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ASSAR
Adaptation at Scale in Semi-Arid Regions

Policies, Projects and People

Exploring the Adaptation-development Spectrum in India

CARIAA-ASSAR Working Paper #2

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Titles in this series are intended to share initial findings and lessons from research and background studies commissioned by the program. Papers are intended to foster exchange and dialogue within science and policy circles concerned with climate change adaptation in vulnerability hotspots. As an interim output of the CARIAA program, they have not undergone an external review process. Opinions stated are those of the author(s) and do not necessarily reflect the policies or opinions of IDRC, DFID, or partners. Feedback is welcomed as a means to strengthen these works: some may later be revised for peer-reviewed publication.

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Abstract

Adaptation is a key process for human and natural systems to deal with current and future impacts of climate change. While focussed on climate change, it is recognised that for adaptation action to be effective, it must take into account inherent vulnerabilities arising from social differentiation, historical trajectories of marginalisation and inequality, and differential asset bases as well as macro-dynamics in markets, policies, and natural resources. In India, a fast growing economy with multiple development challenges, addressing development deficits have been the main focus of policymakers and development practitioners. These have been initiated, planned, managed and implemented by various actors from the national and sub-national government to international donor and development agencies, non-governmental organisations, and communities themselves. The growing realisation that climate change is an additional stressor, has motivated significant adaptation action in India; either through mainstreaming adaptation concerns in existing development work, or formulating adaptation projects which may or may not focus on development goals. In this paper, we review literature and 69 existing adaptation-development projects[1] in India to examine the nature of what we call the 'adaptation-development spectrum' and how it is manifested in research and practice (through different actors, processes and methodologies). We find that while there is a significant reorientation of development action in India to mainstream adaptation goals, there remain issues around who takes on which role (and has the competency to do so) as well as how critical aspects of adaptation (flexibility, forward-thinking, and learning) are being considered in adaptation-development projects currently.

Key words

Adaptation, Development, India, Mainstreaming, Climate Change

[1] For this paper, we define adaptation-development projects as projects that are either (1) development projects which explicitly aim to address climate change concerns through adaptation, (2) development projects that address climate change concerns (though not explicitly and through mitigation or co-benefits approaches), or (3) adaptation projects per se.

Acronyms

ADB	Asian Development Bank
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
ASSAR	Adaptation at Scale in Semi-Arid Regions
CARIAA	Collaborative Adaptation Research Initiative in Africa and Asia
CCA	Climate Change Adaptation
CDKN	Climate and Development Knowledge Network
CSE	Centre for Science and Environment
CoP	Conference of the Parties
DRR	Disaster Risk Reduction
GEF	Global Environment Facility
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
HDI	Human Development Index
IDRC	International Development Research Centre
IFAD	International Fund for Agricultural Development
IPCC	Intergovernmental Panel on Climate Change
JICA	Japan International Cooperation Agency
MDGs	Millennium Development Goals
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MoEF & CC	Ministry of Environment and Forest and Climate Change
NAPCC	National Action Plan on Climate Change
NEP	National Environmental Policy
NGO	Non-Governmental Organisation
SAPCC	State Action Plans on Climate Change
SARs	Semi-Arid Regions
SDC	Swiss Agency for Development Cooperation
SDGs	Sustainable Development Goals
SPP	Social Protection Programmes
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children's Emergency Fund
USAID	United States Agency for International Development

About ASSAR

All authors of this working paper are team member in the ASSAR (Adaptation at Scale in Semi-Arid Regions) project, one of four hotspot research projects in CARIAA. The international and interdisciplinary ASSAR team comprises a mix of research and practitioner organisations, and includes groups with global reach as well as those deeply embedded in their communities. The ASSAR consortium is a partnership between five lead managing institutions - the University of Cape Town (South Africa), the University of East Anglia (United Kingdom), START (United States of America), Oxfam GB (United Kingdom) and the Indian Institute for Human Settlements (India) – and 12 partners – the University of Botswana, University of Namibia, Reos Partners, INTASAVE, the Red Cross/Crescent Climate Centre, University of Ghana, ICRISAT, African Wildlife Foundation, University of Addis Ababa, Watershed Organisation Trust, Indian Institute for Tropical Meteorology, and the Ashoka Trust for Ecology and the Environment.

Working in seven countries in semi-arid regions, ASSAR seeks to understand the factors that have prevented climate change adaptation (CCA) from being more widespread and successful. At the same time, ASSAR is investigating the processes – particularly in governance – that can facilitate a shift from ad-hoc adaptation to large-scale adaptation. ASSAR is especially interested in understanding people's vulnerability, both in relation to climatic impacts that are becoming more severe, and to general development challenges. Through participatory work from 2014-2018, ASSAR aims to meet the needs of government and practitioner stakeholders, to help shape more effective policy frameworks, and to develop more lasting adaptation responses.

This working paper draws from ASSAR's first phase (Regional Diagnostic Study) which took stock of the current state of knowledge on the climatic and non-climatic risks in our research sites. In this paper, we focus on India to interrogate the overlaps and divergences between adaptation and development, and the actors and institutions operating in this space. www.assaradapt.org

Why focus on semi-arid regions?

Semi-arid regions (SARs) are highly dynamic systems that experience extreme climates, adverse environmental change, and a relative paucity of natural resources. People here are further marginalised by high levels of poverty, inequality and rapidly changing socio-economic, governance and development contexts. Climate change intersects with these existing structural vulnerabilities and can potentially accentuate or shift the balance between winners and losers. Although many people in these regions already display remarkable resilience, these multiple and often interlocking pressures are expected to amplify in the coming decades. Therefore, it is essential to understand what facilitates the

empowerment of people, local organisations and governments to adapt to climate change in a way that minimises vulnerability and promotes long-term resilience.

In India, we are focussing on three semi-arid sites: Maharashtra, Tamil Nadu and Karnataka, and this working paper draws on examples from these sites as well as national (Indian) discourses on adaptation and development.

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Contents

1. Introduction

1.1 Developing Adaptation and Adapting Development[2]

''the whole point of the work on adaptation processes is to have risks (and opportunities) associated with climate change (or other environmental changes) actually addressed in decision-making at some practical level'' (Smit and Wandel 2006: 285).

Growing recognition of climate change as a problem of both local and global significance has led to the emergence of adaptation being seen as a mechanism to manage risks climate change poses. Climate change adaptation (CCA) has progressed from the ignored stepchild of mitigation in science and policy circles to being 'mainstreamed' in development planning (Lemos et al. 2007; McGray et al. 2007; Schipper 2007). This line of thinking has led to the rise of terms such as 'climate compatible development', which is the awareness that 'tackling climate change cannot be at the expense of reducing poverty and achieving human development' (CDKN 2015). On the other hand, adaptation experts argue that while climate change poses a moderate threat to current sustainable development through residual damage and limits to adaptation, it poses a severe threat to future sustainable development (Denton et al. 2014) and thus 'development as usual' is not an option (Inderberg et al. 2015; Olsson et al. 2014). They argue that for adaptation to deal with climate change impacts effectively, risk management is too narrow a focus and the presence of uncertainty further complicates decision making. Transformations in food, water, and energy systems will have to be supplemented by transformations of social systems and development pathways (Eriksen et al. 2015). Also, the ways in which people negotiate uncertainty at various spatio-temporal scales through different strategies, and the complementarities and tensions between those strategies will have to be factored in.

Development research and practice itself has a long tradition of dealing with inherently complex problems which affect people differentially (for example, industrial development around cities can produce jobs at the cost of farming in those areas) and have cross-scalar drivers and impacts (for example, national policies on food subsidies affect household nutritional security). Despite obvious overlaps, the articulations and execution of CCA and development agendas and practices are yet to be conceptualised clearly (Eakin et al. 2014; Olsson et al. 2014; Eriksen and Brown 2011; Lemos et al. 2007; Schipper 2007).

In this paper, we try to unpack this issue through the following exploratory questions. (1) Do climate adaptation and development policies and projects build upon or obfuscate each other's objectives and actions? (2) Can we categorise activities and projects as adaptation or development?(3) And finally, which actors are equipped to span the spectrum between

[2] The title has been borrowed by an article of the same name that Lemos et al. (2007) published in Ecology and Society.

adaptation and development, if such a spectrum exists? This paper is a provocation that interrogates policies, programmes and projects in India to answer some of the questions above. It charts the institutions and actors in the CCA space in rural and urban semi-arid India and finds that development and adaptation span a continuum in policy and practice. In doing so, we argue that while the policy framework for climate adaptation and development is converging at national and regional scales, and is informed by a strong international discourse that leads development into adaptation across the spectrum reviewed, projects and the people who implement them run the highest risk of obfuscating objectives through inappropriate action.

1.2 What is adaptation?

The landscape of adaptation has grown tremendously with an array of terminologies, borrowed from complex lineages of disciplines ranging from systems ecology, resilience thinking, political ecology and governance studies as well as a multiplicity of practice domains such as disaster risk reduction and vulnerability assessment. There remain conflicts around what adaptation encompasses and what it does not (Downing 2012; Schipper 2007; Yamin et al. 2005). Table 1 gives an idea of the breadth of definitions and their chronological evolution. In later definitions, one finds that adaptation overlaps closely with the development agenda, suggesting that there is a growing recognition that meeting development aims sustainably should translate into building adaptive capacity and hence contribute to adaptation (Inderberg et al. 2015; Schipper 2007).

Table 1 Chronological evolution of adaptation definitions. (Source: Author extension of a similar table in Schipper (2007))

Source	Definition	Links with sustainable development
Burton (1992)	Adaptation to climate is the process through which people reduce the adverse effects of climate on their health and well-being and take advantage of the opportunities that their climatic environment provides.	Human well-being centric definition.
Smit (1993)	Involves adjustments to enhance the viability of social and economic activities and to reduce their vulnerability to climate, including its current variability and extreme events as well as longer term climate change.	Direct links with 'social and economic activities' which is broad and vague but resonates with the 3-pillars of sustainable development.
Stakhiv (1993)	Any adjustment, whether passive, reactive or anticipatory, that is proposed as a means for ameliorating the anticipated adverse consequences associated with climate change.	Future-focused, not clearly defined if 'adverse consequences' are for human or natural systems.
Burton et al. (1998)	Refers to all those responses to climate change that may be used to reduce vulnerability.	Adaptation as 'reduction of vulnerability'. No linkage with large-scale development.
Pielke (1998)	Refers to adjustments in individual, group and institutional behaviour in order to reduce society's vulnerabilities to climate.	Draws out links between activities and consequences at different scales. Focus on social vulnerability.

Source	Definition	Links with sustainable development
Scheraga and Grambsch (1998)	Adaptive actions are those responses or actions taken to enhance resilience of vulnerable systems, thereby reducing damages to human and natural systems from climate change and variability.	Resilience is offered as a counter-factual to vulnerability, focus on social and natural systems, no explicit development link.
Smit et al. (2000) IPCC (2001)	Adjustment in ecological, social, or economic systems in response to actual or expected climatic stimuli and their effects or impacts. This term refers to changes in processes, practices, or structures to moderate or offset potential damages or to take advantage of opportunities associated with changes in climate. Involves adjustments to reduce the vulnerability of communities, regions, or activities to climatic change and variability.	Incremental change to reduce vulnerability to climate change, 'effects or impacts' not clearly defined in terms of impacts on development processes/outcomes.
Burton et al. (2002)	A wide range of behavioural adjustments that households and institutions make (including practices, processes, legislation, regulations and incentives) to mandate or facilitate changes in socio-economic systems, aimed at reducing vulnerability to climatic variability and change.	Multi-scalar, captures messiness of adaptive behaviour and alludes to the larger (development) context people operate within, starts looking at households and then moves to larger scales.
Nelson, 2007	The decision-making process and the set of actions undertaken to maintain the capacity to deal with current or future predicted change.	Focus on 'capacity to deal with' which alludes to Sen's capabilities approach (Sen 1981). No mention of scale.
Adger (2005) IPCC (2007)	Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. Adaptation can be anticipatory, autonomous or planned.	'moderates harm or exploits beneficial opportunities' - harm/benefits to what and how are not clear.
Oxfam (2009)	Actions that people and institutions take in anticipation of, or in response to, changing climate. This includes changes to things they do, and/or the way they do them.	Links to risk management and livelihood strategies
Osbahr *et al.* (2010)	Adaptation is the adjustment of a system to moderate the effects of climate change to take advantage of new opportunities.	No allusion to non-climatic effects. Language of 'opportunities' resonates with active role of adaptation actors.
IPCC (2014)	The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate, or avoid harm, or exploit beneficial opportunities.	Risk-based framing becomes dominant, sustainable development is less apparent.
Erikson et al. (2015)	Adaptation is a socio-political process that mediates how individuals and collectives deal with multiple and concurrent environmental and social changes	The word 'climate' is missing for the first time alluding to the recognition that adaptation may not only be to climate change.

Internationally, adaptation has witnessed a shift from a focus on biophysical vulnerability to a wider framing of adaptation needs, that include social drivers of vulnerability and people's ability to respond (adaptive capacity) (IPCC 2014). Based on a review of adaptation literature, we identify four key ways in which adaptation is framed:

Adaptation as a process of integrated planning: Since climate change is projected to increase the frequency and intensity of extreme events, the UN Hyogo Convention (and more recently, the Sendai Framework in 2015) helped create national and local-level

disaster management plans to identify 'low-regrets measures' and incorporate climate projections into adaptation plans. Convergence of CCA, disaster risk reduction (DRR), and social protection programmes (SPP) is effective in operationalising CCA mainstreaming (Sharma et al. 2014; Gajjar et al. 2013; Davies et al. 2013; Adhikari and Taylor 2012; Schipper and Pelling 2006; Yamin et al. 2005). However, although CCA and DRR share similar objectives and challenges, their implementation is spread across different national departments, each with divergent entry points and priorities, with their mandates cascading down differentially, and thus integration and coordination is a challenge (Gajjar et al. 2013).

Adaptation and risk-based frameworks: More recently, risk-based frameworks explain adaptation as a behavioural change in response to climatic and non-climatic risks (IPCC 2014). These risks are categorised as extensive or everyday risks (e.g. food insecurity) and intensive or one-time risks (e.g. flooding). Such a framing acknowledges that in reality, people, communities, and policymakers do not respond to climate change alone and negotiate multiple risks when deciding on a response strategy. A risk management lens also puts the focus on how people's values, objectives, asset bases, perceived costs and benefits of different actions, and planning horizons shape their perceptions of climate change impacts (and risks), mediate their decision making, and finally motivate ongoing and potential adaptation responses.

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Adaptation as a social process: This approach to adaptation draws on political ecology, feminist studies and intersectionality research to argue that adaptation is more than a single intervention to deal with climate change impacts and must understand how systems and structures shape adaptive capacities (Eriksen et al. 2015; Taylor 2013; Tschakert et al. 2013). It calls attention to the role of power, gender, and political processes, in shaping vulnerabilities and adaptation options and actions. It also notes that adaptation is about addressing systemic risks that are embedded in current development pathways and adaptation must focus on local capacities, work with decision-making at multiple scales by multiple actors, and engage with what is a highly political process of negotiation and trade-offs (Eriksen et al. 2015; Leach et al. 2010). This approach shifts away from a focus on impacts reduction to seeing adaptation as a socio-institutional process (Downing 2012).

Table 2: Four framings of adaptation

Adaptation Framing	Adaptation as necessary for development	Adaptation as a process of integrated planning	Adaptation as risk-centric	Adaptation as a social process
Drivers	Institutional response that is defined by international policy discourse	Growing recognition that DRR, CCA, SPP have overlapping goals	People, systems face multiple risks, negotiate many goals	Maturation of the discourse through engagement with social responses to CC
Core ideas	Mainstreaming adaptation into development processes	Retains mainstreaming, puts people, inherent and emergent vulnerability at the centre	Risk-centric, cognizant that social and natural processes shape risk	Recognises messiness, focuses on issues of gender, power, tacit knowledge

Based on the four framings of adaptation discussed above, we can begin to examine how they lend themselves to a particular method of facilitating and implementing adaptation practice and research.

1.3 Adaptation and development: two sides of the same coin?

The four framings above show that adaptation and development have critical overlaps. Adaptation is increasingly being seen as a process that is shaped by power, inequity and political agency, issues that development researchers and practitioners have encountered and deeply engaged with (Eriksen et al. 2015; O'Brien and Wolf 2010). Researchers in particular have highlighted the role of history and how path-dependency locks in people and countries into certain trajectories and choices (Eriksen et al. 2011; Leach et al. 2010), and how cross-scalar drivers and their impacts are complex but essential to map (Patwardhan et al. 2009; Adger et al. 2005). Development and adaptation are thus linked because structural inequalities constrain local adaptation and livelihood choices (Eakin et al. 2014; Tschakert et al. 2013; Lemos et al. 2007). Therefore, without the bedrock that good development provides, it is argued that adaptive capacity is lower and adaptive action potentially stunted.

It is increasingly being realised that adaptation action that addresses climatic risks must be supported by developmental strategies and programmes that address non-climatic risks (Smit and Olga 2001) because lives and livelihoods seldom face risks in isolation. On one hand, households and communities experience and simultaneously respond to climatic and non-climatic risks, which are multi-scalar, complex, and interlinked (Patwardhan et al. 2009). On the other hand, policy-makers and governments negotiate competing agendas concurrently and make decisions at various scales. Also, household strategies, practitioner programmes and government-led development activities modify present and future adaptive capacity with direct implications for planned and autonomous adaptation (Tschakert et al. 2013; Lemos et al. 2007; McGray et al. 2007).

Eakin et al. (2014) differentiate between specific adaptive capacity which is necessary for managing and reducing climate-related risks and generic adaptive capacity which is associated with deficiencies in basic human development needs (e.g. health, education, livelihood security, mobility), truncated opportunities and freedoms (Sen 1981), which also contribute to inherent vulnerability. They argue that only by building both these capacity types explicitly, simultaneously and iteratively, can CCA and sustainable development goals be achieved. Despite this recognition that CCA and development agendas have critical synergies, the arenas in which CCA and sustainable development are discussed (the Conference of Parties and the SDG frameworks respectively) remain visibly divorced (Eriksen et al. 2011). This is mainly because of differences in the way CCA and sustainable development are conceptualised, the problems they are meant to address, the methods they use, the timescales they operate on, and the actors and processes they involve (Table 3).

Table 3: Differences between adaptation and development (*author construct from literature review*)**. Note that these differences are not always explicit and there may be overlaps that are not captured in the table.**

	Development	Adaptation
Problem addressed	Development deficits, structural inequalities, lack of basic amenities	Mainly an environmental problem. Addresses risk posed by climate change and increased climate variability
Method of realising goals	Generic capacities (health, education, livelihood security, mobility), human wellbeing, multidimensional poverty	Specific capacities (capacity to adapt to current and future climatic risks)
Tools used	Development indicators (SDGs, MDGs, HDI), specific indicators such as food security, health indices, multidimensional poverty index	Tools to study adaptive capacity: Sustainable Livelihoods Framework (SLF), political ecology lens (PE), Livelihoods as Intimate Government (LIG), Pressure and Release Model (PAR)
Domains involved	Economics, development studies, public policy, to some extent human geography, anthropology	Climate science, disaster management, engineering, environmental science, geology, geography; more recently, anthropology, human geography
Actors involved	Governments, NGOs, development agencies, economists and development researchers, funders, communities and households, development banks	Research organisations, think tanks, funders, national governments and international actors (UNFCCC, IPCC); more recently, NGOs, sub-national governments, communities and households
Time scale of planning	Short-term (five year plans, project cycles)	Project cycles but with a longer decadal timescale in mind mapping onto longer-term climate projections and impacts

Crucially, Table 2 demonstrates that despite the differences between adaptation and development, the actors working across both domains are common and often overlap. However, it is the scientific domains that have contributed to the understanding of the two discourses that have until now, been markedly different, and have affected the formulation

of research lenses and implementation approaches. The recent introduction of social sciences into adaptation research programmes, marks the beginning of disciplinary overlaps. Now that a fairly scientific understanding of anthropogenic contribution to climate change is known, as well as impacts of climate change on human settlements, adaptation to these impacts can be studied through social science research methods.

It is worth noting that sustainable development has increasingly found a place in IPCC reports (Eriksen et al. 2011; Yohe et al. 2007), which has led to the growing consensus on focussing on climate-compatible development (Denton et al. 2014) and recognising synergies between adaptation and sustainable development.

To conclude, recent articulation of adaptation to climate change impacts finds many parallels with development due to the recognition that climatic stressors are experienced in addition to pre-existing non-climatic stressors and that good development should and will enhance adaptive capacity. Adaptation and development planning and action has obvious overlaps: meeting aims of equitable economic development, poverty alleviation, ability to meet personal aspirations and improved access to basic services through good decision-making that justifies expenditures and has flexible evaluation plans. Effective or 'good adaptation' also includes iterative, reflexive decision-making, supports and integrates well with other policy goals, and centralises principles of adaptive management and learning (Moser and Boykoff 2013). As Lemos et al. (2007:1) note, "*many of these ideas (investing in information and knowledge production and communication, encouraging appropriate institutions that permit evolutionary change and learning to be incorporated) are not new, they have been part of the development discourse and practice for many years…What is new is that these elements of development and capacity building are re-emerging in the unique context of climate change.*"

1.4 Structure of working paper

The remainder of the paper is structured as follows. Section 2 describes how global and national agendas have shaped the evolution of adaptation policy in India. Section 3 presents findings from a review of select projects in three semi-arid states of India and maps the main players in adaptation research, policy and practice domains in India. Section 4 discusses what the findings mean for the understanding of the adaptation-development spectrum in India. We conclude arguing that while there is a significant reorientation of development action in India to mainstream adaptation goals, there remain issues around who takes on which role (who conceptualises, implements and benefits from adaptation-development projects) as well as how certain aspects central to adaptation (flexibility, forward-thinking, and learning) are not necessarily being considered in adaptation-development projects currently.

2. Evolution of adaptation policy

"Despite the potential for synergies, climate adaptation and development policy typically developed in isolation, by separate institutions and agencies, rather than in an integrated fashion" (Eakin et al. 2014:2)

2.1 The global context

Mitigation responses have been the main priority for top-down intervention by experts, governments, and development agencies until recently (SDC 2014). Given the growing consensus on the impacts of climate change, adaptation has emerged as equally central to climate change policy. Against this context, international climate change action (through the CoP21 in Paris) has also converged to agree that climate change action is integral to achieving the proposed SDGs, especially those relating to poverty (SDG 1), inequality (SDG 10), climate change (SDG 13), safe and resilient cities (SDG 11), and global partnerships for sustainable development (SDG 17) (Ansuategi et al. 2015). From the development side, global policies have increasingly evolved towards merging the sustainable development agenda (through the post-2015 development agenda) with concerns of addressing climate-induced impacts (through the UNFCCC process) (Gajjar et al. unpublished). In fact, of the 17 SDGs, one (SDG 13) mentions climate change explicitly and three others (e.g. SDG 2 to combat hunger, SDG 7 on affordable and clean energy, SDG 11 on inclusive and resilient cities) acknowledge climatic risks as significant to factor in if specific targets are to be met.

Over the decades, climate change issues have moved from being considered an environmental issue alone with a focus on emission cuts, projected temperature rises and atmospheric carbon dioxide levels, to one that has converged with the development agenda (through building adaptive capacities) (Table 4).

Table 4: A brief history of the evolution of global discourse around climate change action .

Source: Author extension of a similar table in Singh et al. (2015)

1972	United Nations Conference on the Human Environment held in Stockholm. Recognised that poverty alleviation is crucial for protecting the environment.
1987	World Commission on Environment and Development (WCED) publishes the Brundtland Report (*Our Common Future*), emphasising sustainable development as a process to address environment and development dilemmas, fore fronted the need for intergenerational equity, and marked the emergence of the environment as a critical facet of international governance.
1990	The Intergovernmental Panel on Climate Change (IPCC) publishes its first assessment report (AR1) which finds that the world has been warming and future warming seems likely. Climate change is the domain of climate scientists (meteorology, atmospheric science).
1992	The United Nations Conference on Environment and Development (UNCED), or Earth Summit, takes place in Rio where agreements on preserving the climate, forests, deserts, oceans, and biodiversity are produced. The UN Framework Convention on Climate Change (UNFCCC) is produced and Kyoto Protocol becomes an international treaty committing nations to reduce greenhouse gas emissions. The protocol has direct implications on the development pathways countries take.
1995	IPCC's second assessment report (AR2) analyses the climate science, impacts, adaptation and mitigation strategies along with the economic and social dimensions of climate change.
2000	Eight Millennium Development Goals (MDGs) are established following the UN Millennium Summit. MDG progress seen as an important mechanism to address vulnerability drivers. Goal 7 on environment and sustainability discusses climate change cursorily.
2001	The third assessment report of the IPCC not only discusses climate science, impacts, adaptation and mitigation strategies but also vulnerability.
2007	Fourth IPCC report (AR4) warns that serious effects of warming have become evident, cost of reducing emissions would be far less than the damage they will cause, and propose mitigation and adaptation as twin strategies. CoP13 in Bali ends in Bali Roadmap, which emphasises the need for deep cuts in global emissions and launches a separate technical group to create capacities for adaptation. Adaptation Fund is launched.
2009	CoP15 results in the Copenhagen Accord, which recognises the scientific case for keeping temperature rise below 2°C, but does not contain commitments for reduced emissions that would be necessary to achieve the target.
2011	CoP17 in Durban adopts a Green Climate Fund of US$100 billion per year to help poor countries adapt to climate impacts. Common but differentiated responsibilities approach recognises that present and future climate action is shaped by past emissions and development trajectories.
2012	Rio +20 takes place. A report titled *The Future We Want* is released. The main message is to propose that sustainable development can be achieved through social inclusion, economic development and environmental protection. Climate change not explicitly on the agenda.
2014	IPCC releases AR5 which uses a risk management framing and forefronts adaptation as a necessary strategy to deal with present and future climate change. Cities emerge to the forefront demonstrating growing recognition of urbanisation as key developmental process.
2015	CoP21 in Paris and SDG Summit to define a post-2015 development agenda, both in December, conclude that development and climate change challenges must be addressed simultaneously. CoP 21 explicitly centralises the Loss and Damages (L&D) framework to attribute liability and calculate compensation and sticks to the target of 1.5^{o}C.

This policy evolution saw a concurrent widening of actors and their agendas in discussions of how climate change and development intersect. Thus, climate scientists began exploring ways to improve the utility and uptake of climate information, while development practitioners started acknowledging climatic risks when implementing their programmes.

2.2 Indian context

Focus on development

India faces significant development challenges: 22% of its population is categorised as living below the poverty line (Planning Commission of India 2013) and it is home to one out of every three malnourished children in the world (UNICEF 2014). Against this context, India has long argued that current national development goals outweigh the need for climate change action. Post-independence, India's development strategy was shaped by a state-led socialist vision facilitated by centralised planning (Tandon 2013). Development planning was led by the Planning Commission and a federal frame that centred on Five Year Plans. Economic liberalisation, starting in the 1990s, exposed India to globalisation and led to a spurt in growth, expansion of the services sector, a decline in poverty but an increase in inequality (Subramanian et al. 2015). Recent government policies have broadened development as moving beyond poverty reduction alone and ensuring inclusive growth (Suryanarayana 2013). Gains made by enhanced growth have simultaneously created problems such as rising income inequality, environmental degradation and poor performance on many human development indicators.

Evolution of climate policies

India's National Environmental Policy (NEP), the earliest policy document discussing climate change, reiterates the principle of common but differentiated responsibilities and prioritises the 'right to development'. It identifies key climatic vulnerabilities and recognises the need to *"assess the need for adaptation to future climate change, and the scope for incorporating these in relevant programmes"* (MoEF, 2006:43). The NEP however, had an over-emphasis on economic efficiency and lacked participatory approaches in its formulation (Badami and Kohli 2006).

India's climate policies are established on the principles of co-benefits (Revi 2008; Dubash 2013) and primarily introduce measures that promote development while yielding secondary climate benefits (Dubash and Joseph 2016). The fourth IPCC Assessment Report in 2007 emphasised the significance of adaptation to deal with climate challenges. Concurrently, a High-Level Advisory Group (HAG) on climate change was formed in 2007 in India and helped prepare and coordinate National Action Plans for climate change, impact assessment, adaptation and mitigation agendas. India's first National Action Plan on Climate Change (NAPCC), released in 2008, identified eight core missions, which represented *"multi-*

pronged, long-term, and integrated strategies for achieving key goals in the context of climate change" (MoEF 2008:3). While the NAPCC introduced into the policy discourse, the concept of co-benefits, the prioritisation of domestic, economic, and social development objectives over environmental concerns has weakened the co-benefit frame in guiding policy trade-offs and priorities (Dubash 2013).

Over the last decade, the discussion around climate change has transitioned from being a foreign policy issue to a broader debate on whether and how development trajectories should incorporate climate change measures and goals (Dubash and Joseph 2016; Dubash 2013). Despite this progress, there has been more emphasis on mitigation at the cost of adaptation and only three of the eight national missions have a strong adaptation focus (Table 5). Domestic policies on climate change also suffer from inadequate capacity within government departments, lack of continuity in institutions, poor cross-departmental coordination, lack of funding, and inconsistent and inadequate efforts in mainstreaming of climate concerns in development decisions (Dubash and Joseph 2016; Chaudhari and Mishra 2015; Ganguly and Panda 2010; Sharma and Tomar 2010).

Finally, since 2010, the central government has requested states to develop State Action Plans on Climate Change (SAPCC), which aim to achieve coherence across states in design and implementation of climate measures, as well as recognise the state jurisdiction over several areas within the NAPCC, particularly those related to adaptation (Dubash 2013). So far SAPCCs across India are of differing quality and efficacy (Dubash 2007), have no mandate to implement, and no financial support.

Table 5 India's national missions addressing climate change adaptation. Authors' analysis based on content analysis and literature review

Mission	Aim	Links with adaptation (content analysis by authors)	Potential alignments with SDGs (authors' analysis)	Recommendations related to adaptation goals and SDGs (based on Dubash and Joseph 2016; Dubash 2013; Byravan and Chella Rajan 2012)
National Mission on Green India (GIM)	To address climate change by enabling forest-dependent communities to adapt to climatic variability and by enhancing carbon sinks of vulnerable species, ecosystems	• Focussing on greening, forestry, ecosystem health • Building livelihoods through conjunction with existing programmes such as the MGNREGA, Compensatory Afforestation Fund Management and Planning Authority (CAMPA) and National Afforestation Programme (NAP).	SDG 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss SDG 6. Ensure availability and sustainable management of water and sanitation for all Target 6.6 Protect and restore water-related ecosystems SDG 11. Make cities and human settlements inclusive, safe, resilient and sustainable Target 11.4 Strengthen efforts to protect and safeguard cultural and natural heritage. Target 11.7 Provide universal access to safe, inclusive and accessible, green and public spaces.	• Timely decentralisation and implementation of Green Mission will prove difficult. • Doesn't address issue of reducing the rate of diversion of forest land for non-forest use. • Danger that the mission will be reduced to a plantation. programme for commercial purpose, rather than addressing local needs. • Ignores issues of access to natural resources. • Includes most vulnerable dwellers (especially women and children) and vulnerable contexts (informal settlements). • Does not focus on conservation of natural heritage in cities • Fails to address risks associated with lack of green spaces in cities (e.g. heat-waves, flooding).
National Mission for Sustainable Agriculture	To transform Indian agriculture into a climate resilient production system through suitable adaptation and mitigation measures.	• Building local adaptive capacity through existing schemes such as Rashtriya Krishi Vikas Yojana (RKVY), National Horticulture Mission (NHM), National Food Security Mission (NFSM) and National Agricultural Insurance Scheme (NAIS). • The National Initiative on Climate Resilient Agriculture (NICRA) to scale up outputs for wider adoption by farmers.	SDG 2. End hunger, achieve food security and improved nutrition, promote sustainable agriculture. Target 2.3 Double agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers. Target 2.4. Ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, help maintain ecosystems, strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and improve land and soil quality. Target 2.5. Maintain genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and ensure access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge.	• Does not focus on women, indigenous people, fishers, pastoralists in similar manner as SDGs. • Needs to address current weaknesses in agricultural extension services and insufficient credit and insurance availability to poor farmers (addressed to some extent through revamped Pradhan Mantri Crop Insurance Scheme). • New regulatory frameworks and capacity to address climate change are missing in institutions responsible for implementing agricultural policy. • Fails to address issue of access to land. • Overlooks the potential of non-farm employment (and synergies with linked policies such as Rurban Mission, AMRUT, MGNREGS).

Mission	Aim	Links with adaptation (content analysis by authors)	Potential alignments with SDGs (authors' analysis)	Recommendations related to adaptation goals and SDGs (based on Dubash and Joseph 2016; Dubash 2013; Byravan and Chella Rajan 2012)
National Water Mission	To conserve water, minimise wastage and ensure its more equitable distribution both across and within states	Adaptation planning is developed by putting in place appropriate processes for generating awareness and building institutional capacity. Focus on participatory integrated water management.	**Goal 6.** Ensure availability and sustainable management of water and sanitation for all. **Target 6.1** Universal and equitable access to safe and affordable drinking water. **Target 6.4** Substantially increase water-use efficiency across sectors, ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity. **Target 6.5** Implement integrated water resources management at all levels. **Target 6.6** Protect and restore water-related ecosystems.	● The water sector is poorly integrated with ecology, climate change and development concerns. ● Demand management of water has not been prioritised. ● Water in agriculture has been largely ignored.

The post-2015 development agenda and mainstreaming CCA

While some of the interventions enumerated under the NAPCC are already being undertaken (MoEF&CC 2014), given the range of climatic impacts on different sectors and existing vulnerabilities in India, a change in 'direction, enhancement of scope, and accelerated implementation' (MoEF 2008:3) is required. The Second National Communication to the UNFCCC (MoEF 2012) reiterates the urgency of effective adaptation measures in different sectors and acknowledges the importance of both win-win and no-regrets strategies. It also recognises that the country lacks a comprehensive and integrated impact assessment framework.

The NAPCC to a large extent is drawn on the principles of mainstreaming. Table 4 also illustrates the link between the objectives of three national missions that take into account adaptation, and the SDGs. Overall, the missions are comprehensive and their objectives broadly align with the SDGs. However, the missions fail to address differential vulnerability and do not explicitly focus on the most marginal and vulnerable, as promoted through SDGs (Table 4). It is worth noting that while the NAPCC was being made, the reference framework was the MDGs. Thus, the NAPCC may need to be reimagined in the light of the post-2015 SDGs and along the lines of the recommendations in Table 4.

In India, integrating climate-centric policies into existing national development policies has gained momentum in the last decade and is gradually trickling down to sub-national levels (Dubash and Jogesh 2014; Sharma and Tomar 2010). However, mitigation interventions, which are often incentive-based and technology-oriented and offer measurable outcomes, have been mainstreamed into energy policies and development plans far more efficiently than adaptation because they are deliberately kept value-neutral (Sharma and Tomar 2010; Basu unpublished).

Studies looking at the adaptation-development spectrum (Dovers and Hezri 2010; Lebel et al. 2009), propose mainstreaming as an effective approach to streamline measures both in the interest of adaptation and development. They suggest mainstreaming can motivate investments and draw on existing institutions. However, the sharing or extension of roles and responsibilities to the existing development and environmental agencies also presents risks of loosely delineated activities in the nature of specific climate change targets (Dubash and Jogesh 2014).

To meet CCA and sustainable development goals, policy and practice must clearly draw linkages between poverty alleviation, livelihoods and climate change (Denton et al. 2014; Gajjar et al. 2014; Eriksen and Brown 2011). While the Government of India, has reiterated its intentions to focus on development and economic growth (MoEF&CC, 2014), internationally, investment and political will towards adaptation is increasing. First, a number of impact and vulnerability assessment studies are emerging (for a comprehensive list see MoEF 2012). While these have traditionally been top-down approaches aimed at

assessing biophysical impacts and sectoral vulnerabilities, more recently, community-based vulnerability assessments are being done (Patra 2014). Second, despite its current limitations, the co-benefits concept is helping shift from a binary of mitigation vs. adaptation, to recognition of mitigation and adaptation that could become an effective instrument to achieve multiple goals.

The Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), a state-led programme aimed at alleviating poverty through employment generation, is one example of potential mainstreaming of climate change adaptation in development planning. By encompassing objectives of drought proofing, building resilience to climate risks, and reversing/slowing natural resource degradation, MGNREGS is well positioned to address climate change vulnerability (Tiwari et al. 2011). However, functional and methodological limitations (Adam 2014) prevent it from being truly transformational.

3. What does the adaptation-development spectrum look like in India?

To understand the designing and practice of adaptation across India, we reviewed 69 projects implemented in three semi-arid states in the country. We used Google Scholar and Google to search for projects online as well as contacted adaptation experts through email to identify relevant projects. To provide a boundary to our inquiry, we limited the search using four criteria:

1. included projects implemented between 2005 and 2014
2. included projects funded by ten prominent global funding agencies operating in India[3]
3. included projects located in India and in three specific states – Karnataka, Maharashtra and Tamil Nadu – which are ASSAR's research sites
4. included projects that had some measure of building adaptive capacity. This was done through a search using keywords such as 'development', 'climate change adaptation', 'climate change', 'watershed development', 'livelihood strengthening', 'infrastructure building', and capacity building'

The above criteria led us to shortlist 71 projects. Next, project websites and documents were examined individually to ascertain they were adaptation or development projects and met all the above criteria. The final list included 69 projects and these were reviewed in terms of project conceptualisation and implementation: (1) at different scales (local, state and national levels), (2) in different landscapes (rural or urban), (3) across multiple sectors, and (4) demonstrating involvement of different groups of people. The analysis used secondary sources: project documents, project websites, reported results, blogs, newspaper articles and grey and white literature regarding the projects. The data was coded in MS Excel against the four points noted above. In projects where certain information was difficult to discern from secondary sources (e.g. lack of clarity around actors involved in the project), the section was coded as 'not defined'. In all instances, we tried to triangulate our coding through multiple sources to avoid miscoding.

[3] The funding agencies reviewed include World Bank, Asian Development Bank (ADB), Swiss Agency for Development and Cooperation (SDC), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), UN-Habitat, United States Agency for International Development (USAID), Global Environment Facility (GEF), Department for International Development (DFID), United Nations Environment Programme (UNEP), Japan International Cooperation Agency (JICA), International Development Research Centre (IDRC) and International Fund for Agricultural Development (IFAD).

It is important to keep in mind that the conclusions of this study cannot be generalised across all development projects or agencies, as we limited our scope of analysis to projects funded by ten agencies.

3.1 Review of projects

The primary focus of the projects[4] varied (Figure 1) and ranged from conservation (of ecosystems, biodiversity), livelihoods strengthening (e.g. introducing opportunities for income generation or diversification), infrastructure development (e.g. for supply of water, solid waste management), promotion of sustainable agriculture (e.g. integrated pest management, climate smart agriculture), watershed development, improved investment in the health sector (e.g. better access to health facilities), disaster risk reduction, improving governance (e.g. strengthening government and outside government institutions for project implementation), and capacity building (of multiple actors through knowledge sharing and providing training).

A significant number (28%) of interventions focused on improving infrastructure and service provision, with a focus on improved water supply and solid waste management (especially in urban areas). This is closely followed by projects focussing on biodiversity conservation and ecosystem management (23%).

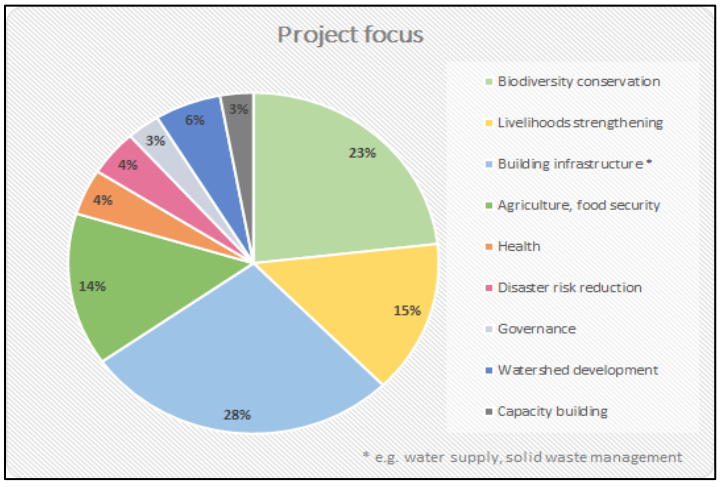

Figure 1: Primary objective of adaptation-development projects (n=69)

[4] While projects often had more than one objective; e.g. biodiversity conservation and capacity building, coding was done based on the primary objective as stated by the project.

Scale of project

Projects are often conceptualised, planned for, and implemented at different scales. For our review, we assessed the scale at which projects were conceptualised and planned for. This does not necessarily mean that the project is implemented at the same scale. A state-level project may be implemented in certain districts or watersheds: for example, the Tamil Nadu Irrigated Agriculture Modernization and Water-Bodies Restoration and Management Project is a state-wide World Bank-funded project that has implemented water management and sustainable agriculture practices in 55 sub basins over six years.

Most projects (61%) were conceptualised at the state level while 36% of projects were at the national and only 3% at local levels. This might be skewed by choice of projects restricted to ten funding agencies. Most state-level projects were in sectors of agriculture, infrastructure, and health (all state-level subjects) while national-level projects were mainly related to capacity building, disaster risk reduction, biodiversity conservation, and livelihoods strengthening (Figure 2). The later observation demonstrates that goals such as biodiversity conservation (e.g. Strengthening the Enabling Environment for Biodiversity Conservation and Management in India) are potentially more suited for larger-scale implementation where the wider scope of national processes and representatives are required for effective impact.

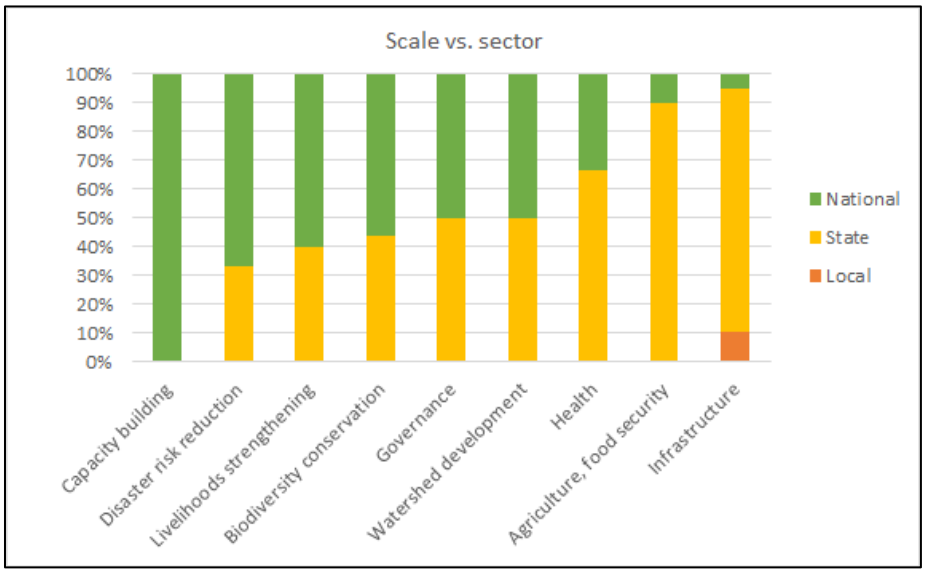

Figure 2: Projects focussing on certain sectors are conceptualised at certain scales

In contrast, project implementation, with specific infrastructural interventions, is carried out at finer scales. For example, the Karnataka Municipal Water Energy Efficiency Project was a state-level project implemented in six pilot cities across the state. We suggest that conceptualisation at the national scale, which is linked to broad goals of poverty alleviation, sustainable livelihoods, and creating equitable societies has to, during project

implementation, accommodate dynamics at finer scales: local contexts, institutions and competing challenges.

Where projects were implemented

Of the projects, 51% have been implemented in rural areas, 27% implemented in urban areas, and 12% implemented in both rural and urban areas. In 10% of the projects, there was no clear delineation of the landscape the project was implemented in. Higher implementation in rural areas is due to the fact that rural India has witnessed higher and longer investments through development interventions with adaptation co-benefits (livelihood diversification, biodiversity conservation, natural resource management) and direct climate-focused adaptation programmes (CSE 2014).

As expected, most rural projects are focussed on promoting sustainable agriculture, meeting food security, watershed development and to a lesser extent, community-based biodiversity conservation (Figure 3). Most projects in urban areas are infrastructure-based projects focussing on water provision, housing in informal settlements and solid waste management. Notably, projects focussed on governance and institution building were all urban which highlights a potential gap in governance-related engagement in rural areas. However, this finding needs more substantiating through empirical research. The focus on governance and institution building is especially important since several scholars have highlighted governance-related issues (redundancy, inadequate capacity, poor institutional memory, and overlapping and unclear roles) as key barriers to adaptation implementation and scaling up (Singh et al. 2015).

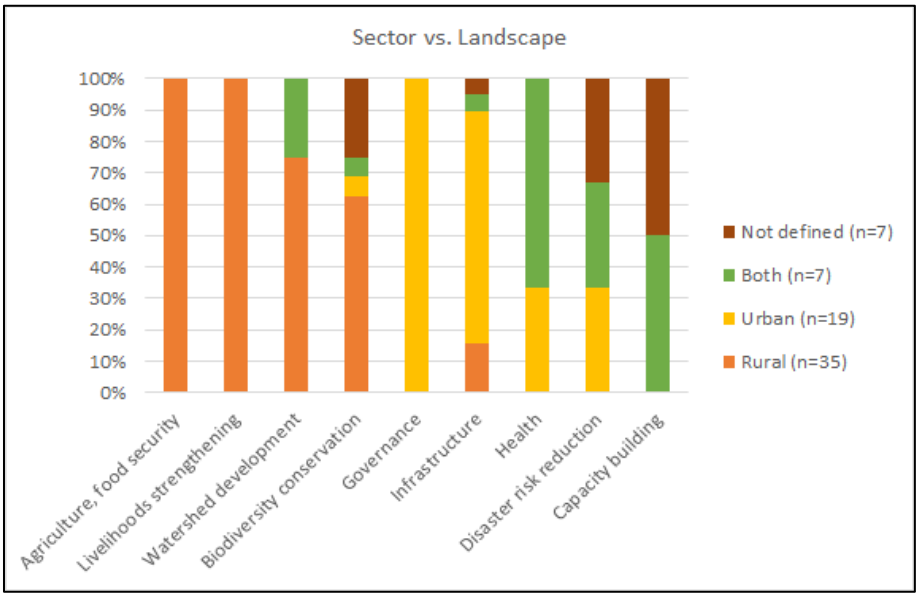

Figure 3: Landscape affects the sector

Do projects address climate change explicitly?

Very few projects (15%) explicitly mentioned CCA as their objective; 65% had no explicit link to climate change action, and 20% addressed climate change but not necessarily through adaptation. The last category often focussed on mitigation or indirectly addressed climate change impacts by increasing awareness and building resilience against climatic risks and impacts. For example, the Partnership for Land Use Science (Forest PLUS) project, funded by USAID, aims at improving forest management which will subsequently help in mitigating climate change.

Across rural and urban landscapes, very few projects explicitly address climate change per se, i.e. mention reducing climate-induced risks or aim to build local adaptive capacity. However, more rural projects showed direct climate change action as compared to urban areas, probably because rural livelihoods are primarily dependent on natural resources and hence directly exposed to climatic risks (Figure 4). In urban areas, the impact of climate change intersects with numerous overlapping developmental challenges and is indirect, and therefore harder to attribute solely to a changing climate.

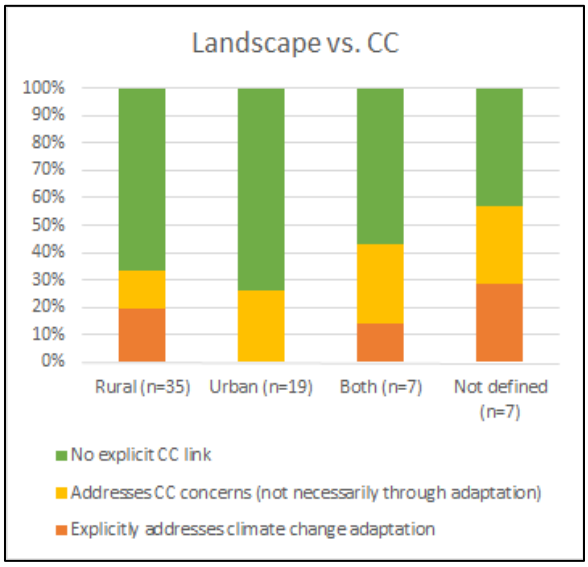

Figure 4: Place of implementation affects project focus on climate change adaptation

While several projects at the national level explicitly addressed CCA (signalling the recognition of the importance of CCA at a national level), projects conceptualised at the state had a higher number of projects (40%) with no explicit link to climate change (Figure 5, left). This potentially points to the fact that states grapple with several problems at a regional scale and therefore find it harder to single out CCA as a dominant focus in their plans and projects. Also, states are yet to effectively mainstream climate action in their plans because they have no clear mandate and financing mechanism (Dubash and Jogesh 2014) though the data is too small to reach definitive conclusions. The agricultural sector

serves as a counter example where an extensive network of agriculture universities and extension architecture has a clear mandate from the national and state planning frameworks. This demonstrates that top-driven incentivisation with a clear monitoring and implementation framework can help mainstream CCA at multiple scales.

Across sectors, most projects did not explicitly implement climate change-related actions (Figure 5, right). Interestingly none of the three health projects reviewed had links to climate change despite a significant body of research identifying climate change as a potential multiplier of disease outbreak and spread (Majra and Gur 2009). Within infrastructure-based projects, climate change tends to have a higher correlation with mitigation benefits than adaptation outcomes.

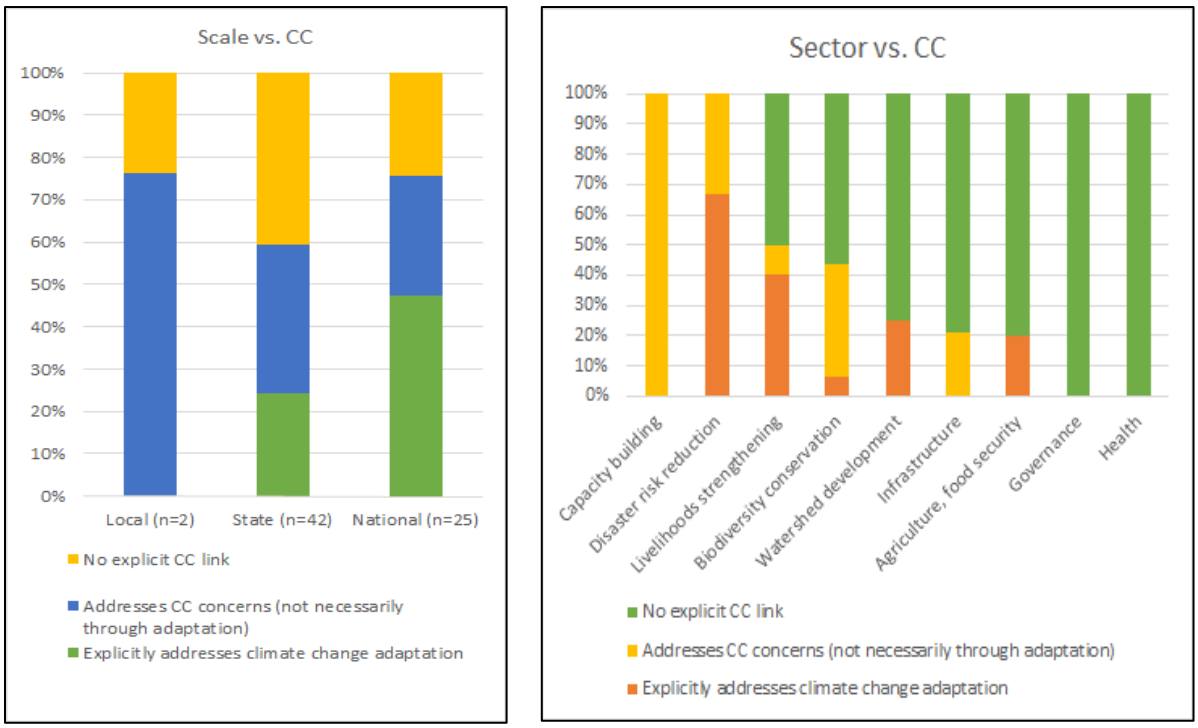

Figure 5: Project focus on CCA is shaped by scale (left) and sector of focus (right)

Does the time a project started matter?

There has been an increase in the number of projects with a stated focus on adaptation over time while projects with no climate change link in their objectives have decreased (Figure 6, left). This is potentially driven by the growing policy emphasis and international momentum around climatic risks, awareness of climate change impacts and funding available for adaptation that has led to the mainstreaming of climate adaptation in

development action. Whether this mainstreaming reflects momentum towards more transformative change or a repositioning of existing development agendas remains to be seen.

There has also been a diversification in the focus that projects state as their primary objective over time (Figure 6, right). The 1990s saw a predominance of projects working on biodiversity conservation which reduced over the next decade. This decade also witnessed liberalisation of the Indian economy. The 2000s saw an increase in the number of sectors covered with a higher focus on governance, DRR and capacity building. This attention away from biodiversity reflects a shift in what is perceived as more at risk, in both rural and urban areas.

Figure 6: Change over time in project engagement with CCA (left) and sector of focus (right)

In the last two decades, while biodiversity has declined due to global environmental change, communities have had to adapt to a changing climate as well as to a depletion of natural resources. Recognising this, there has been an increase in supporting activities of knowledge production and capacity building (Figure 7, right).

3.2 People involved in the adaptation-development spectrum

There are multiple actors working across different scales, sectors and landscapes and that may have different and/or overlapping roles and responsibilities. Across the 69 projects, we coded people involved in the projects and categorised them as follows:

- **Funders:** agencies that provide funds to or invest in adaptation-development projects. These are often international donors, private sector agencies and public agencies who support programmes financially.

- **Reviewers/planners:** people who plan and formulate projects and identify agencies who can either facilitate or implement interventions. Such agencies include the central and/ or state agencies.
- **Implementers or intermediaries:** Actors who implement projects and can include a range of stakeholder groups, from NGOs who facilitate implementation to regional government agencies.
- **Beneficiaries:** People in landscapes, systems and sectors identified as benefiting from or targeted by the project.

In recent years, plural arrangements are also encouraged with non-state and state actors co-planning, co-designing, and co-implementing projects. In our review, overall, there was clarity about the roles of people at two extremes: funders and target beneficiaries. For instance, the project 'Promoting Water Use Efficiency across Urban Sector to Address Climate Change' clearly mentions that it is funded by USAID and the targeted beneficiaries include urban communities and other users- municipal and industrial. This trend, observed in most of the projects reviewed, may be because the monitoring and evaluation standards set by international agencies require clear attribution of results (through branding a project as 'funded by so and so').

However, delineation of actors in the middle, i.e. the agencies and people managing day to day project delivery and those who are involved with planning, facilitation and implementation was unclear and messy. For instance, most projects used words such as executing, implementing, supporting or partnering organisations/agencies with less clarity on their function as an executing agency. Further, there was no mention of agencies involved with planning and designing phases. Many local organisations involved in implementation were often not mentioned in the reporting documents. For example, the World Bank-Global Environment Fund project 'Sustainable Rural Livelihoods Security through Innovations in Land and Ecosystem Management Project' was executed by national government agencies (e.g. Department of Agriculture, Union Ministry of Agriculture and Union Ministry of Environment and Forests), with no mention of the engagement and involvement of local actors despite aiming to have impacts at the local level. Reasons for this silence on the middle could also be because reporting norms focus on project outputs and outcomes (expressed in people impacted, ecological areas conserved) rather than processes and people involved (knowledge that often goes undocumented and is held by those within the project).

In the projects reviewed, implementation was mainly carried out by national or state governments (Figure 7, left) but this observation may be because of the choice of projects funded by international agencies. Such projects tend to approach the state to legitimise their presence but also to incentivise governments to adhere to international agreements (Abbot and Snidal 1998). Local actors such as local NGOs and community groups or households had a very small role (4% each) in implementation demonstrating that

devolution of implementation activities is not significant despite development discourses promoting participatory and bottom-up approaches. However, it is worth noting that in initial framings of a project, local partners (or intermediaries) are not necessarily identified and they may emerge (or be hired) as the project progresses. Thus, while funders and beneficiaries are identified before projects start, the 'middle' evolves only later.

Coming to project beneficiaries (Figure 7, right) as expected, vulnerable households and communities (including slum dwellers, farmers, indigenous tribes, women and children) were the most significant beneficiaries. However, state and local governments were also beneficiaries, chiefly in projects focusing on building institutions and knowledge sharing.

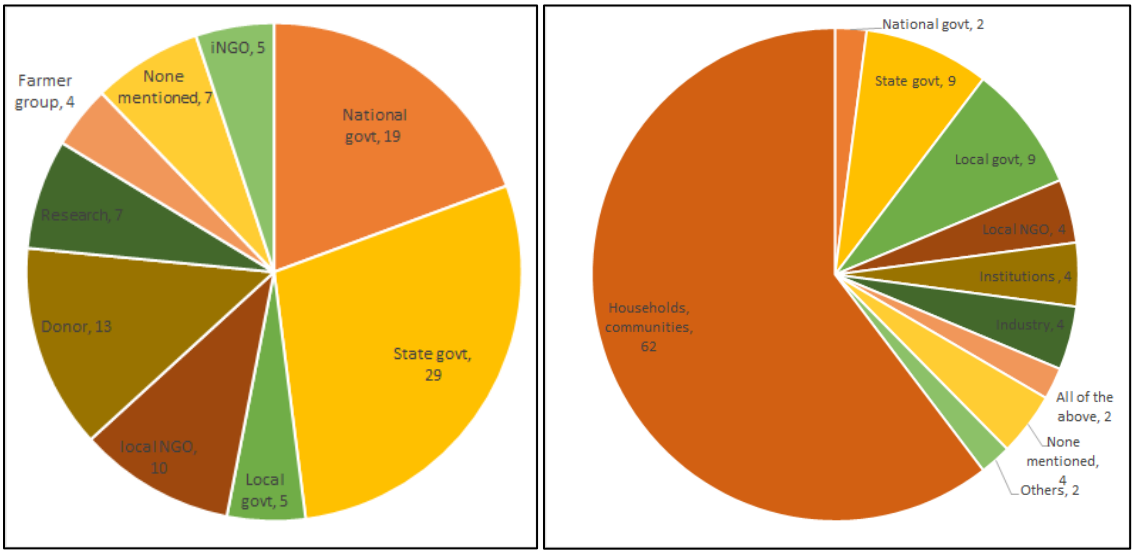

Figure 7: People involved in project implementation (left) and stated project beneficiaries (right)

This demonstrates a recognition that households and communities tend not to implement and benefit from adaptation-development projects in isolation. The realisation that governments, funders and civil society have to be involved has come from a maturation of the idea that projects need an enabling institutional environment to facilitate transformative change.

4. Discussion

Let us now return to the initial questions which provoked this working paper and try to answer them:

(1) Do climate adaptation and development policies and projects build upon or obfuscate each other's objectives and actions?

In the past, the Indian government's focus on poverty alleviation and development has outweighed the need to address climate change adaptation. For the last 65 years, national policies have focused on addressing drivers of poverty and, in some cases, vulnerability. More recently however, these policies are being reoriented to recognise and account for climatic stressors. So, from a policy angle, we find that mainstreaming adaptation concerns into development planning is potentially building upon each other's objectives and actions.

While traditionally, development interventions have been guided by a risk management framework (Schipper and Pelling 2006), a risk-centric framing is also observed in the adaptation-development projects reviewed[5]. Further, from the project review, we found that the people involved in implementing adaptation projects remain largely the same as those who were commonly engaged in development projects (Figure 7). Therefore, in addition to an evolving policy landscape and a common risk-based framing, development and adaptation projects converge due to a continuity of intermediaries (implementing or facilitating agencies) who implement them. This could be a positive trend if actors at different scales (funders, government bodies and intermediaries) are able to operationalise novel approaches that allow the interests and aspirations of different actors to emerge and be factored in when building consensus around future scenarios, adaptation responses, and development pathways. Therefore, while policy frameworks for CCA and development are increasingly being designed to build upon each other, it remains to be seen whether the projects and the people who implement them are able to act in a synergistic manner.

(2) Can we categorise activities and projects as adaptation or development?

Most of projects reviewed for this paper did not explicitly state addressing climate risks as their key focus. Of the projects that did explicitly mention addressing climatic risks, most were in rural areas (Figure 4), which points to the higher dependence of rural livelihoods on natural resources and the vulnerability of such livelihoods to climate risks. Also, projects since the 2000's tended to focus more on

[5] The next step of this research hopes to categorise the reviewed projects according to the four adaptation framings identified in Section 1.1

soft adaptation approaches (Sovacool 2011) which include contributing to institution strengthening, capacity building and knowledge sharing, as opposed to hard adaptation approaches such as improving infrastructure and extending basic services in urban areas; and building water harvesting structures and afforestation in rural areas. This indicates the awareness that technical measures alone will not sustain climate sensitive pathways, and that people across scales (such as government officials, policy makers, civil society, beneficiaries) will need to be oriented towards the new risks posed by climate change. Such an awareness fits well with evidence that shows how investment in soft approaches have a higher marginal compared to hard approaches returns (Cartwright et al. 2013). Despite calls for integrated, cross-sector adaptation that is mainstreamed into development planning (Sharma and Tomar 2010; McGray et al. 2007; Schipper and Pelling 2006), local and national adaptation actions tend to be sectoral and focused on technical measures to reduce risk.

Based on the above, we argue that it is possible to categorise projects and activities as climate adaptation not through their stated purpose of addressing climate risks, but through the unstated outcome of achieving specific adaptive capacity to deal with climate risks (Eakin et al. 2014). On the other hand, good development projects help provide a bedrock of generic adaptive capacity in communities and institutions but do not necessarily contribute to specific adaptive capacity (to climate change). Thus, despite clear overlaps, development and CCA projects can be differentiated based on whether they are explicitly focussing on responding to and preparing for present and future climate variability and change.

The issue of rebranding several development programmes as adaptation has been raised repeatedly (Nightingale 2015; McGray et al. 2007). It can be argued that development is adaptation when it (a) meets the demands of the three pillars of sustainable development (social, environmental and economic concerns) as well as (b) includes the tenets of 'good' adaptation; i.e. it is forward thinking and flexible (Tschakert and Dietrich 2010), has a strong element of learning, and undertakes incremental capacity building leading to transformational change (Tschakert et al. 2013). Conversely, when development initiatives are designed reflexively, are cognisant of the potential of unintended consequences of short-term development approaches and strategies, and utilise inclusive approaches for teasing out local knowledge and building community consensus, they can contribute to adaptation.

(3) Which actors are equipped to span the spectrum between adaptation and development, if such a spectrum exists?

Adaptation actors span the research, policy, practice space and include information generators, users, funders, implementers and beneficiaries at multiple scales (Table 3, Figure 7). Climate scientists, new to the development agenda, are increasingly

being asked to produce climate projections that can inform local and regional strategies. On the other hand, economists and other social scientists attempt to assess the vulnerabilities of poor populations. For both natural and social scientists, as well as development agencies and intermediaries, in order to re-orient their skills and capacities for producing regionally relevant (climate and hydrological) and contextually rich (social, political and cultural) information, a high element of collective learning and action will be required (Brown et al. 2010). Researchers have argued that the 'wicked' nature of climate change as an issue means that it requires participatory interdisciplinary or transdisciplinary approaches, especially when it comes to issues of CCA (Olsen et al. 2013; Brown et al. 2010).

Private sector actors are increasingly joining the adaptation-development spectrum through investments in resource management (e.g. watershed development investments by large companies such as Indian Tobacco Company and reliance Limited), improving market linkages, aiding skill development, facilitating information access (e.g. start-ups like Skymet providing weather and climate information services) and providing insurance. However, our review did not focus on private sector actors and this could be an area of further research.

Although a re-orientation in the policy space is observed both at national and sub-national scales (Section 2.2.2), state action plans will find it harder to single out climate change as a focus area because their human and financial resources are limited and are currently geared towards meeting development goals under business as usual scenarios (Dubash and Jogesh 2014).

By mandating collaborative approaches for interdisciplinary research and community engagement funding agencies are attempting to guide the implementation of development programmes towards adaptation. We propose that by promoting network-based programmes, funders are nudging practitioners and researchers to shift along the spectrum, from a development to an adaptation orientation. However, as noted under (1) of this discussion, it is most critical for the intermediaries or implementers of adaptation-development projects to learn from their own past experiences with communities, and integrate the long-term impacts of climate change, as well as the unsustainable outcomes of previous developmental initiatives, into their work.

5. Conclusion

Theoretically, the framing of adaptation has progressed from it being necessary for development, to an understanding that it is a social process (Table 2). In this evolution of what drives, defines and emanates from different framings of adaptation, it is clear that adaptation is recognised as different from development and has at its centre, ideas of flexibility, learning, and forward thinking (Tschakert and Dietrich 2010). Inderberg et al. (2015) argue that past development paradigms have failed to address the drivers of climate change, and question whether adaptation can be achieved without transforming current socio-economic structures. However, development practitioners have employed and refined participatory approaches for engaging with poor and vulnerable communities for decades. The adaptation community could do well to integrate the learning from these engagements for building adaptive capacity, in the context of a changing climate. Similarly, the development community must learn about the unique ability of climate change to compromise effective sustainable development (Lemos et al. 2007). Since both development and adaptation communities have long-term interests in improving how people deal with and prepare for stressors of all kinds (climatic, structural, inherent, emergent) this is an area where the most productive collaborations between the two communities are expected to materialise.

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