or who had led scientific integration activities in the earlier days of the programme and were now returning. Interviewees reported that this gave them a high level of trust with the community and enabled them to have a strong understanding of the community's needs and interests. One Northern researcher explained *"I think that was part of their value, that they knew so many of the people already and had that goodwill and relationship already with so many of the ESPA researchers. There was immediately a level of trust and goodwill is what I've picked up"* (NR12).

The PEB also consciously chose new team members that would take a participative approach, who understood researchers' motivations, and who would be highly respected and have a degree of authority in the research community. An observer to the discussions on the new team said they were looking for "participative approaches" and someone:

"who knew that their role was to create the space for encounters, rather than to provide singular intellectual leadership... somebody who would serve the process... a great listener and someone who is trying to pull together the best of the different sources of knowledge, and that's a humble person" (ESPA PS2).

The approach taken in UPGro was very different from ESPA but also found a way to alleviate the potential tension between programme level actors and researchers. How

UPGro was set up was influenced by the experience in ESPA. It was a conscious decision to make the programme more ‘bottom-up’ drawing on NERC’s experience of using groups of research organised into programme co-ordination groups. It was designed so that programme level activities should be strongly informed and shaped by the researchers in the programmes.

As explained in section 4.2 an external organisation, the Skat Foundation, a legally independent non-profit organisation based in Switzerland, was contracted to deliver “knowledge brokering” activities. The knowledge broker’s programme of work was informed by working closely with the PCG, which was made up of senior researchers from the five consortium projects.

The PEB minutes for UPGro show that they were very conscious of trying not to burden the PIs unnecessarily. The minutes repeatedly show instances of discussing how to make the reporting requirements as light touch as possible while still maintaining accountability. They were also aware of involving the PIs in the governance of the programme as much as possible. For example, they invited a PI to the PEB meetings and rotated different PIs to join, making sure the researcher perspective was feeding in. They also worked with the knowledge broker and senior researchers on the Logframe to ensure they had an “*ambitious Logframe [that] is also realistic*” and to “*involve the PIs to ensure that we have project buy in to the Logframe*” (UPGro PEB Minutes).

The researchers’ interviewees in UPGro were very complementary about how the integrative functions of the programme were set up. The tension that existed in ESPA around researchers feeling that the integrative functions were not delivering value for them was not present in UPGro.

As well as the way that the programme integrative functions were set up, another important factor referred to repeatedly by interviewees around why it was working well was that it was:

“down to the people involved and the existing relationships that are there ... they have all worked together for a long time so understand where the frustrations are and how to get round them... there is always going to be an element of competition. I mean that just happens in academia, but I think generally there has been a real willingness to work together where it makes sense to do so. You know there is a respect and genuine interest in what the other projects are doing” (UPGro PS4).

6.1.2.2 Summary of the source of the tension

The source is that researchers are very busy and focused on their own projects, also, they are experts in their fields and reluctant to be heavily directed. The way the model was set up in ESPA and the way it was originally implemented caused a major problem for the programme. Researchers struggled to see how directorate activities could help their own projects or how their participation was contributing to other values they hold, such as community building. It felt like a burden rather than a help. This led to them not being motivated to take part.

It was improved in ESPA at the end by focusing on researcher viewpoint and what would benefit them and the programme, building positive momentum and using key figures with authority amongst researchers. In UPGro it was ameliorated by bottom-up governance models and by UPGro researchers knowing each other well. The key finding from these two programmes is that although the governance model is important, it is not the defining factor in whether this tension will arise. The interview evidence suggests it is more about fostering the right personalities, attitudes and relationships.

From the two programmes, to summarise, the interviewees identified a number of traits that enabled the Directorate in ESPA and the Knowledge Broker/Co-ordinator in UPGro to reduce the tension with the researcher community:

- participative, team-oriented attitudes and personalities;
- humble personalities who are good at listening and understanding other perspectives;
- deep knowledge and understanding of the relevant science worlds and the international development sphere;
- existing working relationships and accumulated trust with the community;
- the ability to manage a complex, interlinked programme of work.

6.1.2.3 Summary of its effects on the programmes

The negative effect if this tension arises is that the programme will struggle to cohere and create as much value ‘greater than the sum of its parts’ as it would if the programme actors and researchers worked together harmoniously. The programme actors rely heavily on the researchers’ inputs to create value; if the researchers feel that it is not worthwhile they will disengage from the programme and focus on delivering their projects only. There is

limited scope for compelling researchers to engage with programme activities meaningfully. In this situation they will revert to doing the minimum amount and activities will fail to achieve their potential. One ESPA PI told me “*we essentially had as little to do with the ESPA Directorate as possible*” (ESPA NR12).

If the outputs of the programme actors are not honed to be relevant to researchers then you get the situation of the programme creating repeated documents, e.g., theories of change, and knowledge frameworks that are not used extensively by the researchers and instead remain primarily a page on the programme website. The researchers generally found the conceptual frameworks developed for ESPA to be overcomplicated and not particularly useful, including the theory of change. The EPR notes that:

“The utility of these documents might have been increased if the Directorate had encouraged selected PIs and their research teams to participate in their development – some of these individuals had considerable relevant knowledge and experience that was not fully taken advantage of” (DFID, 2018).

Another result of a dysfunctional relationship between programme actors and researchers is that the programme can miss the opportunity to use the researchers’ networks. One programme actor in UPGro explained that you can think of these programmes as an exercise in layering networks of the actors involved (UPGro PS2): the programme actors themselves are likely to bring extensive networks e.g., in UPGro, the Skat Foundation brought a strong network through administering the Rural Water Supply Network, a global network with 10,000 members in more than 150 countries. However, the programmes can also benefit from the networks that researchers have developed and nurtured. If the relationship is tense between programme actors and researchers then researchers are less likely to contribute their networks to the exist layers of networks in the programmes. If this is the case, then the interviewee suggested the programme will have significantly less reach in its research into use activities.

A final negative effect identified by a programme actor in ESPA (ESPA PS2) of this tension is that if you do not have strong relationships between the programme actors and researchers then it can inhibit the funders’ ability to understand what is happening in the programme; this can contribute to their anxiety of whether they are achieving their goals in the programme. It also inhibits the funders’ ability to communicate to the researchers what they are seeking from the programme. The programme actors operate as an

important conduit of communication both up and down in the programme between researchers and funders, and if relationships are strained in this space then researchers become less clear about what funders want and funders become less clear about what is being delivered in the programme, contributing to possible tensions at this level.

6.1.3 Tension between Northern researchers and the funders

The main tension found in this thesis between the researcher interpretive community and the programmes' funders was around perceptions of what is realistic to expect from a research project of this type. The tension arises if researchers feel that the requirements to produce excellence, impact, interdisciplinarity and capacity building are not backed up by sufficient time and monetary resource. This tension was present in similar degrees in both ESPA and UPGro.

6.1.3.1 Description of the tension over the two programmes

The section above on the researcher interpretive community showed that the majority of researchers in ESPA and all the researchers in UPGro were comfortable with the programme goals and with combining them in one project. The tension did not relate to fundamental misalignment of interests. They had varying ways of interpreting the goals, various strategies of combining scientific excellence and impact, but they did not see any fundamental tension in doing so. However, where there was a tension, was that their experience of running projects suggested that it requires significant time and resource that is not always forthcoming from the funders, leaving a gap between the programme's aspirations and the reality of what can be achieved.

The amounts and lengths of time for the large calls varied over ESPA and UPGro. The ESPA 2011 grants had an average value of £2.9 million for each grant over five years and were the largest and best resourced projects. The ESPA 2012 grants had an average value of £1.7 million and duration of three to four years, and the ESPA 2013 grants had an average value of £415,000 and duration of three years. In UPGro the consortium projects were given four years and received up to £1.9 million of funding each.

A small number of interviewees felt that these terms were realistic and appropriate: this was particularly the case with interviewees who had received the large 2011 grants in ESPA. However, the majority felt that what they were being asked to do was not realistic. This relates to the experience recounted above in detail around the complexity of

managing the ‘massive monsters’ of these research projects, as experienced by the senior researchers. The researchers provided detailed narratives around how long it took to get the projects up and running with all the different teams, equipment and locations, and that more often than not there would be some kind of delay due to a wide range of potential unpredictable factors. There is also the period of data collection, and by this point the funding is often almost coming to an end.

A senior researcher on one of the UPGro projects gave an example of a project that involved taking hydrological observations. They explained that the first year was taken up in setting up the testing and arranging teams. Once in place they needed at least two years to get meaningful data; this was disrupted by an anomalous year of drought then very heavy rainfall, meaning they really needed a third year to get meaningful data. By the time they were getting data from the project, therefore, it was almost the end of the funding period. They were struggling to see how they would have time to analyse the data properly (let alone communicate it to the partners they had been working with), or devote sufficient time to the interdisciplinary synthesis they had been planning for.

The researchers in UPGro also felt that the budget of up to £1.9 million was not enough money for running a project across multiple jurisdictions, involving both physical science installations and significant social science components. They then had to find the time for impact related partnership building and community engagement, and make space for sufficient man-hours for the lengthy process of meaningful interdisciplinary engagement and analysis. This kind of experience of running out of time and money was very common in UPGro; only one consortia project in UPGro did not apply for a ‘no-cost extension’. This issue was exacerbated in UPGro because there was also a programme-wide delay at the start of the programme in setting up the dispersal of funds to Southern partners due to some new due diligence rules being introduced in NERC.

Many ESPA projects also reported that they had not managed to finish their programmes of work; they described how they ran out of time for analysis activities and impact work. A common experience was planning to use another round of funding from a new programme to complete data analysis work.

The researchers reported feeling very frustrated by this situation. One explained it with the following metaphor “*It almost feels like you have done the shopping, the cooking, the*

eating is half done, then you're not really able to eat your dessert. You're left with unhappy feelings that I couldn't finish it" (UPGro NR5). What they want from the funders is consistently realistic budgets and timescales. A repeated refrain from the researchers was also that they wanted more flexibility from the funders. They wanted to be able to explain to the funders the legitimate reasons why the project has taken longer or used more money than was planned for and to receive the required support to get the project finished. They reported feeling that what they wanted from the funders was trust, and that if they were trusted they would be able to deliver value for money by getting the projects completed properly.

The funder perspective is that they are understanding and believe researchers are well intentioned; they recognise the complexity and challenges of this type of programme. There was also a slight sense amongst DFID programme staff interviews that they do see the researchers as interested in very niche subjects and focused on delivering their own programmes of work rather than the programme's goal. However, they did communicate that they did trust the researchers as a whole. From their perspective, however, they do not have the systems in place to be able to operate in the way that the researchers want them to. In terms of the amount of money per project, they are under pressure to deliver value for money that puts a downward pressure on the size of individual projects and an incentive to fund more projects per programme if they believe it is suitable. In terms of flexibility they need predictability of how funds will be disbursed in a programme. They do not want to be disbursing money flexibly in the way proposed by researchers.

In terms of the length of projects, DFID reported being under increasing pressure during the period of the case studies to fund shorter programmes because of the heightened volatility in the political landscape. They do not want to fund programmes that run over spending review periods because they cannot be certain that the programmes will receive funding in the next period.

One way in which funders are more flexible is in relation to granting no-cost extensions to projects. One observer at the PEB level in UPGro explained that funders almost expect this from projects as it is seen as normal that researchers will overpromise; they are relatively happy to be flexible on the timing for final deliverables as long as it does not require further funds to be disbursed.

6.1.3.2 Source of the tension

As explained above, the main source of this tension relates to the way that the funders ask for ambitious goals and, from the perspective of researchers, often do not provide the required time and funds to allow them to deliver. A further source of the tension described by a number of researcher interviewees was that they believed the level of competition of funds leads them to overpromise on what they can they do in a project.

Ultimately, the source relates to the pressures both the researchers and funders are under. Northern researcher interviewees described tending towards optimistic estimates of what can be achieved in order to win the grant. During this period for funders, there was strong pressure to reduce the length of programmes and achieve maximum value for money. They also needed to provide strong accountability for funds and were required to run competitive funding rounds rather than having more flexible *ad hoc* funding.

6.1.3.3 Summary of its effects on the programmes

This tension did not prevent the programmes from functioning: it is quite a latent tension. There was a feeling of understanding and acceptance on both sides of it just being the way it is. Several researchers expressed understanding of the need for accountability and time limits on projects. One said “*I mean we would all like longer and longer projects, but we also must acknowledge that taxpayers want to know if things are working we can’t just expect a blank slate*” (ESPA NR6). On the other hand several funders expressed understanding that researchers have a tendency to overpromise. On no cost extensions, a PEB observer said:

“Academics always do that, because they always set themselves unrealistic ambitions and want to carry on with the work as much as they can. So I ... and NERC just sign off on those without a lot of scrutiny, because it’s kind of the done thing within academia, things always take longer than you expect” (PEB observer²⁰).

It seems to have become almost expected that research projects will not be fully completed. One interviewee who was both a reviewer of proposals and a successful applicant on ESPA said:

“my perspective on the ESPA stuff was that you had to drastically overpromise, but it wasn’t expected that you would deliver... we were expecting, and not just

²⁰ The programme is not identified in this case as it may allow the interviewee to be identified.

accepting, that people will significantly overpromise and then when they get the money we are not necessarily expecting them to do what they say they are going to do. The whole thing is kind of skewed. There is just an acceptance that you will overpromise. And when we got our project, one of the first things ... said to me, apart from lots of nice things about the proposal, and he then went on to say if you do half of what is in there we will be delighted” (ESPA NR2).

One consequence of this is that it creates a sense of unfairness if some applicants are less aware of the situation and do not overpromise. There were no specific examples reported, but several interviewees did mention a *sense* of unfairness.

A serious consequence of this tension is that projects do not get completed within the funded period. The common way of dealing with this is for a no-cost extension to be granted where academics are given an extra half a year or a year to complete the work but are not given extra funds. On UPGro, for example, four out of the five projects were granted no-cost extensions. However, as explained above, academics have multiple commitments and need to move on to the next grant quickly. What this means is that when the money stops the work becomes more fragmented and people start to drop away as they pick up other commitments.

It is not that academics do not want to get the work done; they do want to see things through and particularly get their high quality publications banked. One explained in detail:

“We have to get as much as we can done of the core pieces of the analysis, within the timeframe of the research grant, and to get the papers outlined, so that then they can be written up, if not completely by the end of the grant, they’re pretty much there. And then the kind of more detailed follow on, we’ll probably do, but it will be done on a shoestring, as it were. We’ll all have a personal investment, and want to see things followed through, both in the UK and with the African researchers. So, the relationships would be maintained. I can imagine that we are always in touch. But it will be in a more piecemeal or fragmented way, than having a decent bit of money, and therefore time, to focus to it” (UPGro NR2).

It becomes much less certain whether the work gets finished or not. One interviewee explained:

“actually it is quite a risky element for the completion and delivery of the project, it is, because if I’m gone and some of our other colleagues are gone, and some are probably not even interested in applying for a no-cost extension, because not everybody is doing it, then the momentum is lost, right? So what do you do with

the new data coming in? Who is going to analyse it? So it becomes a real problem really for a project like this” (ESPA NR5).

The other point to make is that from the descriptions by the interviewees of the progress of their projects it seems that the parts of the project more likely to suffer will be the activities focused on interdisciplinary synthesis and impact. Northern researcher interviewees explained as time becomes more pressured and commitment ebbs away from a project, the academic leaders are likely to prioritise completing their core publications from the programme of work.

The final effect of this tension is the least tangible but potentially most far reaching. The perceived mismatch between what is being requested and what is realistically possible with the time and resources allocated creates a sense of unreality around the programme. Common refrains in interviews with researchers were that the programmes become exercises in “ticking boxes” and “bullshit” as they aim to give the funders what they think they want but what they are not sure they can deliver.

6.1.4 Tension between Southern researchers and funders

There was a strong tension in both programmes between the perspective of Southern researchers and the perspective of those running the programmes. Southern researchers expressed how they wanted to be leading intellectually, or at least equal to Northern researchers, and to be supported to build capacity, with a focus on PhDs and equipment. The funders want to support Southern researchers and there was an emphasis on this goal in the programmes; multiple efforts were made to encourage Southern leadership and capacity building. However, despite the strong rhetoric in the programmes, there remained a significant gap between the level of priority given to these issues by Southern researchers and the level of priority given to it in the programmes by funders.

6.1.4.1 Description of the tension over the two programmes

Below, it will be argued that although both programmes included Southern leadership and capacity building as key parts of the programmes, both programmes were ultimately ambivalent about how important it was and that it took less priority than the other goals.

Starting with ESPA, promoting and supporting leadership and capacity building for Southern researchers was described as a key objective of the programme from the beginning. The ESPA memorandum said “*Partnership with Southern researchers should*

be seen as mandatory with evidence given of Southern partners driving the research agenda” (ESPA, 2009). Programme documents made clear, and interviewees explained, that funders undertook a number of actions to promote these goals. First, NERC modified their online application system so that developing country applicants would only have to undergo full recognition checks if they were successful in receiving funding, and dedicated resources were made available to assist developing country researchers in registering and completing the system requirements. Second, they agreed to pay the full economic costs of developing country researchers in recognition that developing country institutions were less well funded than developing country institutions and may not have the same block grant funding support from the dual support system as in the UK. Third, the programme supported a number of specific calls and activities targeted at supporting capacity building for Southern researchers. This included the Strengthening Research Capacity (SRC) grants in 2008/2009; these consisted of 11 grants totalling £1.4m, average value of £125,000 for up to 12 months, and four fellowship grants totalling £1.1m with an average value of £100,000, each lasting two years.

However, despite the stated intention and the list of actions taken, it was also clear from the beginning that Southern leadership and capacity building were being side-lined at the programme level. In fact, ESPA’s Capacity Strengthening Information Note (2012) and Strategy (2013) are surprisingly open about this. They state that “*capacity strengthening activities should be a minor component of most ESPA activities*”, and that “*ESPA research projects should only undertake limited capacity strengthening activities*” (this despite the same strategy document claiming that the ESPA programme is “*committed to help build the next generation of researchers working in areas supporting the ESPA programme and research agenda*”).

The most striking demonstration of the ambivalence in practice to the issue of Southern leadership in the programme is the fact that it was known from the beginning that the use of NERC peer review and commissioning processes was likely to reduce the number of projects with Southern leadership. It was identified as a major issue in the first annual report for DFID in 2010/11. This was found to be the case, with a large number of applicants from developing countries applying for the 2011 large consortium call but none being successful. Despite knowing this, the situation remained essentially the same throughout every call. This meant that despite the language at the beginning of the

programme focusing on equality and leadership for Southern researchers, the roles they took up in the programme were typically as co-investigators or more junior team members rather than project leads.

There may have been some inevitable challenges in having to use the NERC research commissioning systems, but it was also clear that more could have been done to ensure that more leading research institutes in the global south took up project lead positions. For example, the EPR raises the fact that the peer review panels were largely made up of Northern researchers and that efforts to include at least one peer reviewer from a developing country may have helped with Southern representation. They could also have chosen to put a particular emphasis on capacity building and Southern leadership for some of the calls if there was the will to do so.

A clear example of the ambivalence shown towards capacity building in the programme was that funding of PhD students not registered at a UK institution was not permitted as this was not NERC practice. The funding of PhD students was noted by many Southern researchers as a very important part of participation in these types of programmes and it was seen as unfair by Southern researcher interviewees that a solution could not be found to this problem. In addition, the fellowships were somewhat disappointing in size and scope: only half the fellowships went to developing country researchers, that is four fellowships in a programme worth over £40 million. As the EPR concludes:

“If contributing to the establishment of a new cohort of interdisciplinary researchers in the Global South was an important objective of ESPA, a better balance between providing funding targeted at world class research and that aimed at strengthening capacity amongst the next generation of researchers could perhaps have been found”.

Despite the lack of leadership at the programme level, it was clear from the interviews that, at the project level, it was a priority for many teams, including the Northern researchers leading the teams. Many ESPA projects supported and promoted developing country and early career researcher leadership and capacity building through their own research study design and activities. However, these instances were left to individual personal relationships and values within research teams. In the four interviews conducted in ESPA, all the Southern researchers were clear that they were not in leadership positions and expressed some level of frustration with the lack of focus on partnership and capacity building. One interviewee explained:

“I think in some parts it was quite equal, but in the final decision it is always the UK people. I don’t want to say UK people, but developed country overseas people. So I think in general we tried to share and talk, but in the final decision it is always the overseas people” (ESPA SR3).

In UPGro, the language around inclusion of Southern partners had become slightly less ambitious. The Business Case for UPGro identified the creation of “meaningful partnerships” with African researchers/research institutions as a programme goal. UPGro still stated that the funders would “*particularly encourage research proposals led by African institutions where these institutions can meet RCUK due diligence baselines (e.g. finances)*” (UPGro Business Case). In the absence of a Southern research leader in the project, Research projects would need to have at least one partner organisation based in the global South and “*demonstrate how African partners are actively engaged with the research process and dissemination*” (Business Case). As with ESPA, it was open to institutions in the global South to lead on the research projects that could meet the accountability and audit requirements of the programme funders. In the consortia call document, the language seemed to have been weakened even further stating that “*UPGro projects are intended to have a clear and significant role for developing country researchers and/or institutions*” (UPGro, 2012).

The draft Logframe had an output for “*Improved hydrogeological capacity in Africa coupled with skills in communicating science into policy*”; this was given a weighting of 15% towards the Annual Review score. It had three indicators for the output:

“Proportion of UPGro researchers from African/other LD Countries communicating research findings to policy-makers at workshops/policy events;

Proportion of institutions successfully accessing UPGro funding coming from Africa and/or developing countries; and

Proportion of high quality UPGro policy relevant research produced and published by Southern partners in international journals” (UPGro, 2012)

The finalised Logframe had the output “*UPGro early career researchers equipped with the skills to collaborate and communicate their work in the wider context of poverty and groundwater science and governance*”. This was measured by attendance at presenting and training events and was disaggregated by whether African and the gender of the early career researchers. It had a 10% impact weighting. The finalised Logframe also included an indicator on the proportion of papers with lead (first or second) authors based in

African institutions. By 2018 the target was that 11 papers should have an African first or second author, but this milestone was missed with 8 out of 41 papers having an African first or second author. It is notable that the revised Logframe removed the indicator on the proportion of institutions successfully accessing UPGro funding coming from Africa and/or developing countries.

The picture in UPGro was overall remarkably similar to ESPA, although, as explained above the rhetoric of Southern inclusion had been slightly toned down by the time UPGro was created. The funders adopted a similar set of measures in the programmes to support Southern inclusion and capacity building. They offered support in navigating the online administration system and offered 100% of full economic costs. They also offered to pay the cost of travel to inception meetings to encourage partnership. The PCG plan included a component focused on early career capacity building, including for African researchers, and included a week-long training course in the UK culminating in an Early Career research conference.

Despite these efforts and the UPGro programme documents saying that they encouraged Southern research institutions to lead bids, there was very limited representation of Southern-led bids; of the 16 catalyst grants, 3 were led by Southern institutions. There were no successful Southern-led bids for the consortia calls. Figure 6.1 shows that for the catalyst grant call this was not due to a lack of applications from Southern institutions. UKCDS performed an analysis of the process of applications for the UPGro catalyst grants that shows clearly how applications from the least developed countries were largely sifted out at outline stage.

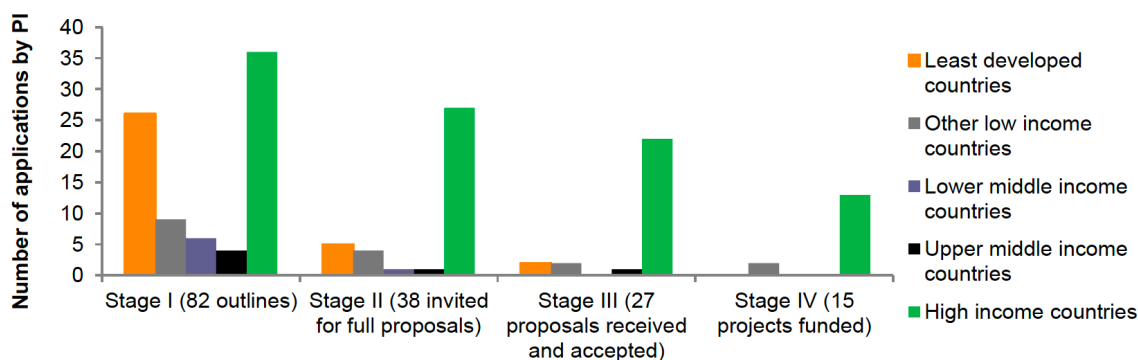


Figure 6.1: Applications by class of country to UPGro Catalyst Grants

Source: UKCDS (2014)

As explained above in section 5.1.6, there were a lot of positive accounts from Southern researchers of the ways in which UPGro benefited Southern researchers. In general, it was seen as an opportunity for them to progress their research careers and they gained from taking part in international knowledge networks. A number reported positive experiences of meaningful partnerships and co-operative working. However, there was a clear tension between what the Southern researchers wanted to get out of the programme and the programme in practice as created by the funders.

As explained in section 5.1.6, many Southern researchers in UPGro expressed frustration that they felt they were not on a level playing field with the Northern partners and the steps were not taken at the programme level to address these frustrations. It was instead seen as being left to individual projects and to the beneficence of individual Northern PIs. As detailed in section 5.1.6 several Southern researchers expressed frustration at lacking leadership roles and having to adopt the conceptual frameworks and approaches of Northern researchers, which several reported thinking were not appropriate to their context.

6.1.4.2 Summary of the source of the tension

From the Southern researcher framing it is clear that, for many of the interviewees, their needs were not met by the programme: they wanted leadership roles in the programmes, a focus on equipment and PhDs, to be engaged in the programmes in a way that allowed them to publish, and to promote meaningful community engagement and sustainable impact. However, their experience of the programmes was that it was down to the individual PIs they were working with whether they had a good experience or not.

The basic source of the tension was that the goal of Southern researcher inclusion and capacity building was not as high priority as the other goals to the funders collectively. The importance of the goal to DFID meant that it was written into programme documentation and made a requirement for funding and that it was considered and planned for. However, the choice to use NERC's selection and management systems on both programmes meant that it was not given high priority in the practice of the programme. It was included in both Logframes and projects were strongly encouraged to ensure that Southern researchers co-published and led some publications, however, Annual Reports shows that the numbers were not that ambitious, and the targets were often missed. The idea that Southern institutions would lead bids remained in place

throughout both programmes, but RC interviewees admitted that limited efforts were made to ensure that this actually happened and there were almost no large consortia led by Southern researchers in either programme.

From RC's perspective (elaborated in section 5.1.2), it is their mandate to support and nurture the UK research base; their interest in nurturing capacity building and leadership of Southern researchers is seen through the lens of how it benefits UK researchers. RC's perspective is that they have strong systems to produce academic excellence and to monitor the smooth flow of money and accountability processes. They have limited ability to apply their systems flexibly to promote Southern leadership. They were as helpful as possible to Southern researchers and tried hard to make changes with their systems, such as only requiring Southern research institutions to register on their systems fully if they were successful. However, they were not willing or able to make significant amendments to their practices in order to make this goal a priority of the programmes.

6.1.4.3 Summary of its effects on the programmes

Again, the effects of this tension are quite latent. Interviewees did not report that it stopped the programmes functioning well in producing high quality research. The ESPA and UPGro Logframes both had the emphasis on publications. The tensions in these programmes did not stop the successful enrolment of Southern researchers into the programme as partners because, as explained above in section 5.1.6, Southern researchers need these types of programmes to do research and they provide many benefits to them. One Southern researcher from UPGro explained:

“we can't opt out of it, I think until the African government start putting money in themselves in research, that is when you will have a say. But as long as we are depending, 90% or even 100%, of our research from international donors, it's not going to happen” (UPGro AR6).

Despite the lack of concrete evidence of the effect it had on the programme, interviewees reported it is likely that negative effects were produced that were difficult to pick up. First, several interviewees mentioned that this tension led to disengagement from projects by Southern researchers which slowed down and potentially endangered the progress of projects. One interviewee explained: *“a lot of African scholars they vote by keeping silent. They go quiet and don't respond. Cause I know some researchers who really were annoyed because they felt the relations were bad so then they just vanish” (UPGro Ar6).*

This also came through on the other side of the relationship with some of the senior Northern researchers noting that they had experienced slow-downs or disengagements in communication.

The second potential effect, which is difficult to monitor but was mentioned by interviewees, is that if you do not have Southern researchers in a leadership position then there is a strong sense that projects will end up having less impact than they could. The ESPA EPR makes this point saying “*The impact of weaker participation and leadership from developing country researchers in ESPA may have been less well targeted research and a greater challenge in getting research into use*”. This is recognition of the important role of Southern researchers anchoring the research and results within the local political economy and providing credible linkages with relevant decision-making bodies and individuals.

The last effect is again the least tangible. That is that the lack of priority given to Southern leadership and capacity building produced, for several programme actor interviewees, a sense of moral dissonance that the programmes were not really doing what they should be doing (explained in section 5.1.7 Critical programme actor community).

6.1.5 Tension between the critical programme actors and RCs/Neutral programme actors

The critical programme actor interpretive community had a markedly different interpretation of the programme from many of the other communities. The groups with which their interpretation had the strongest tension were the neutral programme actors and the RCs. The tension revolves around differences of interpretation around the meaning of ‘for the poor/poverty alleviation’ titles of the programmes and the meaning of the programmes being greater than the sum of their parts.

For critical programme actors, the ‘greater than the sum of its parts’ element means that programme actors bring projects together to solve a specific poverty related issue in a way that a collection of projects on their own could not. They wanted the projects to start with a more specific poverty related outcome in mind and then ask what kind of research is needed to achieve the outcome most effectively. To them, the programmes look like a missed opportunity.

For neutral programme actors and the funders, research “*for the poor*” meant funding excellent research in an area broadly related to poverty. Greater than the sum of its parts meant optimising learning opportunities, building communities of researchers and taking opportunities to collectively maximise impact when they arise.

This tension was consistent across the two programmes and so this section will not include a narrative of the tension over the two programmes. It will rather provide further detail on the nature of the differences between the interpretations and then describe the nature of the effect on the programme.

6.1.5.1 Summary of the source of the tension

The source of the tension is a different conceptual starting point for judging the programmes. The neutral programme actors started by framing the programmes as RC/DFID collaborations. They adopt a kind of *realist* view that if it is the RCs involved in the programmes then it is going to be focused on academic excellence and competitive peer review. Within this context they believe you can then craft a successful programme of this kind by delineating an area of research that is broadly related to poverty reduction and bringing in a knowledge broker/director that can add value to the projects by helping to link them up with appropriate decision-makers and enable cross-project learning.

The view is summed up well by this quote:

“So I think it’s a really nice meeting between a research network, a knowledge brokering partner and an applied research area that has very strong relevance to the poor and their wellbeing. It’s pretty good” (UPGro PS1).

They believe that to place major capacity building and development impact demands is unrealistic in a RC/DFID programme. They point out that RC programmes are just one of the tools DFID use and others are more realistic for achieving these goals.

The critical programme actors instead start with an *ethical* position, contrasted with the *realist* view of the neutral programme actors. As section 5.1.7 explained they say that if a research programme is framed as being ‘*for the poor*’ then it should have a clear pathway to alleviating poverty and should start with the question of what kind of research can we do to promote this goal. They see a trade-off between the goals of excellence and development impact and believe that excellence was given too much focus in the programmes. They valued the other goals of the programme more highly and are happy

for the standards and procedures associated with scientific excellence to be applied more flexibly in order for the programmes to have greater impact.

They see the programmes as vague in how they will address poverty. They would like a much more specific outcome to be identified at the beginning and then to design the programme around achieving that outcome. They see the programmes as they were designed as too focused on producing outputs, i.e., publications and policy encounters, but that they are not clear enough about the links from these outputs to the outcomes and impacts. They think this produces a false sense of value of money that counts outputs but means that the programme does not really add up to a major impact on an important issue. One said *“I think if you take an outcomes-based approach from the outset then you can trace attribution and then you are more accountable for outcomes and then you get a better display of value for money”* (UPGro PS2).

This is not to say that interviewees did not think that individual projects were doing important research on issues affecting the poor and doing crucial work with communities across the globe. However, they believed that the choice to use excellence focused peer review meant that the projects were quite disparate and not focused on collectively solving a more specific poverty related issue.

6.1.5.2 Summary of its effects on the programmes

This tension did not have a tangible effect on the programme in terms of the running of the programme and in terms of the programmes meeting the success criteria that were set by the respective PEBs. Both programmes were achieving their A+ ratings, largely as a consequence of being academically productive and by showing that the research teams were engaging with research users of different types (DFID, 2018, UPGro 2016). These critical voices do not seem to have had much impact at the PEB level of the programme. Discussions of this type were not noted in the PEB minutes or the interviews with PEB members.

However, this tension leads to important questions around the purpose of the programmes. These programmes were born out of a specific context and moment in research for development funding in the UK. DFID was focused on poverty reduction but had been criticised for lacking a scientific culture. The RCs had been asked to re-join the effort to solve international development challenges. Both had been asked to support

building an enhanced ‘development sciences’ capacity in the UK that was seen to be losing vitality (see section 4.1.2.6). This context brought DFID and the RCs together and, largely because DFID could benefit from free management costs that fitted with their value for money agenda, the decision was made to use RC selection and management systems.

This context led to the programmes taking the form that they did, with a stronger focus on scientific excellence, a loosely framed development challenge, and led mainly by Northern researchers. The critical programme actor viewpoint raises the question of whether it had to be this way. Could the programmes have been better balanced towards the other goals? And more fundamentally, is it morally justifiable to be spending large amounts of money that is framed as being of benefit to poverty alleviation in this way?

6.1.6 Summary of synergies in the programmes

The synergies between interpretive communities has not been emphasised in this thesis because it is not an emphasis of the analytical approach that was chosen as appropriate. IPA, as elaborated by Dvora Yanow (2000) focuses strongly on the analysis of the tensions between actors. However, during the process of completing the analysis it became clear that there was a lot of synergy between the groups and it seemed important to also include these in summary. The issue of the lack of focus on synergies within the IPA approach will be returned to in the discussion chapter (section 7.1.7) as one of the weaknesses of the IPA approach as adopted in this study.

The first and most substantial synergy is the one described in sections 5.1.4 above around a vision for a programme that combines scientific excellence with development impact. When I started the study, based on the literature, I expected to find a strong tension between the actors around prioritising development impact or scientific excellence, particularly between researchers and funders. In fact, there was a high degree of synergy between the interpretations of the Northern researchers involved in the programme and the funders. The tension between the funders and researchers mainly related to the allotted time and resources rather than the programme’s vision. By the time UPGro was created, DFID and NERC were also able to create a shared vision around how to combine, commission and measure development impact and excellence together. The story of the two programmes is largely one of the developing synergies and increased co-operation around a shared vision over the two programmes and should be read as such.

The second synergy was around the positive value all the groups gave to the concept of interdisciplinarity; none of the groups were negative about this concept. Funders, researchers and programme actors wanted to support its development in the programmes. The interpretation of its meaning was left fairly open, both in the programme documentation and in the minds of the communities, but it did not arise as a strong tension at the programme level of either programme. There was clear strong agreement among the actors that it was an important element in producing impactful research on the topics of the programmes.

Linked to this there was a strong synergy around the idea of building an interdisciplinary community in relation to ecosystems services/poverty alleviation and groundwater resources/poverty alleviation. This was highlighted as a value by many of the researchers and as an aim of the programme by the funders. It was also strongly supported by the programme actors in both programmes.

Another positive synergy in the programmes was around the perceived value of practical lesson learning of how the programmes could be improved. There were a number of lessons learned by the funders, in consultation with the community of researchers and programme actors, over the period and particularly in the transition from ESPA to UPGro. The most substantial lesson was the emphasis on a participative, bottom-up governance model that was developed in UPGro, partly as a result of the experience in ESPA. Another lesson was the value of ‘seed corn’ funding if you are promoting interdisciplinarity and Southern partnerships. ESPA was one of the first programmes to do this and it was carried through to multiple other programmes, including UPGro that used the catalyst grants to do this. Another lesson related to all the learning from ESPA around how to promote Southern inclusion. Although there was less priority given to this topic than deserved, from the Southern researchers perspective there was still a lot of valuable learning from ESPA around the administrative issues of funding Southern institutions directly, which was carried over into UPGro.

More important than the specific lessons learned, however, was the consensus amongst actors that adopting a learning attitude was important. For example, at the end of ESPA, in addition to the independently commissioned End of Programme Review and the DFID official internal programme review, there was also a learning review commissioned by

the Directorate, agreed by the funders and actively taken part in by the researchers that produced a significant catalogue of lessons and materials to be stored on a legacy website.

6.2 Insights from the analysis

This section draws on the analysis of interpretive communities and tensions to draw out a series of insights about the dynamics between senior stakeholders in the two case study programmes.

To present these findings in a coherent and structured way the insights are presented under four levels. This structure of four levels will also be taken through into the discussion section 7.1 of the thesis which will discuss the four levels of insights in relation to relevant parts of the literature review findings.

The first level will be insights relating to high-level dynamics, taken to mean broad characterisations around the motivations of the different groups and how they interact with each-other. In other words they are the insights that are not specific to research programmes. These level of insights sit above the programme level and relate mainly to the kind of insights from the literature review discussed in section 2.1.1.1 where the high-level dynamics of science funding systems were discussed.

The second level will be insights at the programme level relating to more granular issues around how to enrol actors into the programme activities. This level of insight relates more closely to section 2.1.1.4 that discussed the literature on research programme dynamics.

The third and fourth level of insights build on two themes that both the literature and, consequently, this thesis have focused on: insights around combining scientific excellence and development impact, and, insights relating to the dynamics around inclusion of Southern researchers in the programmes.

6.2.1 Insights relating to high-level dynamics

6.2.1.1 The motivations of researchers were nuanced, multi-layered and diverse

The Northern researchers described a range of underlying motivations for why they wanted to work on the ESPA and UPGro programmes. First, they were clear that they needed to get high quality publications from the programme. Several mentioned the REF

and the primacy of publishing in leading journals to make progress in their careers. However, a strong theme from the interviews was that this was not why they were doing the kind of work they were doing. The majority talked about being personally motivated to contribute to solving development challenges through their work. They were also strongly motivated to help build capacity and work in partnership with Southern academics. Another motivation in taking part in the programmes, though less prominent than the others, was to interact and learn from others in the programme.

In UPGro the motivations of the researchers were more similar within the programme. As described above, all the researchers in UPGro had found ways to combine pursuit of scientific excellence and development impact activities within the same project lifetime; in ESPA there was more of a mix across the spectrum. The group ‘excellence separated from impact’ were still motivated to have a positive impact but their short term interest and motivation was in producing the scientific excellence. This group did not see it as the role in their project to be engaging very pro-actively in knowledge translation and impact work as they saw this as a later stage, possibly to be carried out by better placed organisations.

There was a complex mix of personal and institutionally derived motivations that had a strong sense of altruism but also a realism about the need to meet institutional objectives to proceed with their careers. This mix of institutional objectives also became more heterogeneous over the period of study. The inclusion of impact case studies in the REF gives researchers more room to focus on this in their research careers. It is not possible to characterise simply the motivations for these development-oriented scholars working across multiple disciplines in the UK. There is a complex palette of motivations that researchers can draw on in each programme to which they apply.

6.2.1.2 The sources of tensions between the actors were diverse, dynamic and contextual

Across the range of tensions there was a wide range of explanatory factors causing, aggravating or fuelling the tensions between the different interpretive communities. Below I summarise these sources of tensions and reflect on their character.

The tension between the RCs and DFID (explained in section 6.1.1) had arguably the most complex range of sources. There was first a strong conceptual tension between how the funders understood what development impact from research looked like, with DFID

expecting more immediate impact and the RCs viewing a longer pathway. However, this conceptual difference cannot solely explain why the tension persisted in ESPA throughout the programme. There were a number of factors that contributed to and fuelled the tension.

First, part of the tension emanated from the internal tensions within DFID at the time around the meaning of research. On the one hand, DFID research programme managers had a nuanced understanding of development impact from research. They believed it could be a long pathway, indirect and not that certain. On the other hand, they did not have the tools to demonstrate the value for money of this approach and were under increasingly strong pressure to demonstrate short Pathways to Impact. Second, there were a set of very specific circumstances around ESPA that contributed to the tension. It was a large, high profile programme with a lot at stake for both NERC and DFID; it was also the first time they had collaborated on a programme. In their negotiations they got stuck on debating the conceptual differences and were then pressured to quickly put the programme together. At the same time, what was largely driving DFID's interest in working with the RCs was the very appealing scenario of the RCs providing selection and management procedures that were seen as high quality and, crucially from DFID's point of view, free. However, the pressure to get the programme moving meant they opted to combine the use of NERC's excellence driven peer review and a light touch management system with DFID's Logframe approach without fully considering, understanding or adapting these institutional arrangements to give confidence to DFID that their interests would be met.

It is worth highlighting here that these internal tensions relate to a specific moment in the history of research for development in the UK that was elaborated in detail in Chapter 4. The 2004 House of Commons inquiry was a key moment that set in place the ideas around research for development over the next decade. This included a focus on engaging the UK science base more in research for development, improving the quality and standing of research at DFID, with a stronger focus on developing the capacity of Southern researchers. This meant that within DFID there was a strong focus on scientific excellence at the same time as an enduring focus on highly applicable research that was being increasingly prioritised due to the pressure to demonstrate value for money. The new Research and Evidence Division was also not immune from wider shifts in the landscape

and was under the same increasing pressure to demonstrate and attribute impact from their work. The history that was elaborated in Chapter 4 showed that DFID contained different strands of thinking that have developed out of different periods for the organisation which means that DFID staff are operating in an environment with different competing visions that are not resolved which on the one hand means that they can draw on them to give some leeway in how they implement programmes but on the other hand it means that they will also get pulled one way and then another, giving the impression of a lack of clarity around objectives to their partners.

A large part of the source of the tension was a clash of institutional arrangements that had been solidified into the programme from the beginning. The final sources of tension related to individual personalities, attitudes and levels of knowledge. An exacerbating source of tension was high staff turnover in both the RCs and DFID that, with the programme lacking a clearly articulated and written down resolution to the conceptual issue of impact, meant that tensions were re-ignited as new staff members grappled with the programme. The tension was strongest in the programme when there were personalities who did not gel well together.

Another important factor to highlight around the tension between the RCs in DFID was that it was dynamic and shifted considerably during the period of study. By the time UPGro was being conceptualised and designed, the wider UK research funding landscape was undergoing significant shifts that prioritised accountability for the impact from research. This included the inclusion of impact in the REF case studies guidance from 2011 onwards and the reaction of the RCs to the Warry report, including the institutionalisation of Pathways to Impact and the requirement for researchers to account for their impacts on the Researchfish system. This shifting context made it easier for the funders in UPGro to negotiate a compromise that provided what both funders needed from the programme.

The sources of tensions between the other groups were not as complex or multi-layered as that between the funders. The tension between the programme actors and researchers (section 6.1.2) largely related to a straightforward clash of interests whereby the programme actors were not matching their activities well to the interests of the researchers; this was exacerbated by attitude and personality issues (this is explored further below in section 6.2.2 on insights at programme level). The source of tension

between funders and researchers (section 6.1.3) related to different views of what was practical and realistic in the timeframe and resource level of projects. The source of tension between the Southern researchers and funders related to differing levels of priority being given to the inclusion of Southern researchers in the programme (section 6.1.4). The tension between the critical programme actor community and the funders/neutral programme actors (section 6.1.5) and funders was the most conceptual tension. It related to the starting point with which the actors framed the programme.

In summary, the case studies have shown that the sources of tensions around multi-goal, sustainable-development programmes were diverse, dynamic and contextual. The DFID example showed that sources of tension were partly internal to organisations as well arising from differences between them. The tensions were multi-layered and combined conceptual tensions and more mundane issues. For example, the DFID/RC tension shows that a highly conceptual source of tension was aggravated by specific contextual circumstances and a range of more mundane issues such as high staff turnover, individual personalities and clashing administrative systems. The DFID/RC example also showed that the sources of tension can be dynamic and fluid, with the background conditions shifting over the course of ESPA to UPGro, which in this case helped ameliorate the tension.

6.2.2 Insights relating to programme-level dynamics

6.2.2.1 A major tension related to what was realistic in a programme of this type

In terms of what, from the literature, was expected to be one of the main tensions in the programme, the tension between funders and researchers, was less prominent than might have been expected. There was a great deal of synergy between the group of researchers who had successfully applied for the programmes with the funders' vision. As explained above in section 6.1.6, the majority of Northern researchers in ESPA interviewed and all the Northern researchers in UPGro liked the vision of combination of scientific excellence with development impact. The programme's vision was well pitched to the researchers and they were enthusiastic to try to carry out the funders' vision. The tension rather related to differing views of what could realistically be achieved within the time and cost restraints of many of the rounds of funding. The main source of this tension relates to the way that funders asked for ambitious goals and, from the researchers' perspective, often did not provide the required time and funds to allow them to deliver.

6.2.2.2 Researchers have to be enticed with an attitude of co-production to reduce the tension with the programme actors

The Northern researchers' motivations were generally well aligned with the programme's vision and they were well incentivised to deliver high quality scientific work engaged with an impact agenda. For large periods, the ESPA programme Directorate was not functioning very well. However, this did not stop the individual projects from proceeding with their studies and engaging with local decision-makers and communities on their individual impact plans. This is reflected in the fact that despite ESPA not functioning very well as a programme for large periods (as described in section 6.1.2), it far surpassed its targets in terms of number and quality of publications and produced many individual successful impact stories across the globe (DFID, 2018). The point being that research projects will carry on functioning if the integrative centre of a programme stops functioning well, and the funders will still receive many of the indicators of success that they assign to a programme.

In these case studies, however, the tension between Northern researchers and programme actors in ESPA showed that researchers needed to be incentivised to engage in wider programme activities. The interviews with researchers showed that they worked on their own long-term programmes of research and needed to be *enticed* to be motivated in integrative activities. Researchers are motivated to engage with community building activities and gain from networking with each other and, of course, are interested in activities that may benefit their own projects. However, the activities need to be designed and communicated in a way that responds well to the needs, interests and motivations of researchers otherwise researchers are liable to disengage. Interpersonal issues and trust were very important sources of tension or synergy between programme actors and researchers. The way the interviewees talked about the programmes suggests success depends on building co-operative, trusting and enjoyable relationships.

6.2.2.3 Tensions around interdisciplinarity did not arise prominently in the programmes

As explained in the literature review at 2.1.1.3 there is a detailed literature on the tensions that can arise in a research project that seeks to integrate natural and social science. However, at least with these case studies, I did not find a strong tension at the senior programme stakeholder level around this issue. The obvious place where it would have been expected to perhaps arise was between the ESRC and NERC. However, the interviewees from these organisations did not report this as a major tension and on the

whole they adopted similar interpretations of the programmes. The ESRC interviewees said that they did see it as part of their role to keep social science on the agenda but they seemed happy with how it was written into calls and the level of social science components within the projects. This could be explained by the fact that the ESRC was investing significantly less than DFID and NERC, and not involved in the day to day management, in both programmes and so had less at stake.

Another site where this tension might have expected to arise was within the peer review panels between the social and natural scientists. But as explained in section 3.2.2 I was not able to gain access to these forums and in any event a detailed analysis of these processes was not in the scope of the study.

6.2.3 Insight relating to combining scientific excellence and development impact

6.2.3.1 Whether there was a conflict or not depended on how impact was conceptualised at project/output scale or at programme wide impact scale

To the majority of Northern researchers, the funders and the neutral programme actors, the UPGro programme combined scientific excellence and development impact without creating a major tension or conflict. In ESPA, as explained above, there was tension between the funders around the conceptualisation of impact and some researchers were not reconciled to their combination. In UPGro, however, the funders created a programme that seemed to balance the two that removed the tension for the majority of groups. This compromise entailed:

- giving primacy to ground-breaking science in selection processes;
- choosing an area of research with high potential development relevance;
- checking that research projects have a viable individual impact plan during the selection process;
- recording the outputs of impact engagements in the Logframe; and
- letting researchers get on with their own projects as long as they report on outputs.

The integrative activities consisted of providing opportunities for the projects to learn from each other and looking for emerging synergies between the projects that could be used to present results to decision-makers. For this group the focus was on recording impacts as outputs from the programme. In other words, using indicators of activities that are directly under the control of the projects. In this case, the outputs they were measuring

were the number of instances of decision-makers being involved in research and vice versa, number of feedback and engagement activities. The outcome they were measuring was stories of UPGro research influencing decision-makers in some way.

The critical programme actor community was the group that consistently did see a tension between excellence and impact. They started with the question, what does a groundwater research programme look like that is designed to unlock groundwater for the poor in SSA? This is their measure of what impact should look like and it led to a very different diagnosis of whether there is a tension between excellence or not. They wanted a much fuller articulation of a more specific impact plan of how research can be used to solve a development issue. To them, the ‘greater than the sum of its parts’ integrative nature of the programme should relate to how the projects cohere together to address a specific poverty related issue.

For this community scientific excellence was seen to be in tension with development impact in the following two main ways (elaborated in section 5.1.7). The choice of modality of project-based science funding (i.e., three-five year consortia working on generating novel scientific breakthroughs) is seen as well suited to produce groundbreaking findings and high ranking publications; however, it was seen by this community to detract from the research activities that could produce the greatest impact for the money invested. Examples given by this community of other potentially more impactful modes of research were research synthesis and translation activities and shorter, political-economy type studies.

The second way is that the institutional arrangements associated with scientific excellence i.e. excellence driven peer review and hands off management of projects was seen to detract from the ability to actively steer the programme towards a coherent and cumulative impact on the targeted issue.

6.2.4 Insights around the dynamics of inclusion of Southern researchers

The main insight drawn from the two case studies around Southern inclusion is that the rhetoric of capacity building and Southern leadership in the programme was consistently greater than the actions to create capacity and leadership. There was no other issue where there was a similar gap between rhetoric and action.

The basic source of the tension was that the goal of Southern researcher inclusion and capacity building was not as high priority to the funders collectively as the other goals. The importance of the goal to DFID meant that it was written into programme documentation and made a requirement for funding that it was considered and planned for. However, the choice to use NERC's selection and management systems on both programmes meant that it was not given very high priority in the practice of the programme (detailed in section 6.1.4).

This chapter has concluded by drawing on the analysis of interpretive communities and tensions to identify a series of insights about the dynamics between senior stakeholders in the two case study programmes. The final chapter will discuss what these insights mean in a wider context. It will review the implications in terms of the literature set out at the beginning of thesis and also in terms of policy implications and avenues for further research.

Chapter 7: Discussion and conclusions

As explained in the introduction section 1.2.2 this thesis aims to make two distinct contributions to knowledge:

1. *Identifying and testing a suitable analytical approach and methodology in an appropriate way to study the under researched subject of multi-goal, sustainable-development research programmes and evaluating the strengths and weaknesses of the approach used.*
2. *A novel empirical account of multi-goal, sustainable-development research programmes, their dynamics and a set of learnings for future programmes.*

Chapters 4, 5 and 6 have applied the IPA approach to the study of multi-goal sustainable development research programmes and have outlined *the novel empirical account* created by applying the *suitable analytical approach*. This discussion chapter will now seek to fill in the remaining gaps in meeting the contributions to knowledge: reflections on the implications of the findings chapters and seeking to evaluate the strengths and weaknesses of the approach and detail a set of learnings for future programmes.

The discussion chapter is split into three sections. The first section will consider how the findings relate to the literature presented in the literature review. The second section will outline a set of policy implications from the case studies. The third section will consider the strengths and weaknesses of the IPA approach and the way it was applied in this thesis.

7.1 Discussion

7.1.1 How the findings relate to insights in the literature review

The consideration of how the case study findings relate to the insights from the literature is discussed at four levels:

- high-level dynamics relating to broad characterisations around the motivations of the different groups and how they interact with each other;
- insights at the programme level;
- insights around combining scientific excellence and development impact; and

- insights relating to the dynamics around inclusion of Southern researchers in the programmes.

This is the same structure as the section on insights from the analysis at the end of Chapter 6 used (the logic of this four level structure to the text is explained at section 6.2).

7.1.2 Discussion relating to high-level dynamics

The literature review summarised the line of studies that had emerged since the mid-1990s from within the wider field of STIS. This literature sought to characterise the dynamics of science funding systems to identify the essence of the relationships between actors in the system by identifying and characterising the main actors, their primary interests, their position in the system and the consequent patterns of relationships over different contexts. This was primarily pursued through the application of Principal-Agent Theory (PAT). Following the PAT approach, the social world is comprised of rational utility maximising actors that makes it possible to discern general truths from the structure of relationships and the relatively uniform motives of the actors (Braun and Guston, 2003). The government, as principal, and the researchers as agents are described as having diverging interests. Researchers are characterised as motivated primarily by the need to improve *“their role and position in the scientific system, not to satisfy the funding agency”* (Van der Meulen, 1998); this can conflict with the government’s interest in promoting particular policy goals from the research. The core of the PAT approach is that it finds that the structure of the relationship, where the agent has an information advantage due to their superior knowledge of the area of expertise, and where there is a collective action problem of utility maximising individuals pursuing divergent interests, throws up a set of problems from the point of view of the principal.

The findings of the thesis case study suggest there are a number of contradictions between this presentation of science funding dynamics and the reality of multi-goal, sustainable-development programmes. The first assumption that is contradicted is that the social world around these programmes is comprised of rational utility maximising actors. The analysis of DFID’s motivations to fund the programmes suggested that their motivation was not purely rational. This thesis has tracked how the motivation was shaped and influenced by a specific set of contextual factors relating to a specific moment in the history of research for development, and aid more widely, in the UK. Chapter 4 set out

the historical moment in detail and how it produced varying currents of thought and action in DFID over the period the programmes were initiated and implemented. There was no single obvious or ‘rational’ motivation for DFID for taking part in the programme. They were motivated both by an interest in generating a high quality body of evidence which had been given extra emphasis by the critical assessment of the quality of DFID research by the 2004 House of Commons inquiry and also by an interest in much more directly applied research that would have a more obvious impact on poverty alleviation in a short timescale. The organisation was going through a tumultuous period with strong pressure on individuals and departments to demonstrate attributable results. Throughout ESPA there was a level of contradiction and tension in what they wanted to get from funding the programme. Trying to discern a single, rational motivation was not possible. Sections 5.1.1 and 6.1.1 of the thesis showed that the motivation was fluid, multi-levelled, contextual and at times contradictory.

In PAT, the assumption of rational utility maximising actors allows for the motivations of classes of actors to be discerned; in turn, this allows for theory building around the nature of tensions between the actors. For example, researchers are characterised as motivated primarily by the need to improve “*their role and position in the scientific system, not to satisfy the funding agency*” (Van der Meulen, 1998).

The analysis of the case studies suggests that there is not a homogenous enough motivation amongst researchers that would allow for this class of actors to be ascribed a simple utility maximising motivation. The analysis found that, in ESPA, there were two distinct groups in terms of what they were trying to achieve from the programme: the ‘excellence with impact’ community, and the ‘excellence separated from impact’ community. In UPGro, the motivations of the researchers were more similar within the programme. As described above, all the researchers in UPGro had found ways to combine pursuit of scientific excellence and development impact activities within the same project lifetime. However, there was a complex mix of personal and institutionally derived motivations that had not only a strong sense of altruism but also a realism about the need to meet institutional objectives to proceed with their careers. It is not possible to characterise simply the motivations for these development-oriented scholars working across multiple disciplines in the UK. There is a complex palette of motivations on which researchers can draw in each programme to which they apply.

In PAT, funders' and researchers' interests are classed as opposed; this allows for the theory building around the nature of opposing interests. However, the findings from the case studies did not find a clear divergence of interests between funders and researchers in the context of these programmes. Most researchers were broadly happy with the funders' vision of excellence with impact. The issue for them was that in their view they were often not being given enough time and money to achieve what the funders were asking of them.

PAT, credibility cycles and co-ordination modes all focus on tensions between funders and researchers; in the case study analysis, however, one of the main tensions was actually between the funders. As shown in the introduction, the majority of contemporary multi-goal, sustainable-development research programmes have more than one funder, so this is not a niche issue. The tension between funders was one of the most enduring tensions and also one of the tensions that had the strongest effect on the functioning of the programme. However, the tensions between funding partnerships is not covered in the high-level models of funding dynamics described in the literature review. In the PAT model, RCs are seen as intermediary actors who serve a function of ameliorating tensions between funders and researchers but with limited interests of their own.

There were also tensions between the programme actors and between different types of researchers who held opposing views. In PAT, the tensions were seen as mainly vertical between the funders and the funded, whereas in the case studies the tensions were vertical and horizontal between the funders, funded and the intermediary programme actor group.

In PAT, credibility cycles and co-ordination modes approaches, the tensions come from misalignment of motivations, described as collective action problems. In my case study, this was just one of the many sources of tensions. The case studies showed that the sources of tensions around multi-goal, sustainable-development programmes were diverse, dynamic and contextual. The example of DFID showed that sources of tension were partly internal to organisations as well arising from differences between them. The tensions were multi-layered and combined high level conceptual tensions and more mundane issues (see section 6.2.1.2 for a detailed elaboration on this point).

In summary, the case studies in this thesis suggest that the picture of motivations and tensions presented by PAT, and by credibility cycles and co-ordination modes, over-

simplifies a much more complicated and nuanced picture in the case of multi-goal, sustainable-development research programmes. It matters because many of the motivations and tensions that the PAT approach would not have identified were the tensions in the study that led to the most serious effects on the programme functioning. For example, the tension between DFID and the RCs that was shown came from, and be aggravated by, a complex mix of internal, conceptual and mundane sources, would not have been accounted for by these types of approaches.

7.1.3 Discussion relating to programme-level dynamics

The literature review summarised and reviewed the existing literature on multi-goal programmes to help inform the approach taken to analyse sustainable-development variants of multi-goal programmes. The review identified a number of key findings from this strand of literature. The section below will argue that the case study findings largely support the key findings from this strand of literature and also add a number of insights that are not currently featured in the literature.

One of the themes from the literature was that programmes that seek to achieve transformative changes, struggle in the context of traditional funding systems (Adler et al., 2009; Bernard de Raymond, 2018; Kloet et al., 2012; van der Hel, 2016). The studies reported how efforts to turn science programmes towards complex societal goals are often held back by systems of measurement and management that are geared towards high quality scientific production. This was related to the point raised by de Raymond (2018) and Van der Hel (2016) that the framing and articulation at the beginning is difficult to shift once a programme has started.

This finding was strongly supported in the findings of this thesis. Many of the actors felt that the decision to use NERC's funding selection and management systems meant that the programme was strongly steered towards high quality scientific outputs over the other aims of the programmes. This was a consistent theme amongst the interviewees. It was particularly thought to be the case by the critical programme actor interpretive community who felt strongly that the choice to use these systems precluded the programmes success from their perspective.

Another theme from the literature on multi-goal programmes was that programmes were often too short for the extra academic goals to bear fruit (Adler et al., 2009; Kloet et al.,

2012). This was also strongly supported from the findings from this thesis, at least from the perspective of the Northern researchers who reported that this was particularly the case for multi-goal sustainable-development research programmes. The interviewees provided detailed and vivid accounts of why, what one described as ‘massive monsters’, take significant time and resource to put together and implement, and how often by the end of the funding period they are just getting the results in and would be focused on analysis and publication.

Related to this point, another specific argument made by Adler et al. (2009) was that tensions between funders and researchers could arise in the contradictory needs in that funders were said to want measurable results, and they valued predictability and small deviation from the funding plans. At the same time, researchers found the funding system too rigid, in particular the requirement that there was equal disbursement of funding over the years. Researchers found it would be better if there was more flexibility and to have the ability to continue funding for successful projects at the end of a programme. This tension was present between funders and researchers in the case studies (see section 6.1.3). The researchers wanted more flexibility whereas the funders needed predictability of dispersal of funds and accountability.

Another theme from the literature was that neither funders nor researchers had full control of programmes and that they were intertwined in a negotiation as the programme developed. Shove (2003) found that researchers were already running their own programmes of work and using the funders’ programmes to piece together the funding they needed to support their research aims. This resulted in an iterative process of mutual adjustment on both sides with researchers not aiming to collectively capture the agenda but rather work together with the funder’s agenda to develop their own. This was mirrored in the case studies with the idea that researchers created a ‘jigsaw’ of projects that underlay their long-term research programmes and that they adjusted their work to fit with the programmes (see section 5.1.3).

The last point from the multi-goal programme literature was that de Raymond (2018) developed a set of varied findings about the organisational dynamics of the programme. He found that a key issue in the programme was promoting trust between funders with different visions of the programme. In a similar way Klerkx and Leeuwis (2008) found that when you have more than one funder it can lead to burdensome reporting because

the organisations struggle to let go of any of their needs. The findings in relation to the ESPA programme support this insight. The lack of a resolution to tensions between the funders at the start of ESPA led to tension around the goals of ESPA and what funders wanted from researchers. As discussed above, the tension between funders in the programmes was one of the most enduring and consequential tensions. The literature review shows that it is an issue that is starting to be picked up on in the literature on multi-goal programmes, although it was certainly not a strong focus of the literature.

The main addition of the findings from this thesis to this literature related to insights around the dynamics around integrative programme actors (in ESPA the Directorate and in UPGro the Knowledge Broker/PCG/Coordinator) in multi-goal programmes. This was not a feature of the literature on multi-goal programmes summarised in the literature review chapter, but it is certainly a feature of many multi-goal sustainable-development programmes and so is an important addition to the literature. Jones et al. (2018) talk about this feature; this was one of the studies that was not included as a major study because it was based on a single workshop rather than a substantial empirical study. They outline some practical considerations around the importance of creating a centralised knowledge management function for a programme to achieve synthesis. They say that this needs to be considered and created from the start and be properly resourced.

The findings of this thesis describe in more detail the dynamics of the tension and synergies between programme actors and researchers. The interviews with researchers showed that they work on their own long-term programmes of research and need to be enticed to be motivated in integrative activities (see section 6.1.2).

7.1.4 Discussion relating to combining scientific excellence and development impact

The literature suggested that a key tension in the programmes could be that between the goals of scientific excellence and development impact. Scholars have argued that seeking to produce excellent science, evaluated according to universal standards, has the potential to take research away from being relevant to local problems, as scientists are forced to follow research agendas developed in wealthy nations where the centre of gravity of the academic world lies (Bianco et al., 2016).

The findings of this thesis add additional insight on this issue by outlining two ways in which a focus on scientific excellence within a research programme of this type was seen to be detrimental to development impact.

First, most straightforwardly and in line with the description from the literature above, many Southern researchers on the programme felt that having the projects led by Northern researchers led to the use of conceptual approaches that were not the most appropriate to use in the context of the country in which they were working (see section 5.1.6.2).

Second, the dynamic of this tension arose in a specific way in the findings from this thesis that I have not seen described elsewhere in the literature. Whether there was a conflict or not depended on whether development impact was conceptualised at project/output scale or at programme-wide impact scale. To the majority of Northern researchers, the funders and the Neutral programme actors, the UPGro programme combined scientific excellence and development impact without creating a major tension or conflict. When the emphasis was on measuring instances of impact at the project output level, the actors felt that it was perfectly possible to combine activities associated with scientific excellence and activities associated with generating impact within one project. The Critical programme actor community, however, saw a tension between excellence and impact; because they looked at the excellence versus impact issue at the programme-wide outcome level. To them, scientific excellence was seen to be in tension with development impact in the following two main ways (see section 6.2.3.1 for more detail on the two ways). Firstly that the choice of modality of project-based science funding was seen as well suited to produce ground-breaking findings and high ranking publications but detracted from the research activities that could produce the greatest impact for the money invested. Secondly, the way that the institutional arrangements associated with scientific excellence of excellence-driven peer review and hands off management of projects was seen to detract from the ability to actively steer the programme towards a coherent and cumulative impact on the targeted issue.

In summary, the thesis adds to the literature by viewing this conflict through the specific lens of research programmes rather than in a more general sense. It found that whether there was a conflict or not depended on the actor's vision for this type of programme and their conceptual starting point in judging success. It raises profound questions to be

reflected on by funders and other actors operating at the senior level of these programmes. These will be revisited below in the policy implications section.

7.1.5 Discussion around the dynamics of inclusion of Southern researchers

The literature review summarised the large number of studies that have looked at the position of Southern researchers in collaborations with Northern researchers. The literature painted a picture of structural inequalities where the Southern researchers were highly disadvantaged in their engagements because of resource dependence and the difficulties of the circumstances in which they operate. Muriithi et al. (2018) found Southern researchers operated from a position of weakness to take up leadership positions. They operated in a context of low levels of investment in funding research, at both the institutional and national level, and institutions with inadequate policies, high levels of bureaucracy, competition among local institutions, weak links with industry, and a major focus on teaching as opposed to research. Partnering is often the only way they could access research funding, placing them in a position of resource dependence on the Northern partners.

Unfortunately the examples of ESPA and UPGro did not provide case studies of good practice in how to counter these structural tendencies in research programmes. The analysis found that, although there were many good examples at project level and Northern researchers were motivated to do what they could, there was a gap between the rhetoric of Southern researcher inclusion at the programme level and the level of priority it was given in practice during the lifetimes of the programmes. The lack of priority at the programme level meant it was left to the individual approach of the Northern researcher PI how Southern researchers were enrolled into the programmes.

The contribution of the analysis is that it has added another way in which Southern researchers could be disadvantaged in the research funding process. It showed how the integrative centralised functions could be another site where Southern researchers are excluded from leadership. As Southern researchers were included as co-Investigators or more junior researchers, they tended not to have a direct line to the centralised integrative bodies (i.e. the Directorate and the Knowledge Broker/PCG). Despite many expressing a wish to be more involved, they did not generally know much about the bodies and almost all that I spoke with had not been actively involved in any decision-making processes: many barely knew about them at all (see detail in section 5.1.6.2).

7.1.6 Policy implications

The positioning of this thesis was that it aimed to produce a critically engaged and pragmatically oriented analysis of the subject. As explained in the literature review, the positioning was influenced by the idea of phronetic social science as expounded by Flyvberg (2001). The idea of producing this type of social science is not to produce clear policy prescriptions that can be taken off the shelf and applied. Rather the idea is to produce rich accounts through case studies so that practitioners can understand the context and the debates and reflect on their own circumstances in considering how the paths of action taken in the case studies may be applied. Therefore, the lessons below are offered tentatively as a set of reflections from these case studies that can be borne in mind by future programme designers.

The first lesson to reflect on is the necessity to make sure that the initial design and set up phase of the programme is not rushed. In ESPA, the programme negotiation phase was seen as very difficult for DFID and NERC and they struggled to get past conceptual differences around the meaning of impact. However, they were under pressure to start the programme and went ahead without fully resolving or understanding what each funder needed from the programme. The lack of a clear, mutually beneficial and coherent articulation of the programme meant that the tensions between the funders never really went away. It also contributed to communication problems with the research community and to a general sense that the programme never operated coherently towards a shared goal. Part of the problem was a lack of understanding of each other's institutional arrangements and the connected needs.

This suggests it is worth spending time and money at the start to articulate a coherent message around impact and excellence and make sure the selection and management processes cohere. Funders should get to know each other's systems and what they entail in detail. One interviewee suggested that ESPA would have benefited from bringing in an external facilitator with expertise in research for development to help the funders work through these issues in advance.

The second reflection, which is closely related to the first, is that funders should keep the combination of goals and objectives realistic considering the amounts of funding and time they are offering in their grants. During the design process they should not overload the programme with objectives, allow for the time and resource that researchers need to go

through all the processes involved in co-generating excellence, impact, interdisciplinarity and Southern inclusion. If it is not possible to do all of this in one round of funding, they should make it explicit what is realistically expected. Funders should also reflect on whether there is any way to build in more flexible mechanisms for top up funding at the end of projects. The analysis suggested that many projects are running out of money towards the end, meaning that many of the extra academic goals are suffering and funders may not be getting the value out of the projects they could with a small amount more money and time.

The third reflection is that researchers need to be *enticed* to take part in the integrative activities offered by the programme actors. Programme actors need to develop a keen understanding of the interests and motivations of the researchers they are working with to tailor the activities to make them worthwhile to the researchers. The PCG model in UPGro was appreciated by the researchers as a way for them to engage in shaping the programme, but it was not just the particular governance mechanism. The analysis suggested that it was more about personalities, reputations, knowledge, attitudes and whether PIs knew each other previously and had developed good relationships. To summarise, the analysis across the programmes identified a number of traits that enabled the directorate in ESPA and the Knowledge Broker/Co-ordinator in UPGro to reduce the tension with the researcher community:

- a participative, team-oriented attitude and personalities;
- humble personalities who are good at listening and understanding others' perspectives;
- deep knowledge and understanding of the relevant science worlds and the international development sphere;
- existing working relationships and accumulated trust with the community;
- the ability to manage a complex, interlinked programme of work.

The fourth reflection relates to the tension between the critical programme actors viewpoint and others. The critical programme actors adopted a stronger ethical standpoint, asking if it was justified to spend money on research programmes set up in the way ESPA and UPGro were set up. If programmes were going to be framed as 'for the poor' in the way that both these programmes were framed in their titles and descriptions, then is there a better way to do these programmes that delivers more benefit

for poverty alleviation in developing countries. The critical programme actors believed there was a better way. They suggested that to do more problem driven research the programmes should be:

- demand driven: more research and consultation should be done with decision-makers in developing countries at the design phase to identify pressing problems that research can impact;
- strategically designed by people with research for development expertise;
- make the Logframe impacts and outcomes more specific, strategic and focused, then provide a detailed theory of the processes between outputs, outcomes and impacts;
- use more guided and selective peer review processes that pick projects that can fill knowledge gaps strategically;
- more social science: this group believed that for many problems there was enough known about the natural science to produce practical guidelines and that what was often lacking was the social economic aspect;
- more funding to Southern researchers: this was seen as crucial for developing demand driven research and was worthwhile in itself; and
- more active management: the programme would need high level strategic steering by suitably qualified development and scientific experts, and they would need to be able to steer researchers towards the emerging gaps as the programme developed.

The final policy reflection from the analysis is that policy-makers should consider how programmes can live up to the rhetoric on Southern research inclusion and capacity building.

Suggestions from the analysis are:

- fund equipment, PhDs, and consider how space can be carved out for writing papers and analysis. This was raised as a key issue by a number of Southern researchers. One option could be to set up a fund to pay for writing retreats that Southern researchers of varying levels of seniority can apply to use;
- find ways to incorporate Southern voices in any programme level groups, the specific suggestion from several of the Southern researchers in UPGro was that

these groups should include co-Is more directly as with the current status quo Southern researchers are more likely to be co-Is than PIs;

- consider how peer review processes could be adapted to increase the chances of Southern-led projects, one way to do this that was suggested by an interviewee was to have more Southern based academics taking part in panels. Another way could be to give development impact considerations and in country networks a slightly higher priority in the funding criteria as many interviewees in the study believed that Southern academics are often stronger on these points;
- consider if people could check in on projects in some way to ensure that Southern researchers are being included in fair partnerships. This could include doing check ins with Southern researchers directly or asking for evidence of what projects are doing to ensure this goal is realised in every project and not just those with Northern leads who are most dedicated to the issue.

7.1.7 Strengths and weaknesses of the IPA methodology

This section will reflect on and evaluate the strengths and weaknesses of the IPA approach for analysing multi-goal, sustainable-development research programmes. It will start with the strengths and then move on to the identified weaknesses. When considering the weaknesses, I will reflect on the extent to which the weaknesses related to the way IPA was applied in my study as opposed to inherent weaknesses in the approach.

7.1.7.1 Strengths of the IPA approach

Overall I found the IPA approach to be a rigorous and nuanced methodology for studying the complexity of motivations from the perspective of different actor's experiences. By starting with the experiences and perceptions of individuals, it builds an inductive analysis from the bottom up. This inductive type approach ensures the analysis is guided by what matters to the participants rather than starting with high level hypothesis generated from the literature. It has allowed for a detailed analysis of the dynamics around this type of programme and generated a set of rich insights, as detailed above.

The main strength of the approach lies in the way that it allows for an open and rich analysis of the causes of the tensions and synergies between groups. It combines analysis of conceptual issues around how individuals interpret the goals of the programme with analysis of the practical, more mundane issues around administrative systems or the day-to-day realities of being a researcher or a programme manager. There may be a grand

conceptual difference, or the potentially more mundane sources may be more important. The example of the analysis of what causes the tension between the funders is an example of this, as well as the tension between programme actors and researchers. It also adds richness through contextualising tensions and allowing for tensions to be dynamic than abstracted and static.

Another major strength of the approach is that it balances a ‘technocratic’ vs a ‘critical’ approach. The introduction to the thesis discussed this distinction used by Edge (1995). From the start the thesis aimed to chart a path between the two extremes. An extreme technocratic approach to my study would have asked researchers and funders what has or has not worked across the research programmes and sought to establish the barriers to and drivers of change and how they could be re-aligned to allow the identified lessons to be learned and implemented. An extreme critical approach would focus entirely on deconstructing and multiplying narratives around the goals found in the programmes, seeking to show the level of divergence through thick descriptions and analysis. Having now used the IPA approach I believe it presents a good mix of the two positions.

The set of tensions – between the funders, Northern researchers and programme actors – that were resolved in the shift from ESPA to UPGro, presented a set of more technocratic ‘what works’ type lessons around how to resolve tensions between these groups. Resolving these tensions allowed UPGro to run more smoothly and in line with the expectations of the powerful group of actors who were designing and running the programme at executive level. These insights were generated by adopting the perspective of these actors and recounting their experiences. However, the IPA approach also requires the searching out of less dominant perspectives on the issue at hand. There were two interpretive communities in the programme whose perspectives were not strongly represented at executive level and whose opinions presented more critical perspectives on what and who the programme was for. These were the Southern researchers and the critical programme actor group. The Southern researcher perspective led to a questioning of the gap between rhetoric and action in the programmes relating to the inclusion of the group, and the critical programme actor perspective allowed for a questioning of the whole premise of the way the programmes were established and run. I believe the IPA approach allowed these groups to act as a kind of conscience for the analysis of the programmes.

7.1.7.2 Weaknesses of the IPA approach

The balance described above between technocratic and critical approaches provided by IPA is also arguably its main weakness. This position as both practicable and critical arguably leads to a sense of not doing either fully.

On the one hand it could be more radical in its critique. By largely staying with the perspectives of powerful actors at programme level it arguably fails to present all the sidelined voices in the programme. Also by focusing on the perspective of individuals it fails to thoroughly trace and deconstruct the underlying discourses around the research for development discourse in the UK. The focus on intergroup tensions is helpful for making the analysis quite useful and keeping it grounded, but perhaps this leaves the underlying fundamental tensions less explored.

I also found the element of the analysis that asks for tensions to be framed as *between* interpretive communities to be problematic. Some of the tensions felt like they were more tensions between discourses rather than between the interpretive communities. This is perhaps an inevitable tension in analysis that tries to group interpretations of individuals together for the purposes of creating a wieldy description and analysis. In reality, actors may agree and disagree on some issues across and within the groups. However, this would not be an issue if you approached the analysis from a more critical discourse analysis position.

Alternatively, it is arguably too critical to provide truly useful information of the practical technocratic type. The focus on unpacking the perspectives of all the main groups detracts from focusing on the particular issues in which those running the programmes may be interested. It does not provide the type of more objectively presented and thorough unpacking of what works that may assist those in positions of authority. Methodologies associated with the evaluation of science programmes would be more successful in providing this type of more objectively presented information that could hold more sway in directing action within a government department.

On a related point, the approach arguably has too much of a focus on criticising the tensions between groups and not enough focus on identifying the common ground and synergies. I added a short summary of my reflection on the analysis of synergies at the end of the tensions section, but it was not a focus of the IPA approach of Yanow (2000)

and Schwartz-Shea and Yanow (2013) and in following their approach I certainly did not focus as much on synergies as I did on tensions. This arguably makes the approach too negative overall.

A final reflection on the weaknesses of the IPA approach is that in its breadth of coverage of the multiple interpretations and tensions it arguably fails to fully explore any individual or set of issues. However, on reflection this is arguably more to do with how the IPA approach was applied in this study than inherent to the approach itself. I wanted to avoid focusing on any one issue in this study as I wanted to provide an exploratory type study that encompassed the complexity of the programmes and how all the goals and actors fitted together and interacted. If I had chosen just one or two of the goals I could have focused more deeply on it. In the format of hour long interviews – which were realistically the longest I could obtain – it was quite difficult to cover all of the issues in as much depth as I might have liked. I could have instead for example just asked participants about their interpretations on development impact from research and spent more time on this single issue and I would have likely generated richer material for analysis. On the other hand the strength of the way I have approached the study is that the breadth of coverage means it is a useful exploratory study of a subject that has not been studied before and should hopefully provide inspiration for multiple further avenues of study to explore particular aspects.

This section will be revisited in section 7.2.3 of the thesis covering potential avenues for further research, where an argument is made of how IPA could be complemented by both more technocratic and critical approaches to further explore particular issues raised in the thesis and provide a balanced field of research on the study of multi-goal, sustainable-development research programmes.

7.2 Conclusions

This section will revisit the research questions, outlining how the thesis has addressed each question in turn. It will then describe the two contributions to knowledge of thesis before considering avenues for further research.

7.2.1 What are the dynamics between senior stakeholders of multi-goal, sustainable-development research programmes?

This overriding question is answered below through the addressing of the sub-questions.

7.2.1.1 What different interpretive communities can be identified at programme level?

The thesis identified seven interpretive communities at the programme level and described in detail the meaning ascribed by each community to the programmes in the findings section at 5.1 above.

DFID programme managers

Section 5.1.1 described the DFID programme manager's interpretive community. Their framing of the programme was described as informed by their institutional setting focused on poverty reduction and value for money and also their nuanced understandings of development impact from research gained through their experience of running these programmes. The primary motivating factor of forming the collaboration with NERC and the ESRC was described as a way to move funds, using a high quality peer review system, that was perceived as good value for money. They value low risk, predictable flows of money with a strong audit trail and they deplore over or underspend. Also the rising results agenda and the backdrop of increased scrutiny of DFID meant they highly valued being able to provide a strong account of the positive impacts from the programme, as it unfolds. On the other hand, based on their experience of running these programmes they also believed it could be a long pathway, indirect and not that certain. In summary, there was an internal tension within this community. They value excellence and peer review. They see themselves as defending the value of research within DFID. However, they are required to use the institutional arrangements they have and are under increasing pressure to demonstrate, or at least provide a compelling narrative of, impact during the programmes.

RC programme managers

Section 5.1.2 described the RC programme manager interpretive community. It described how the framing of the programmes by the RC programme managers is largely defined by the nature of their place in the research system, the implications of the Haldane principle, and the consequent focus on selection and administration procedures. They do not see the programmes as particularly unique or special. The peer review institutional arrangement was central to how they think about their role in the programme. To them, if you put the focus on the peer review and it is run well following principles of transparency and objectivity and with a suitably qualified panel, then this sets the programme on course to meet its objectives.

Northern researchers

Section 5.1.3 identified two interpretive communities within the Northern researcher interviews: Northern researchers comfortable combining excellence with impact; Northern researchers who maintain a separation between excellence and impact. The section began by explaining the common ground before explaining the two distinct groups on the excellence/impact issue. Northern researchers experience these projects as ‘massive monsters’ that are difficult to manage, control and complete. A crucial contextual point to understand in how Northern researchers experience and frame these programmes is that they are working on these projects whilst being under great time pressure in their academic roles. They view the programmes as a way to add another piece to the ‘jigsaw’ of their personal programmes of work. The Northern researchers described a range of underlying motivations for why they wanted to work on the ESPA and UPGro programmes and described a range of underlying motivations for why they wanted to work on the ESPA and UPGro programmes.

UK researchers comfortable combining excellence with impact

Section 5.1.4 described how this interpretive community was defined by their level of comfortableness with combining the pursuit of scientific excellence and development impact at the same time in one research project. Within the group a diversity of ways of how they interpreted and sought to combine scientific excellence and development impact were described.

UK researchers who maintain a separation between excellence and impact

Section 5.1.5 described how this interpretive community maintained that doing both excellence oriented science and development impact in the same project was not desirable. They believed that if you combined the two it could have a negative effect on the science and the development impact.

Southern researchers

Section 5.1.6 described how Southern researchers the programmes. The starting point was described as understanding that these type of international collaborations are the primary way that they are able to access research funding. Beyond this fundamental value to them, the interviewees described a number of motivations for engaging in these projects. The primary values were capacity building, access to international networks, a chance to publish and achieving impact for their local communities. Positive experiences

were described but the majority of interviewees expressed frustration at their role in the projects and their relationship with their Northern research partners. They reported feeling they were not treated as equal partners and that their circumstances prevented them from operating a level playing field with the Northern researchers.

Critical programme actors

Section 5.1.7 identified and described a Critical programme actor interpretive community. They were focused on the *for* poverty alleviation in ESPA and the *for* the poor elements of the UPGro title. They started with the question of how you spend research money, investigating ecosystem services and groundwater services, in a way that will help poor people in developing countries. Their interpretation of the meaning of ‘greater than the sum of its parts’ was that the projects within the programme would collectively solve a problem closely connected to poverty alleviation in a way that they would not be able to do as single projects. They were happy for the processes and standards associated with scientific excellence to be relaxed if it could promote greater impact on poverty alleviation. They saw both programmes as a missed opportunity to produce research focused on poverty alleviation.

Neutral programme actors

Section 5.1.8 described a second set of programme intermediaries who saw the programmes as being much more successful and as a good ‘marriage’ of different elements. The changes they would make were minor and technical in nature. For neutral programme actors/funders, research “for the poor” means funding excellent research in an area broadly related to poverty. ‘Greater than sum of its parts’ means optimising learning opportunities, building communities of researchers and taking opportunities to collectively maximise impact when they arise. They valued open, competitive peer review processes that lead to the highest quality science. They were happy to see what comes back from the research community and work with the researchers to integrate it.

7.2.1.2 What are the main tensions at programme level and what are their sources?

The thesis identified five main tensions between the interpretive communities.

Tension between NERC and DFID programme managers interpretive communities

Section 6.1.1 described a serious tension in the ESPA programme between the RC and DFID programme manager interpretive communities around their interpretations of

development impact. As explained above, DFID recognised that impact takes time and is built from many projects, and they valued excellence and peer review. However, they were required to use the institutional arrangements they have and were under intense and increasing pressure and scrutiny to demonstrate, or at least provide a compelling narrative of, impact during or immediately after the programmes. They needed to have a strong story and some evidence to demonstrate short-term poverty alleviation impact. They were used to designing programmes around set outputs, outcomes and impacts demonstrating this poverty relevance. On the other hand, NERC primarily valued excellent research, provided through the mechanism of peer review. They had a much less pressured expectation of development impact being demonstrated in the short term. The way that they designed strategic programmes was to use consultations with the research community and users of research to identify areas of research where there was potential for impact. Within this broad area they would give researchers much more freedom with fewer checks and no setting of pre-defined impact objectives.

The tension between the RCs and DFID had arguably the most complex range of sources. There was first a strong conceptual tension between how the funders understood what development impact from research looked like, with DFID expecting more immediate impact and the RCs viewing a longer pathway; however, this conceptual difference cannot solely explain why the tension persisted. The conceptual source of tension was aggravated by specific contextual circumstances and a range of more mundane issues such as high staff turnover, individual personalities and clashing administrative systems. The sources of tension were dynamic and fluid with the background conditions shifting over the course of ESPA to UPGro, which helped ameliorate the tension.

[Tension between senior researchers and programme actors](#)

Section 6.1.2 described a tension between researchers and programme actors. The core of the tension is that senior researchers were primarily focused on their individual long-term programmes of work whereas programme actors are focused on the research programme they are employed by. The tension arose where researchers felt that programme level activities were not producing value. The source is that researchers are very busy and focused on their own projects, also they are experts in their fields and reluctant to be heavily directed. It arose where researchers struggled to see how programme level

activities could help their own projects or how their participation in the activities was contributing to other values they hold such as community building.

Tension between Northern researchers and the funders

Section 6.1.3 described how the main tension identified between the Northern researcher interpretive community and the programmes' funders was around perceptions of what it is realistic to expect from a research project of this type. The main source of this tension related to the way that the funders asked for ambitious goals and, from the researchers' perspective, often did not provide the required time and funds to allow them to deliver. A further source of the tension that was described by a number of researcher interviewees was that they believed the level of competition of funds led them to overpromise on what they could do in a project. Ultimately, the source of the tension relates to the pressures both the researchers and funders were under. Researchers face very strong competition for RC grants and are incentivised to tend towards optimistic estimates of what can be achieved in order to win the grant. During this period, funders were under strong pressure to reduce the length of programmes and achieve maximum value for money.

Tension between Southern researchers and funders

Section 6.1.4 described a strong tension between the perspective of Southern researchers and the perspective of those running the programmes. Southern researchers expressed how they wanted to be leading intellectually or at least equal to Northern researchers and to be supported to build capacity, with a focus on PhDs and equipment. The funders wanted to support Southern researchers and there was an emphasis on this goal in the programmes; multiple efforts were made to encourage Southern leadership and capacity building. However, despite the strong rhetoric in the programmes, there remained a significant gap between the level of priority given to these issues by Southern researchers and the level of priority given to it in the programmes. The source of the tension was the differing levels of priority given to these issues between the groups. From the Southern researcher framing, their priority was clearly that their needs were met by the programme: they wanted leadership roles in the programmes, wanted a focus on equipment and PhDs, wanted to be engaged in the programmes in a way that allowed them to publish, and wanted to promote meaningful community engagement and sustainable impact. From NERC's perspective, it is their mandate to support and nurture the UK research base and

their interest in nurturing capacity building and leadership of Southern researchers is seen through the lens of how it can benefit UK researchers.

Tension between the critical programme actors and RCs/neutral programme actors

Section 6.1.4 described a tension between the critical programme actor interpretive the RCs/Neutral programme actors. The tension revolves around differences of interpretation around the meaning of ‘for the poor/poverty alleviation’ titles of the programmes and the meaning of the programmes being greater than the sum of their parts. The source of the tension is a different conceptual starting point for judging the programmes. The neutral programme actors started by framing the programmes as RC/DFID collaborations. They adopted a kind of realist view that if it is the RCs then it is going to be focused on academic excellence and competitive peer review. The critical programme actors instead started with an ethical position, contrasted with the realist view of the neutral programme actors. They said that if a research programme is framed as being ‘for the poor’ then it should have a clear pathway to alleviating poverty and should start with the question of what kind of research could be done to promote this goal.

How do the contrasting interpretations and dynamics between senior stakeholders involved in multi-goal sustainable development research programmes affect the implementation of those initiatives?

There were severe tensions in ESPA from its beginning. The tension between DFID and NERC prevented a clear conceptualisation of the programme that led to misunderstandings, miscommunication and lack of cohesion in the programme. There was also a tension between Northern researchers and the programme actors in ESPA for large periods of its operation. The negative effect of this tension was that the programme would struggle to cohere and to create as much value ‘greater than the sum of its parts’ as it would if the programme actors and researchers were working together harmoniously. The programme actors relied heavily on the inputs of the researchers to create value. If the researchers felt that it was not worthwhile, they would disengage from the programme activities and focus on delivering their projects. There was limited scope for compelling researchers to engage with programme activities meaningfully. In this situation they would revert to doing the minimum amount and activities would fail to achieve their potential.

These two tensions led to the programme not cohering and manifested in a way that prevented the programme from fully enrolling and engaging all the actors. It created negativity and withdrawal. ESPA did not function well at times as a programme in terms of its integrative functions. However, it is important to note that this did not stop the projects from continuing to do their work and producing impressive scientific results. This is reflected in the fact that despite ESPA not functioning very well as a programme for large periods, it far surpassed its targets in terms of number and quality of publications and produced many individual successful impact stories across the globe. The point being that research projects will carry on functioning if the integrative centre of a programme stops functioning well, and the funders will still receive many of the indicators of success that they assign to a programme.

These two tensions were repeatedly referred to in the PEB minutes and a great deal of effort was made to resolve these tensions. The tension around the Directorate was addressed through reconstructing the team around a more participative attitude towards the end of the programme.

When UPGro was formed, resolving these two tensions was a priority for the funders. The tension between DFID and NERC was ameliorated through the creation of a shared vision around research to impact. The tension between the programme actors and Northern researchers was ameliorated through the creation of a bottom-up governance mechanism and through a strong participative and co-operative attitude being adopted towards the research community. UPGro was largely seen by the funders, Northern researchers and neutral programme actors as a highly successful example of how to set up and run this type of programme and achieve a balance between the goals of scientific excellence and development impact.

However, in addition to these tensions that were made priorities of the PEB and were largely resolved in UPGro, there were three more latent tensions that remained in place throughout the lifetime of ESPA to UPGro. These tensions did not affect the day-to-day implementation of the programmes in the same way, but they do raise profound questions around the way the programmes are set up.

The first latent tension was between researchers and funders around what can be realistically achieved in a project. The tension arises if researchers feel that the

requirements to produce excellence, impact, interdisciplinarity and capacity building are not backed up by sufficient time and monetary resource. This tension did not prevent the programmes from functioning: it is quite a latent tension. There is a feeling of understanding and acceptance on both sides of it just being the way it is. However, it leads to a sense of unreality about the whole programme and uncertainty around whether or not projects will be fully finished. The activities associated with interdisciplinarity and impact were perceived as most at risk.

There was a strong tension in both programmes between the perspective of Southern researchers and the perspective of those running the programmes. The funders wanted to support Southern researchers and there was an emphasis on this goal in the programmes; multiple efforts were made to encourage Southern leadership and capacity building. However, despite the strong rhetoric in the programmes, there remained a significant gap between the level of priority given to these issues by Southern researchers and the level of priority given to it in the programmes. Again, the effects of this tension were quite latent; it did not stop the programmes functioning well in producing high quality research. The ESPA and UPGRO Logframes both had the emphasis on publications. The tensions in these programmes did not stop the successful enrolment of the Southern researchers into the programme as partners because, as explained above, Southern researchers needed these types of programmes to do research and they provided many benefits to them. However, several interviewees across the groups felt that the likely effect of the lack of emphasis on Southern leadership was that the programmes would have less development impact as Southern researchers were perceived to have better understanding of local political systems and networks that they could use to have impact.

The last tension was between critical programme actors, and the neutral programme actors and the RCs. This tension did not have a tangible effect on the programme in terms of the running of the programme and in terms of the programmes meeting the success criteria that were set by the respective PEBs. However, it does raise important reflective points around the purpose of the programme.

7.2.2 Thesis contributions to knowledge

The thesis has made two distinct contributions to knowledge.

First, it has identified and tested a suitable analytical approach and methodology in an appropriate way to study the under-researched area and evaluated the strengths and weaknesses of the approach used. The literature review section analysed existing relevant literature to inform a view of the potential dynamics of multi-goal, sustainable-development programmes, and to develop a set of criteria for a suitable analytical approach. It also critically reviewed available approaches in the literature for studying multi-goal programmes but found them unsuitable for analysing this subject. The analytical approach section introduced and set out the principles and practice of the IPA approach and provided an argument as to why it was a promising approach to use. The methodology section explained how the approach would be operationalised using a coding scheme that I developed, and that was honed to be suitable for answering the questions raised by the IPA approach. After applying the approach, I reflected on what I believed were its strengths and weaknesses. I argued that it presented a nuanced and balanced methodology for drawing out a rich description of the dynamics of the subject. It led to both pragmatic and critically-oriented policy-relevant insights. However, I also found that its strength in balancing pragmatism and criticism perhaps created a weakness in not providing either fully pragmatic or critical knowledge. Its main strength lies in being a rigorous methodology for initial exploration and mapping of the terrain around the dynamics of a programme of this sort. However, it needs to be supplemented with more in-depth critical and pragmatic methodologies to provide stronger evidence bases to feed into policy reflection and advice. This is explored further in the final section below on avenues for further research.

The second contribution to knowledge is the empirical contribution of a novel account of multi-goal, sustainable-development research programmes, their dynamics and a set of learnings for future programmes. The subject of the dynamics of multi-goal, sustainable-development research programmes is an under-researched area so there were no clear theories or accounts on which the thesis could build. It has instead provided the first empirical account of the dynamics of this specific subject. This is summarised in the concluding section above addressing the research questions. It has described in detail the dynamics of the programme and provided a set of high-level insights that were in turn discussed in relation to the literature and translated into a set of implications for policy.

7.2.3 Further avenues for research

There are a number of potentially beneficial avenues for research building on the findings of this thesis.

In the strengths and weaknesses of IPA section above, I explained that IPA was an effective and balanced method for identifying the broad tensions and dynamics in a programme, drawing out both pragmatic and critical issues. However, I also identified that its weakness was that, in having this broad focus, it failed to fully commit fully to generating either critical or pragmatic knowledge and so has strength in its breadth but arguably lacks depth on specific issues.

I believe IPA has value as part of a wider research programme analysing multi-goal, sustainable-development research programmes with a broad mix of methodologies and methods to produce highly pragmatic but also a reflective and critical knowledge base on the subject. IPA is valuable as an overall case study methodology that can first act as a kind of exploratory methodology, drawing out the range of issues to be explored more fully with other techniques. Second, it has benefit in potentially creating a comparative corpus of case studies of this type of programme.

A further avenue that warrants exploration in terms of strengthening the academic and policy evidence base in this area is to conduct a systematic review of all available and relevant programme evaluations of multi-goal, sustainable development research programmes. As noted in the literature review at 1.1.4 throughout the course of the PhD I became aware that there are many high quality, rigorous and critically aware evaluations that are conducted and published as reports. It would be valuable for the findings from these reports to be considered and synthesised alongside a consideration of the various methodologies used. If this was published in one of the science policy peer reviewed journals such as *Research Policy*, *Science and Public Policy* or *Minerva* then this would bring the two communities and literatures into contact with each other and potentially set the stage for a useful discussion of themes, findings and policy recommendations.

Bringing in and synthesising the more policy oriented evaluation knowledge base could also help to ensure that the audience for the programme of work includes policy oriented organisations as well as the academic community. Including policy evaluation reports would signal to a wider audience the intent to be pragmatically and solutions oriented. This policy oriented audience could include policy makers (e.g. Research Council staff

and policy professionals in government departments), policy consultants (e.g. those conducting the evaluations) and wider programme stakeholders (e.g. NGOs who routinely engage with these types of programmes). After the synthesis is completed then a process of dialogue could be established through a series of workshops and seminars where participants could be asked to critically reflect on their experience in comparison to the findings and eventually co-produce a set of recommendations.

In addition to this policy evaluation report synthesis, further avenues of research are discussed below under three categories: going deeper on technocratic issues raised by the analysis, going deeper on critical issues raised by the analysis, and further case studies using IPA in different study contexts.

7.2.3.1 Going deeper on technocratic issues raised by analysis

One of the key underlying sources of tension in the programme was personality dynamics and attitudes. This is not an issue that I saw explored in the literature on multi-goal programmes of funding dynamics. Exploring the role of leadership and collaboration in these types of programmes drawing on fields such as psychology and management studies, could be a fruitful line of research.

The issue of the length of projects and how realistic it is to produce excellence, impact, capacity building and interdisciplinarity in the length of time and the amount of resource was another key issue raised by the thesis that could be further explored. A methodology that allowed for the tracing of the processes involved in this type of project over a wide range of projects could provide strong evidence on what actually gets achieved in these projects and what could be done to ensure funders get value for money from them.

A further interesting line of enquiry related to the one above would be to study in further depth the nature of the relationship between funders and researchers in terms of overpromising, expectations and trust. A comparative sociological study of a range of funders working in this field could yield interesting and useful findings around how different funders and communities of researchers negotiate this issue.

7.2.3.2 Going deeper on critical issues raised by the analysis

There were two issues raised by the findings of the thesis that could benefit from deeper application of critical methodologies. Discursive methodologies that seek to deconstruct

the history of how ideas develop and are used are the most obvious candidates for this type of analysis.

The thesis raised the gap between rhetoric and action on the inclusion of Southern researchers in the programmes. A discourse analysis could usefully trace the history of this idea in the context of the research for development field in the UK.

The thesis also raised the issue of the use of the language of poverty alleviation in the programmes and how, from one group's viewpoint, there could have been a better way to pursue this goal. It could be a fruitful line of enquiry to trace the use of the language of 'poverty alleviation' in the developing research for development field in the UK.

The thesis highlighted how the design phase is critical in creating a coherent programme and how interviewees suggested that the ESPA programme was slightly hurried due to pressures in the organisation. Another line of more critical enquiry could be to conduct a kind of political-economy type analysis of the factors that influence the design of this type of programme. A comparative study, drawing perhaps on political economy methodologies, analysing the factors that influence the design phase of this type of programme could draw out important reflective insights for funders.

The critical programme actors adopted a stronger ethical standpoint, asking if it is justified to spend money on research programmes set up in the way ESPA and UPGro were set up. If programmes are going to be framed as 'for the poor' in the way that both of these programmes were framed in their titles and descriptions, then is there a better way to do these programmes that delivers more benefit for poverty alleviation in developing countries.

7.2.3.3 Further case studies using IPA in different study contexts

Completing further case studies using IPA, or similar methodologies, could allow for a corpus of comparative case studies to be constructed. This could allow for the analysis of patterns of dynamics and how dynamics are affected by different types of context.

Building on the identified weaknesses of how the approach was applied in my study, I would make several recommendations on how the IPA approach could be improved. First, it could be adapted to have more focus on synergies to create a more balanced view of the programmes. Second, it could use more ethnographic type methodologies to deepen

the insights and strengthen the triangulation of methods. Third, it could seek to encompass a deeper exploration of views of the programmes within the higher echelons of funding organisations and seek to compare and contrast them with the views of those implementing the programmes. It could go further in attempting to uncover less heard voices around these types of programmes. It could do this by focusing more on Southern researchers at different levels of seniority and in different geographies, or it could focus on early career researchers in general. It could also stretch more into the implementation and project delivery side of the programmes and include analysis of the users of the research, such as local communities and/or decision-makers. Another line of enquiry could be to focus more on a particular issue through the analysis. For example, it could focus specifically on how actors interpret the key issue of balancing development impact and excellence.

A further line of inquiry that could be developed through case studies is to trace learning from one programme or set of programmes to other programmes either within the same organisation or elsewhere. This line of inquiry could ask what are the barriers and enablers of learning within and across organisations and could draw on the extensive literature on organisational learning from management studies. It could also focus on learning processes within and between programmes i.e. what systems are in place to encourage learning. The issue of lesson learning is crucial to ensure that there is steady progress made in organisations' understanding of how to implement these vital, but challenging, programmes.

In conclusion, reviewing the range of further avenues for research outlined above it is clear that this study, and the application of IPA it is based on, has made an important first step in exploring the dynamics of multi-goal, sustainable-development research programmes but that much work is required to build a body of knowledge on the subject that can be utilised effectively by organisations implementing this type of programme.

Bibliography

- Adler, N., Elmquist, M., & Norrgren, F. (2009). 'The challenge of managing boundary-spanning research activities: Experiences from the Swedish context'. *Research Policy*, 38(7), 1136–1149.
- Al-Khaldi, M. (2020). 'Research Fairness Initiative opens a new era for equitable and impactful research collaborations'. *European Journal of Public Health*, 30 (5).
- Alla, K., Hall, W. D., Whiteford, H. A., Head, B. W., & Meurk, C. S. (2017). 'How do we define the policy impact of public health research? A systematic review'. *Health Research Policy and Systems*, 15 (1), 1–12.
- Argyris, C., & Schön, D. A. (1989). 'Participatory action research and action science compared: A commentary'. *American Behavioral Scientist*, 32(5), 612–623.
- Asare, S., Mitchell, R., & Rose, P. (2020). 'How equitable are South-North partnerships in education research? Evidence from sub-Saharan Africa'. *Compare: A Journal of Comparative and International Education*, 1–20.
- AUC. (2014). *Science, Technology and Innovation Strategy for Africa 2024*. Addis Ababa: African Union Commission.
- Barder, O. (2005). *Reforming development assistance: Lessons from the UK experience*. Centre of Global Development Working Paper
- Barry, A., Born, G., & Wetzkalnys, G. (2008). 'Logics of interdisciplinarity'. *Economy and Society*, 37 (1), 20–49.
- Becher, T., & Trowler, P. (2001). *Academic tribes and territories* (Second edition). Maidenhead: Open University Press.
- Bedessem, B., & Ruphy, S. (2019). 'Scientific autonomy and the unpredictability of scientific inquiry: The unexpected might not be where you would expect'. *Studies in History and Philosophy of Science Part A*, 73, 1–7.
- Béland, D., & Cox, R. H. (2010). *Ideas and politics in social science research*. Oxford: Oxford University Press.
- Benner, M. (2011). 'In search of excellence? An international perspective on governance of university research'. In *Universities in transition*, editors Goransson, B., Brundeinius, C. (11–24). New York: Springer.
- Bernard de Raymond, A. (2018). '“Aligning activities”: coordination, boundary activities, and agenda setting in interdisciplinary research'. *Science and Public Policy*, 45(5), 621–633.
- Bevir, M., & Rhodes, R. (2003). *Interpreting British Governance*. New York: Routledge.
- Bevir, M., & Rhodes, R. A. W. (2002). 'Interpretive theory' in *Theory and Methods in Political Science*, editors Bevir, M., & Rhodes, R. A. W. (131–152). London: Palgrave.
- Bhambra, G. K., Gebrial, D., & Nişancıoğlu, K. (2018). *Decolonising the university*. Pluto Press.

- Bhupatiraju, S., Nomaler, Ö., Triulzi, G., & Verspagen, B. (2012). 'Knowledge flows – Analyzing the core literature of innovation, entrepreneurship and science and technology studies'. *Research Policy*, 41, 1205–1218.
- Bianco, M., Gras, N., & Sutz, J. (2016). 'Academic evaluation: Universal instrument? Tool for development?' *Minerva*, 54(4), 399–421.
- Blyth, M. (2002). *Great transformations: Economic ideas and institutional change in the twentieth century*. Cambridge: Cambridge University Press.
- Boaz, A., Fitzpatrick, S., & Shaw, B. (2009). 'Assessing the impact of research on policy: a literature review'. *Science and Public Policy*, 36(4), 255–270.
- Bornmann, L. (2017). 'Measuring impact in research evaluations: a thorough discussion of methods for, effects of and problems with impact measurements'. *Higher Education*, 73(5), 775–787.
- Bos, C., Walhout, B., Peine, A., & van Lente, H. (2014). 'Steering with big words: articulating ideographs in research programs'. *Journal of Responsible Innovation*, 1(2), 151–170.
- Bradley, M. (2007). *North-South research partnerships: challenges, responses and trends; a literature review and annotated bibliography*. Canadian Partnerships Working Paper, IDRC
- Braun, D. (1993). 'Who Governs Intermediary Agencies? Principal-Agent Relations in Research Policy-Making'. *Journal of Public Policy*, 13(2), 135–162.
- Braun, D. (1998). 'The role of funding agencies in the cognitive development of science'. *Research Policy*, 27(8), 807–821.
- Braun, D. (2003). 'Lasting tensions in research policy-making — a delegation problem'. *Science and Public Policy*, 30(5), 309–321.
- Braun, D., & Guston, D. (2003). 'Principal-agent theory and research policy: An introduction'. *Science & Public Policy* 30, 302–308.
- Broden Gyberg, V. (2016). *Aiding Science. An analysis of Swedish Research Aid Policy 1973 – 2008*, Development Dissertation Brief produced for the Expert Group for Aid Studies (EBA), the Swedish Ministry for Foreign Affairs.
- Buffardi, A., & Hearn, S. (2015). *Multi-project programmes: functions, forms and implications for evaluation and learning*. A Methods Lab Publication for the Overseas Development Institute.
- Bush, V. (1945). 'Science: The Endless Frontier'. *Transactions of the Kansas Academy of Science (1903-)*, 48(3), 231–264.
- Cairney, P., & Oliver, K. (2020). 'How should academics engage in policymaking to achieve impact?' *Political Studies Review*, 18(2), 228–244.
- Calvert, J. (2006). 'What's special about basic research?'. *Science, Technology, & Human Values*, 31(2), 199.
- Campbell, J. L. (2002). 'Ideas, Politics, and Public Policy'. *Annual Review of Sociology*, 28(1), 21–38.

- Carbonnier, G., & Kontinen, T. (2014). *North-South Research Partnership: academia meets development*. EADI Policy Paper Series.
- Carden, F. (2009). *Knowledge to policy: Making the most of development research*. Ottawa: IDRC.
- Chambers, R. (1997). 'Whose reality counts' *Intermediate technology publications*, 25.
- Chang, H. (2002). 'Breaking the mould: an institutionalist political economy alternative to the neo-liberal theory of the market and the state'. *Cambridge Journal of Economics*, 26(5), 539–559.
- Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis*. London: SAGE.
- Chataway, J., Dobson, C., Daniels, C., Byrne, R., Hanlin, R., & Tigabu, A. (2019). 'Science granting councils in Sub-Saharan Africa: Trends and tensions'. *Science and Public Policy*, 46(4), 620–631.
- Chataway, J., Smith, J., & Wield, D. (2005). *Partnerships for building science and technology capacity in Africa: Canadian and UK experience*. Africa-Canada-UK Exploration: Building Science and Technology Capacity with African Partners.
- Chubb, J., & Reed, M. S. (2018). 'The politics of research impact: academic perceptions of the implications for research funding, motivation and quality'. *British Politics*, 13(3), 295–311.
- Clarivate Analytics. (2019). *Navigating the Structure of Research on Sustainable-development Goals*. Global Research Report Series from the Institute for Scientific Information
- Clarke, A. E. (2003). 'Situational analyses: Grounded theory mapping after the postmodern turn'. *Symbolic Interaction*, 26(4), 553–576.
- Clemeña, R., & Acosta, S. A. (2007). *Developing research culture in Philippine higher education institutions: Perspectives of university faculty*. Conference paper for the Regional Seminar Competition, Cooperation and Change in the Academic Profession: Shaping Higher Education's Contribution to Knowledge and Research, September 18–19 in Hangzhou, in China.
- Clements, A., Reddick, G., Viney, I., McCutcheon, V., Toon, J., Macandrew, H., Wastl, J. (2017). 'Let's Talk—Interoperability between University CRIS/IR and Researchfish: A Case Study from the UK'. *Procedia Computer Science*, 106, 220–231.
- Cloete, N., Maassen, P., & Bailey, T. (2015). *Knowledge production and contradictory functions in African higher education*. Cape Town: African Minds.
- Cooke, B., & Kothari, U. (2001). *Participation: The new tyranny?* London: Zed books.
- Cornwall, A. (2007). 'Buzzwords and fuzzwords: deconstructing development discourse'. *Development in Practice*, 17(4–5), 471–484.
- Cornwall, A., & Brock, K. (2005). 'What do buzzwords do for development policy? A critical look at 'participation', 'empowerment' and 'poverty reduction.' *Third World Quarterly*, 26(7), 1043–1060.

- Costello, A., & Zumla, A. (2000). 'Moving to research partnerships in developing countries'. *British Medical Journal*, 321(7264), 827–829.
- Cramer, C., Johnston, D., Oya, C., & Sender, J. (2016). 'Research note: Mistakes, crises, and research independence: The perils of fieldwork as a form of evidence'. *African Affairs*, 115(458), 145–160.
- Currie-Alder, B. (2015). *Research for the developing world: Public funding from Australia, Canada, and the UK*. Oxford: Oxford University Press.
- Davé, A., Hopkins, M., Hutton, J., Krcál, A., Kolarz, P., Martin, B., Simmonds, P. (2016). 'Landscape review of interdisciplinary research in the UK'. *Report to HEFCE and RCUK by Technopolis and the Science Policy Research Unit (SPRU), University of Sussex*, 184.
- Department for Business Innovation and Skills. (2010). *The Allocation of Science and Research Funding*.
- Department for Business Innovation and Skills. (2014). *Triennial Review of the Research Councils Final Report*.
- DFID. (2008a). *DFID Research Strategy 2008-2013*.
- DFID. (2008b). *Results Action Plan*.
- DFID. (2010a). *DFID Management response to the first four reports of the Independent Commission for Aid Impact: overview*.
- DFID. (2010b). *How to note: Capacity Building*.
- DFID. (2011a). *How to note: guidance on using the revised Logical Framework*.
- DFID. (2011b). *How to note: reviewing and scoring projects*.
- DFID. (2013). *The Blue Book*.
- DFID. (2018). *ESPA Independent End of Programme Review (Draft final report)*.
- Dodson, J. (2016). *Five trends driving change in research for development*. London: UKCDR.
- Cornell University, INSEAD and WIPO *Global Innovation Index 2017: Innovation Feeding the World*. Geneva: WIPO
- Edge, D. (1995). 'Re-inventing the Wheel' in *Handbook of Science and Technology Studies*, editors Jasanoff, S., Markle, G., Peterson, J., Pinch, T. New York: SAGE.
- Edgerton, D. (2009). 'The "Haldane Principle" and other invented traditions in science policy'. *History and Polic*.
- Eigenbrode, S. D., O'rourke, M., Wulforst, J. D., Althoff, D. M., Goldberg, C. S., Merrill, K., Winowiecki, L. (2007). 'Employing philosophical dialogue in collaborative science'. *BioScience*, 57(1), 55–64.
- Elizabeth the second (1965). *NERC Royal Charter*.
- Elizabeth the Second (1994). *ESRC Royal Charter*.

- Elsevier (2015). *Sustainability Science in a global landscape*. A report conducted by Elsevier in collaboration with SciDev.Net
- Elzinga, A., & Jamison, A. (2011). 'Changing Policy Agendas in Science and Technology' in *Handbook of science and technology studies*, editors Jasanoff, S., Markle, G.E., Pinch, T., (572–597). New York: SAGE.
- ESPA. (2009). *Programme memorandum*.
- ESPA. (2010). *Call for applications*.
- Etzkowitz, H., & Leydesdorff, L. (2000). 'The dynamics of innovation: from National Systems and "Mode 2" to a Triple Helix of university–industry–government relations'. *Research Policy*, 29(2), 109–123.
- Ferlie, E. (2017). 'The new public management and public management studies'. In *Oxford Research Encyclopedia of Business and Management*.
- Ferretti, F., Pereira, Â. G., Vértesy, D., & Hardeman, S. (2018). 'Research excellence indicators: time to reimagine the 'making of'?' *Science and Public Policy*, 45(5), 731–741.
- Finnemore, M. (1993). 'International organizations as teachers of norms: the United Nations Educational, Scientific, and Cultural Organization and science policy'. *International Organisation*, 47(4), 565–597.
- Fischer, A. R. H., Tobi, H., & Ronteltap, A. (2011). 'When natural met social: a review of collaboration between the natural and social sciences'. *Interdisciplinary Science Reviews*, 36(4), 341–358.
- Fischer, F. (2003). *Reframing public policy: Discursive politics and deliberative practices*. Oxford: Oxford University Press.
- Flink, T., & Kaldewey, D. (2018). 'The new production of legitimacy: STI policy discourses beyond the contract metaphor'. *Research Policy*, 47(1), 14–22.
- Flyvbjerg, B. (2001). *Making Social Science Matter: Why Social Inquiry Fails and How it Can Succeed Again*. Cambridge: Cambridge University Press
- Flyvbjerg, B. (2010). 'Five Misunderstandings About Case-Study Research'. *SAGE Qualitative Research Methods*, 12(2), 219–245.
- Fosci, M., Loffreda, L., Velten, L., & Johnson, R. (2019). *Research Capacity Strengthening in LMICs: A Rapid Evidence Assessment*. United Kingdom: Research Consulting.
- Fransman, J., Hall, B., Hayman, R., Narayanan, P., Newman, K., & Tandon, R. (2018). *Promoting fair and equitable research partnerships to respond to global challenges*. Report for the Rethinking Research Collaborative, INTRAC.
- Freeman, C. (1995). 'The "national system of innovation" in historical perspective'. *Cambridge Journal of Economics*, 19(1), 5.
- Geels, F. W. (2002). 'Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study'. *Research Policy*, 31(8–9), 1257–1274.

- Georgalakis, J., & Rose, P. (2019). 'Identifying the qualities of research–policy partnerships in international development–A New analytical framework'. *IDS Bulletin*, 50 (1), 1-21.
- German, T., & Randel, J. (1995). *The Reality of Aid 1995*. London: Earthscan.
- Ghaffar, D. A., IJsselmuiden, C., & Zicker, F. (2008). *Changing mindsets: research capacity strengthening in low-and middle-income countries*. Report for the Council on Health Research for Development (COHRED) Geneva.
- Gibbons, M. (1994). *The new production of knowledge : the dynamics of science and research in contemporary societies*. London: Sage.
- Glynos, J., Howarth, D., Norval, A., & Speed, E. (2009). 'Discourse analysis: Varieties and methods'. *ESRC National Centre for Research Methods Review Paper*.
- Godin, B. (2009). 'The making of science, technology and innovation policy: conceptual frameworks as narratives'. *Management*, 5(4), 761–778.
- Goffman, E. (1974). *Frame analysis: An essay on the organization of experience*. Cambridge: Harvard University Press.
- Grant, J., Brutscher, P.-B., Kirk, S. E., Butler, L., & Wooding, S. (2010). *Capturing Research Impacts: A Review of International Practice*. Documented Briefing for Rand Corporation.
- Grant, J., Hinrichs, S., Gill, A., & Adams, J. (2015). *The nature, scale and beneficiaries of research impact: an initial analysis of the Research Excellence Framework*, Research report prepared for the Higher Education Funding Council of England.
- Greening, J. (2012). *Launching Aid Transparency challenge; Speech by the Secretary of State for International Development, Justine Greening, MP*.
- Grieve, T., & Mitchell, R. (2020). 'Promoting meaningful and equitable relationships? Exploring the UK's Global Challenges Research Fund (GCRF) funding criteria from the perspectives of African partners'. *The European Journal of Development Research*, 32, 514–528.
- Grove, L. (2017). *The effects of funding policies on academic research*. Dissertation, University College London.
- Guba, E. G., & Lincoln, Y. S. (1994). 'Competing paradigms in qualitative research'. *Handbook of Qualitative Research*, 2(163–194), 105.
- Gulbrandsen, M. (2005). 'Tensions in the research council-research community relationship'. *Science and Public Policy*, 32(3), 199–209.
- Guston, D. H. (1996). 'Principal-agent theory and the structure of science policy'. *Science and Public Policy*, 23(4), 229–240.
- Hajer, M. A. (2006). 'Doing Discourse Analysis: Coalitions, Practices, Meaning'. In *Words matter in policy and planning: Discourse theory and method in the social sciences*, editors M. van den Brink & T. Metze. UtrechtKoninklijk Nederlands Aardrijkskundig Genootschap.

- Hajer, M., & Versteeg, W. (2005). 'A decade of discourse analysis of environmental politics: Achievements, challenges, perspectives'. *Journal of Environmental Policy & Planning*, 7(3), 175–184.
- Hammersley, M. (2008). 'Troubling criteria: a critical commentary on Furlong and Oancea's framework for assessing educational research'. *British Educational Research Journal*, 34(6), 747–762.
- Harvey, B., Pasanen, T., Pollard, A., & Raybould, J. (2017). 'Fostering Learning in Large Programmes and Portfolios: Emerging Lessons from Climate Change and Sustainable-development'. *Sustainability*, 9(2), 315.
- Hay, C. (2011). 'Ideas and the Construction of Interests',. In *Ideas and politics in social science research*, editors Beland, D., Cox, R. (65–82). Oxford: Oxford University Press.
- HEFCE (2010). *The higher education workforce framework 2010: main report*.
- HEFCE. (2011). *REF2014 Assessment framework and guidance on submissions*. Bristol.
- Henkel, M. (2004). 'Current science policies and their implications for the formation and maintenance of academic identity'. *Higher Education Policy*, 17(2), 167–182.
- Hessels, L. (2013). 'Coordination in the Science System: Theoretical Framework and a Case Study of an Intermediary Organization'. *A Review of Science, Learning and Policy*, 51(3).
- Hessels, L. K., van Lente, H., & Smits, R. (2009). 'In search of relevance: The changing contract between science and society'. *Science and Public Policy*, 36(5), 387–401.
- Higher Education and Research Act*. (2017).
- HMGovernment. (2020). *UK Research and Development Roadmap*. OGL.
- Hoffmann, S., Pohl, C., & Hering, J. G. (2017). 'Exploring transdisciplinary integration within a large research program: Empirical lessons from four thematic synthesis processes'. *Research Policy*, 46(3), 678–692.
- Holmner, M. A. (2008). *A critical analysis of information and knowledge societies with specific reference to the interaction between local and global knowledge systems*. University of Pretoria.
- House of Commons. (2004). *Thirteenth Report of House of Commons Science and Technology Committee*. London.
- House of Commons Science and Technology Committee. (2013). *Building scientific capacity for development*. London.
- Husserl, E. (1913). *Ideas: General introduction to pure phenomenology*. London: Routledge.
- ICAI. (2015). *DFID's Approach to Impact*.
- Ilott, O., Norris, E., Randall, J., & Bleasdale, A. (2016). *Making policy stick*. Report for the Institute for Government.

- Independent Group on British Aid. (1982). *Real Aid: a strategy for Britain*. Independent Group on British Aid.
- Jacob, M. (2011). *Research funding instruments and modalities: Implications for developing countries*. Background Document for the Programme on Innovation, Higher Education and Research for Development, OECD.
- Jansen, J. (2019). *Decolonisation in universities: The politics of knowledge*. Johannesburg: Wits University Press.
- Jones, L., Harvey, B., Cochrane, L., Cantin, B., Conway, D., Cornforth, R. J., Kirbyshire, A. (2018). 'Designing the next generation of climate adaptation research for development'. *Regional Environmental Change*, 18(1), 297–304.
- Jump, P. (2013). 'Shielding science budget is a labour of Hercules'. *Times Higher Education*.
- Kajikawa, Y., Tacoa, F., & Yamaguchi, K. (2014). 'Sustainability science: the changing landscape of sustainability research'. *Sustainability Science*, 9(4), 431–438.
- Kearnes, M., & Wienroth, M. (2011). 'Tools of the trade: UK research intermediaries and the politics of impacts'. *Minerva*, 49(2), 153–174.
- Klein, J. T. (1990). *Interdisciplinarity: History, theory, and practice*. Detroit: Wayne state university press.
- Klerkx, L., & Leeuwis, C. (2008). 'Delegation of authority in research funding to networks: Experiences with a multiple goal boundary organization'. *Science and Public Policy*, 35(3), 183–196.
- Kline, S. J., & Rosenberg, N. (2010). 'An overview of innovation'. In *Studies On Science And The Innovation Process: Selected Works of Nathan Rosenberg* editor Rosenberg, N. (173–203). Stanford: World Scientific.
- Kloet, R. R., Hessels, L. K., Zweekhorst, M. B. M., Broerse, J. E. W., & de Cock Buning, T. (2012). 'Understanding constraints in the dynamics of a research programme intended as a niche innovation'. *Science and Public Policy*, 40(2), 206–218.
- Kogan, M., Henkel, M., & Hanney, S. (2006). *Government and research: thirty years of evolution*. Springer Science & Business Media.
- Kraemer-Mbula, E., Tijssen, R., Wallace, M. L., & McClean, R. (2019). *Transforming research excellence: new ideas from the global south*. Cape Town: African Minds.
- Kuhn, T. S. (1962). *The structure of scientific revolutions*. Chicago: University of Chicago press.
- Ladyman, J. (2009). 'Against impact'. *Oxford Magazine-Oxford University Press*, 1(294), 4–5.
- Lai, E. R. (2011). *Motivation: A Literature Review Research Report*. Research report for Pearson
- Lamont, M. (2009). *How professors think*. Cambridge: Harvard University Press.

- Langfeldt, L., & Scordato, L. (2015). *Assessing the broader impacts of research: A review of methods and practices*. Nordic Institute for Studies in innovation, research and education. Oslo: NIFU.
- Latour, B. (1979). *Laboratory life : the social construction of scientific facts*. Beverly Hills: SAGE publications.
- Leach, M., Stirling, A. C., & Scoones, I. (2010). *Dynamic sustainabilities: technology, environment, social justice*. London: Routledge.
- Lebel, J., & McLean, R. (2020). 'Research Quality Plus: Another way is possible' in *Transforming Research Excellence*, editors Kraemer-Mbula, E., Tijssen, R., Wallace, M. Cape Town: African Minds.
- Le Grange, L. (2016). 'Decolonising the university curriculum: Leading article'. *South African Journal of Higher Education*, 30(2), 1-12.
- Lele, S., & Norgard, R. (2005). 'Practicing Interdisciplinarity'. *Bioscience*, 55(11), 967–975.
- Lepori, B. (2011). 'Coordination modes in public funding systems'. *Research Policy*, 40(3), 355.
- Lindvig, K., & Hillersdal, L. (2019). 'Strategically Unclear? Organising Interdisciplinarity in an Excellence Programme of Interdisciplinary Research in Denmark'. *A Review of Science, Learning and Policy*, 57(1), 23–46.
- Lowndes, V., Marsh, D., & Stoker, G. (2018). *Theory and methods in political science* (Fourth edition). London: Palgrave Macmillan.
- Lundvall, B.-Å. (2010). *National systems of innovation: Toward a theory of innovation and interactive learning* (Vol. 2). London: Anthem press.
- Lyll, C., Bruce, A., Marsden, W., & Meagher, L. (2013). 'The role of funding agencies in creating interdisciplinary knowledge'. *Science and Public Policy*, 40(1), 62–71.
- Lyll, C., Meagher, L., & Bruce, A. (2015). 'A rose by any other name? Transdisciplinarity in the context of UK research policy'. *Futures*, 65, 150–162.
- MacMynowski, D. P. (2007). 'Pausing at the brink of interdisciplinarity: power and knowledge at the meeting of social and biophysical science'. *Ecology and Society*, 12(1).
- Mansilla, V. B. (2006). 'Assessing expert interdisciplinary work at the frontier: an empirical exploration'. *Research Evaluation*, 15(1), 17–29.
- Mansilla, V. B., Navakas, F., & Fiscella, J. (2006). 'Interdisciplinary Work at the Frontier: An Empirical Examination of Expert Epistemologies'. *Issues in Interdisciplinary Studies*, 24, 1–31.
- Marjanovic, S., Hanlin, R., Diepeveen, S., & Chataway, J. (2013). 'Research capacity-building in Africa: networks, institutions and local ownership'. *Journal of International Development*, 25(7), 936–946.
- Martin, B. R. (2011). 'The Research Excellence Framework and the 'impact agenda': are we creating a Frankenstein monster?' *Research Evaluation*, 20(3), 247–254.

- Martin, B. R. (2012). 'The evolution of science policy and innovation studies'. *Research Policy*, Vol. 41, pp. 1219–1239.
- Martin, B. R. (2016). 'What's happening to our universities?' *Prometheus*, 34(1), 7–24.
- Martin, B. R., & Whitley, R. (2010). 'The UK Research Assessment Exercise: A Case of Regulatory Capture?' In *Reconfiguring Knowledge Production: Changing Authority Relationships in the Sciences and their Consequences for Intellectual Innovation*, editors R. Whitley, J. Glaser, & L. Engwall. Oxford: Oxford University Press.
- McCowan, T. (2018). 'Five perils of the impact agenda in higher education'. *London Review of Education*, 16(2), 279–295.
- McNeill, D., Mossman, M., Rogers, D., & Tewdwr-Jones, M. (2022). The university and the city: Spaces of risk, decolonisation, and civic disruption. *Environment and Planning A: Economy and Space*, 54(1), 204–212.
- Merton, R. K. (1973). *The sociology of science : theoretical and empirical investigations*. Chicago: Chicago University Press.
- Minasny, B., Fiantis, D., Mulyanto, B., Sulaeman, Y., & Widyatmanti, W. (2020). Global soil science research collaboration in the 21st century: Time to end helicopter research. *Geoderma*, 373, 114299.
- Mitchell, A. (2010). *Full transparency and new independent watchdog will give UK taxpayers value for money in aid*.
- Moran, H., Karlin, L., Lauchlan, E., Rappaport, S. J., Bleasdale, B., Wild, L., & Dorr, J. (2020). 'Understanding Research Culture: What researchers think about the culture they work in'. *Wellcome Open Research*, 5(201), 201.
- Mouton, J., Gaillard, J., & van Lill, M. (2014). *Science Granting Councils in Sub-Saharan Africa*. Report for Stellenbosch University Centre for Research on Evaluation, Science and Technology.
- Muriithi, P., Horner, D., Pemberton, L., & Wao, H. (2018). 'Factors influencing research collaborations in Kenyan universities'. *Research Policy*, 47(1), 88–97.
- Mutula, S. (2009). 'Challenges of doing research in sub-Saharan African universities: digital scholarship opportunities'. *Inkanyiso: Journal of Humanities and Social Sciences*, 1(1), 1–10.
- NERC. (2013). *NERC Peer Review College – Research Council Reviewer Protocols*.
- NERC. (2017). *Moderating Assessment Panels: Guidance Notes for the Consideration of Strategic Research Grant Proposals*.
- NERC. (2018). *NERC Research Grants and Fellowships Handbook*.
- Nurse, P. (2015). *Ensuring a successful UK research endeavour: A review of the UK Research Councils*.
- Oancea, A. (2013). 'Interpretations of research impact in seven disciplines'. *European Educational Research Journal*, 12(2), 242–250.
- OECD. (1996). *The Knowledge Based Economy*. Paris: OECD

- Office for National Statistics. (2018). *Government expenditure on science, engineering and technology*
- Ofir, Z., Schwandt, T., Duggan, C., & McLean, R. (2016). 'Research Quality Plus: A Holistic Approach to Evaluating Research'. *International Development Research Center Canada*, 1–6.
- Oswald, K., Gaventa, J., & Leach, M. (2016). 'Introduction: Interrogating engaged excellence in research'. *IDS Bulletin*, 47 (6), 1-19.
- Owen, R., Macnaghten, P., & Stilgoe, J. (2012). 'Responsible research and innovation: From science in society to science for society, with society'. *Science and Public Policy*, 39(6), 751–760.
- Penfield, T., Baker, M. J., Scoble, R., & Wykes, M. C. (2014). 'Assessment, evaluations, and definitions of research impact: A review'. *Research Evaluation*, 23(1), 21–32.
- Petts, J., Owens, S., & Bulkeley, H. (2008). 'Crossing boundaries: Interdisciplinarity in the context of urban environments'. *Geoforum*, 39(2), 593–601.
- Pielke, R. (2012). 'Basic Research as a Political Symbol'. *A Review of Science, Learning and Policy*, 50(3), 339–361.
- Pieterse, J. N. (2011). 'Discourse analysis in international development studies'. *Journal of Multicultural Discourses*, 6(3), 237–240.
- Polanyi, M. (1962). 'The Republic of Science: Its Political and Economic Theory'. *Minerva*, 1(1), 54–73. Retrieved from <http://www.jstor.org/stable/41821550>
- RCUK. (2009). *Memorandum by Research Councils UK for the Science and Technology Committee Report "Setting priorities for publicly funded research"*.
- Richards, L., & Morse, J. M. (2007). *Read me first for a user's guide to qualitative methods*. Thousand Oaks: Sage.
- Rip, A. (1994). 'The Republic of Science in the 1990s'. *Higher Education*, 28(1), 3–23.
- Rothschild, L. (1971). *The Organization and Management of Government Research and Development: A Framework for Government Research and Development*. Green paper prepared for UK Government
- Rothwell, R. (1994). 'Towards the fifth-generation innovation process'. *International Marketing Review*, 11(1), 7–31.
- Quijano, Anibal. 'Coloniality of power and Eurocentrism in Latin America'. *International Sociology* 15, no. 2 (2000): 215-232.
- Sá, C. M., Kretz, A., & Sigurdson, K. (2013). 'Accountability, performance assessment, and evaluation: Policy pressures and responses from research councils'. *Research Evaluation*, 22(2), 105–117.
- Sachs, W. (1992). *The Development Dictionary: A Guide to Knowledge as Power*. London: Zed Books.

- Saldaña, J. (1995). “‘Is theatre necessary?’: Final exit interviews with sixth grade participants from the ASU longitudinal study’. *Youth Theatre Journal*, 9(1), 14–30.
- Saldaña, J. (2013). *The coding manual for qualitative researchers* (Second edition). Los Angeles : Sage.
- Schön, D. A., & Rein, M. (1994). *Frame reflection: Toward the resolution of intractable policy controversies*. New York: Basic Books.
- Schram, S. (2006). *Making political science matter: Debating knowledge, research, and method*. New York: NYU Press.
- Schwartz-Shea, P., & Yanow, D. (2013). *Interpretive research design: Concepts and processes*. London: Routledge.
- Semali, L. M., Baker, R., & Freer, R. (2013). ‘Multi-Institutional Partnerships for Higher Education in Africa: A Case Study of Assumptions of International Academic Collaboration’. *International Journal of Higher Education*, 2(2), 53–66.
- Shaw, M. E., & Wright, J. M. (1967). *Calls for the measurement of attitudes*. New York: McGraw Hill.
- Shove, E. (2003). ‘Principals, agents and research programmes’. *Science and Public Policy*, 30(5), 371–381.
- Sifuna, D. N. (2010). ‘Some reflections on the expansion and quality of higher education in public universities in Kenya’. *Research in Post-Compulsory Education*, 15(4), 415–425.
- Silverman, D., & Gubrium, J. (2006). *Qualitative Research Practice: Concise Paperback Edition*. London: Sage.
- Sivadasan, S. (2003). *Review of the DFID’s role in the international research effort*. Cambridge: RAND Europe
- Smith, A., Voß, J.-P., & Grin, J. (2010). ‘Innovation studies and sustainability transitions: The allure of the multi-level perspective and its challenges’. *Research Policy*, 39(4), 435–448.
- Smith, S., Ward, V., & House, A. (2011). “‘Impact’ in the proposals for the UK’s Research Excellence Framework: Shifting the boundaries of academic autonomy’. *Research Policy*, 40(10), 1369–1379.
- Stirling, A. (2015). *Developing ‘Nexus Capabilities’: towards transdisciplinary methodologies*. Brighton: University of Sussex
- Surr, M. (2002). *Research Policy Paper: Research for Poverty Reduction*. London.
- Technopolis Group. (2016). *Case Study Review of Interdisciplinary Research in Higher Education Institutions in England*. Brighton
- Technopolis Group. (2018). *Review of the Research Excellence Framework*. Brighton.
- Tessema, K. A. (2009). ‘The unfolding trends and consequences of expanding higher education in Ethiopia: Massive universities, massive challenges’. *Higher Education Quarterly*, 63(1), 29–45.

- Tijssen, R. J. W. (2003). 'Scoreboards of research excellence'. *Research Evaluation*, 12(2), 91–103.
- Toulmin, S. E. (2001). *Return to reason*. Cambridge: Harvard University Press.
- Toye, J. (2007). 'Poverty reduction'. *Development in Practice*, 17(4–5), 505–510.
- Traweek, S. (1988). *Beamtimes and lifetimes : the world of high-energy physicists*. Cambridge: Harvard University Press.
- UKCDS. (2014). *The engineering for development research base: a mapping to underpin the RAG discussion*.
- UNDP. (2009). *Supporting capacity development: the UNDP approach*.
- UNGA (2015). *Transforming Our World: The 2030 Agenda for Sustainable-development*.
- UPGro. (2012). *Business case*.
- Upreti, B. R., Zimmermann, A., Berhanu, D., & Cissé, G. (2012). *Partnerships in development-oriented research: lessons learnt and challenges ahead*. CDE/NCCR North-South.
- Urbina, D. A., & Ruiz-Villaverde, A. (2019). 'A critical review of homo economicus from five approaches'. *American Journal of Economics and Sociology*, 78(1), 63–93.
- Valters, C., & Whitty, B. (2017). *The politics of the results agenda in DFID*. London: Overseas Development Institute
- Van Bommel, S., Van Hulst, M. J., & Yanow, D. (2014). 'Interpretive policy analysis in the Netherlands'. In *Policy analysis and evaluation in the Netherlands: Institutionalization and Performance*, editors van Nispen, F., Scholten, P. (69–86). Bristol: Policy Press.
- van der Hel, S. (2016). 'New science for global sustainability? The institutionalisation of knowledge co-production in Future Earth'. *Environmental Science & Policy*, 61, 165–175.
- van der Meulen, B. (2003). 'New roles and strategies of a research council: Intermediation of the principal-agent relationship'. *Science and Public Policy*, 30(5), 323–336.
- Van der Meulen, B. (1998). 'Science policies as principal–agent games: Institutionalization and path dependency in the relation between government and science'. *Research Policy*, 27(4), 397–414.
- Van Hulst, M., & Yanow, D. (2016). 'From policy “frames” to “framing” theorizing a more dynamic, political approach'. *The American Review of Public Administration*, 46(1), 92–112.
- Van Vught, F. (2008). 'Mission diversity and reputation in higher education'. *Higher Education Policy*, 21(2), 151–174.
- Velho, L. (2004). 'Research capacity building for development: from old to new assumptions'. *Science, Technology and Society*, 9(2), 171–207.

- Vogel, I. (2011). *Research capacity strengthening: learning from experience*. London: UK Collaborative on Development Sciences.
- Vowles, P. (2013). *DFID blog: adaptive programming*.
- Wagenaar, H. (2015). *Meaning in action : interpretation and dialogue in policy analysis*. London: Routledge.
- Wardenaar, T., de Jong, S. P. L., & Hessels, L. K. (2014). 'Varieties of research coordination: A comparative analysis of two strategic research consortia'. *Science and Public Policy*, 41(6), 780–792.
- Whitley, R., Gläser, J., & Engwall, L. (2010). *Reconfiguring knowledge production: Changing authority relationships in the sciences and their consequences for intellectual innovation*. Oxford: Oxford University Press.
- Williams, G. (2012). 'The disciplining effects of impact evaluation practices: negotiating the pressures of impact within an ESRC–DFID project'. *Transactions of the Institute of British Geographers*, 37(4), 489–495.
- Williams, K., & Grant, J. (2018). 'A comparative review of how the policy and procedures to assess research impact evolved in Australia and the UK'. *Research Evaluation*, 27(2), 93–105.
- Wilsdon, J., Allen, L., Belfiore, E., Campbell, P., Curry, S., Hill, S., Thelwall, M. (2015). *The Metric Tide: Report of the Independent Review of the Role of Metrics in Research Assessment and Management*.
- Wingfield, T., & Vowles, P. (2014). *DFID is changing its approach to better address the underlying causes of poverty and conflict – can it work? Guest Post from two DFID reformers*.
- Yanow, D. (1996). *How does a policy mean?: Interpreting policy and organizational actions*. Washington: Georgetown University Press.
- Yanow, D. (2000). *Conducting interpretive policy analysis*. Thousand Oaks: Sage.
- Yanow, D. (2007). 'Interpretation in policy analysis: On methods and practice'. *Critical Policy Analysis*, 1(1), 110–122.
- Yin, R. K. (2009). *Case study research : design and methods* (4th edition). Thousand Oaks: Sage.
- Zeelen, J. (2012). 'Universities in Africa: Working on Excellence for Whom? Reflections on Teaching, Research, and Outreach Activities at African Universities'. *International Journal of Higher Education*, 1.

Appendix 1- subject areas covered by interviews

As explained in the methodology I did not use one standard interview template for every interview as the interviews were designed to be open and also tailored to the individual/group. Particular questions relating to very specific clarifications/issues/questions were put to many of the interviewees. However, there were a series of subjects that were covered in most interviews (unless not relevant to the interviewee). The subject areas were used as a guide only and I followed up on interesting points made throughout the interview. I also allowed the interviewee to go on tangents where they were relevant/interesting.

Introduction for interviewee

As well as the formalities of the interview (i.e., confidentiality and how the information will be used), at the start of every interview I explained the background to the PhD and the main question that I was seeking to answer: what does ESPA/UPGro *mean* to the interviewee? Where they were interested, I also explained the methodology and approach of the PhD.

Subject areas

I generally started with some open questions about their perspective on the programme:

- what do you/your organisation hope to achieve from participation in the programme?
- What is your understanding of what success in a programme of this type looks like?
- What have been the main challenges during the programme from your perspective?

Then I went through each of the four goals and asked them for their perspective on them:

- Scientific excellence: how would you define it? How important is it to you? What factors are important to achieving it in a programme like ESPA/UPGro? Is it being achieved in your project/the programme?
- Development impact from research: how would you define it? How important is it to you? What is important to achieving it in a programme like ESPA/UPGro? Is it being achieved in your project/the programme?
- Interdisciplinarity: how would you define it? How important is it to you? What is important to achieving it in a programme like ESPA/UPGro? Is it being achieved in your project/the programme?
- Inclusion of Southern researchers/partnerships/capacity building: how would you define it? How important is it to you? What is important to achieving it in a programme like ESPA/UPGro? Is it being achieved in your project/the programme?
- Do you think the goals fit together well? Are there complementarities/tensions/conflicts?

Then I asked a series of more specific questions:

- What is your understanding of what it means to try to create benefits greater than the sum of its parts in programmes like these? Is it being achieved in ESPA/UPGro?
- Is the programme long enough? In your experience what factors shape the length of time and amount of resource that gets devoted to the programme projects?
- About the poverty focus of the programmes: Do you think there was clarity in ESPA/UPGro about how the whole programme was going to add up to benefits for the poor?

I closed the interview with an open question designed to let the interview summarise their thoughts and make suggestions as what could be improved in the way the programmes are designed and run.

In addition to the questions above I asked a series of specific questions to certain groups. These are presented below.

Researchers

Incentives/motivations:

- What types of activities are most highly rewarded in their institution/discipline? (focus on publications, teaching, non-academic impact? How important are publications for them? Does it matter what type and where published?)
- Why did they decide to take part in the project? Do the goals and focus fit well with their goals and focus?
- For their institution what is the most important thing to get from being part of a collaboration like this?
- In what ways does the institutional setting help or hinder their activities with UPGro?

On the wider programme:

- Do they feel part of the ESPA/UPGro programme community?
- Have they been involved in any of the activities related to co-ordinating/learning?
- Have they found the knowledge broker/directorate useful?

On roles and relations within the team:

- What is your role in their team? Do the roles and responsibilities differ between UK and Southern researchers?
- Are you happy with the division of roles and responsibilities?

- Have there been any cultural barriers? If so, could you describe them?

On the funders:

- To what extent have the funders exercised control over the project? Or left you to your own devices?
- Has what the funders have asked for been reasonable?

On management of research projects (for those with management role):

- What is it like managing a project like this?
- What are the main challenges?
- What do you think are the most important factors for managing a project like this well?

Funders

- In your experience has the relative emphasis on impact/excellence/partnerships/interdisciplinarity shifted in your organisation since 2009?
- What was your experience of collaborating with the other funders? What worked well? Were there sources of tension? What were they?
- What is your general view on the researchers involved in the programme? Do you think they have differing interests from the funders and if so, is it a problem?

Programme actors

- Do you think overall there was sufficient clarity around what was being aimed for in the programme and how to get there?
- What thoughts do you have on the suitability of the different funders approaches in terms of systems and requirements for this type of work?