ADAPTATION IN SMALL AND MEDIUM-SIZED CITIES: INNOVATION, CHALLENGES AND OPPORTUNITIES

Synthesis of IDRC's support to Climate Change research

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Acronyms

CARIAA	Collaborative Adaptation Research Initiative in Africa and Asia
AARC	Africa Adaptation Research Centres of Excellence Initiative
CCAA	Climate Change Adaptation in Africa
BWDB	Bangladesh Water Development Board
CCP	Climate Change Program
CCW	Climate Change and Water
CDKN	Climate Development Knowledge Network
CDM	Clean Development Mechanism
DfID	Department for International Development - United Kingdom
GAP	Gender Action Plan
GHG	Greenhouse gases
HEFCE	Higher Education Funding Council of England
ICLEI	International Council for Local Environmental Initiatives
IDRC	International Development Research Centre - Canada
LCA	Life Cycle Analysis
PAR	Participatory Action Research
PCR	Project Completion Report
PO	Program Officer
SDGs	Sustainable Development Goals
SIDS	Small Island Developing States
UPE	Urban Poverty and Environment
UNFCCC	United Nations Framework Convention on Climate Change

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Executive summary

This report analyzes a portfolio of 36 projects on climate change in built environments which were funded by the International Development Research Centre (IDRC) between 2006 and 2018, comprising a total investment of CA$24,728 million. The analytical synthesis aims to answer the following key questions:

- What are the impacts of IDRC's Climate Change Program (CCP)-funded research on the research field on adaptation in built environments?
- How do the knowledge and strategies generated by CCP-funded research contribute to local adaptation and mitigation strategies, policies and practices to improve the lives of the people living in small and medium-sized cities?
- How have project interventions helped address gender-based vulnerabilities?
- What are the lessons learned and how should they be used for future research?

For this purpose, the CCP commissioned ConClima to synthesize, analyze and extract impacts, contributions, lessons learned, gaps and recommendations in order to inform future programming decisions. A five-step framework was developed to do so: organizing information, documenting, validating and complementing, making sense, and communicating. This exercise was conducted through the review of project reports, project completion reports (PCRs) and project outputs.

Impacts

The most **outstanding impact** that CCP-funded projects have generated comes from downscaling climate analysis to be site- and sector-specific and, above all, to be available for local actors. Indeed, from the vast knowledge generated, there are recognizable impacts, such as increased awareness among key local and national stakeholders, including governmental representatives, academia and research organizations. **This change in awareness** is due in part to the participatory approaches used by the projects. In general terms, participation is embedded in all the analyzed projects, and the means to do so have been diverse.

CCP-funded projects have promoted the creation or strengthening of participation spaces, which have been successful in reaching the objectives of the projects. However, such spaces are not fully translated into local sustainable governance structures.

Impacts of climate actions were identified to the extent that projects have promoted the identification and the piloting of adaptation measures at the local level. Long-term climate, environmental, social and governance impacts could not be analyzed, since further information about the status of activities initially supported by IDRC is not available after project closure. Five out of 36 projects from the analyzed portfolio reached **impact at policy level**, mainly around sectoral policies.

Contributions

CCP-funded projects have **contributed to mitigation strategies** in the form of methodologies and new knowledge in the areas related to greenhouse gas (GHG) emission reductions from solid waste and waste water management. In addition, projects have specifically generated new methodologies for *solid* waste management and new knowledge and tested methodologies for *waste water* management.

Contributions to adaptation strategies such as methodologies and new knowledge have mainly been around water-related issues. Knowledge has come mainly from vulnerability assessments at regional and local levels, and methodologies such as participatory approaches for the co-generation and validation of climate information and proposals.

Contribution to policy is present in the form of tools and approaches related to water, groundwater, coastal management, urban development and land use planning.

CCP-funded projects have made substantial **contributions to practices** through pilots, case studies, trials, demonstration experiences and direct implementation of actions and adaptation measures. The purposes behind this set of actions at the local level varied from the generation of evidence, testing of actions, or simply supporting communities with concrete activities for improving their livelihoods and reducing the climate, social and environmental vulnerabilities they face.

Gender-based vulnerabilities

More than half of the research projects within the analyzed portfolio included gender considerations in different ways and degrees. In these projects gender was considered in the planning framework and included in project methodology, but it didn't address gender inequalities or power relations.

CCP-funded projects that have incorporated in their design a gender approach have used methodologies that have allowed the generation of sex-disaggregated information, including information about climate vulnerabilities. Others have used specific tools to foster the participation of women in specific tasks and processes, supporting them to be part of decision-making in the identification and implementation of solutions to cope with climate, social and environmental vulnerabilities.

CCP-funded projects that have mainstreamed gender throughout their methodology have used specific tools for ensuring the right of women to information and participation, have included women in different participatory spaces, pilots and demonstrative practices, and have empowered women to make decisions around governance arrangements to improve and explore productive alternatives.

Lessons learned

The rich information from the analyzed portfolio is reflected in learned lessons that are presented and classified in four categories: approaches and actions for achieving research impact; ensuring project sustainability; fostering knowledge sharing and cross learning; and achieving policy influence and upscaling. Other lessons learned on project implementation are summarized in Annex 3.

The road ahead

The final section identifies **gaps** in five areas and presents 17 r**ecommendations** on: strategic issues for CCP implementation; influencing policy; monitoring and evaluation; and knowledge management. Current **opportunities** are explored, making links with regional and international agendas and initiatives that could provide insights on how to strengthen CCP´s work. Finally, in **the relationship between the CCP-funded projects and development outcomes,** a short analysis is

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provided on whether the project portfolio analyzed is helping to reach CCP`s development outcomes.

Introduction

Objective of the analytic synthesis

The Climate Change Program (CCP) of the International Development Research Centre (IDRC) commissioned ConClima to analyze and synthesize a portfolio of 36 projects funded between 2006 and 2018 that focused on small and medium-sized cities from 40 countries in the Global South. The overall objective was to carry out a knowledge synthesis exercise on climate change adaptation.

This report will provide the CCP team with an overview of the contribution of this body of research to the field, in terms of outputs (the knowledge generated), outcomes (the concrete solutions that have emerged from the research), and early indications of impact (improved policies, practices, livelihoods). The primary intended user groups of this synthesis are the CCP team and the senior management of the Program and Partnership Branch (PPB) of the Center, who will use the results of the synthesis for communication and programming as well as possible academic publication. The secondary user groups are the academic partners of IDRC working on the same topics.

The synthesis collected, consolidated and analyzed the documented information from the projects to provide an overview of the major outputs, outcomes and impacts on small and medium-sized cities. It required an in-depth analysis of the results of the projects, their impacts and main lessons to answer a set of learning questions:

1. What is the impact of CCP-funded research on the field of adaptation?
2. How do the knowledge and strategies generated by CCP-funded research contribute to local adaptation and mitigation strategies, policies and practices to improve the lives of the people living in small and medium-sized cities?
3. How have project interventions helped address gender-based vulnerabilities?
4. What are the lessons learned and how can they be used for future research?

Portfolio analyzed and programmatic framework

IDRC has supported projects that tackled climate change adaptation from various angles, from research on practical actions to increased adaptation capacities, to more conceptual and basic research on vulnerabilities and different methods to understand and cope with them. The 36 projects in this analysis were developed under three consecutive five-year global programs and two "transversal" initiatives: the Urban Poverty and Environment (UPE) program (2005-2010); the Climate Change and Water (CCW) program (2010-2015); the Climate Change Program (CCP) (2015-2020); the Focus City Research Initiative (2005-2012) and the Climate Change Adaptation in Africa (CCAA) program (2006-2012).

The project portfolio analyzed shows clear evidence of the thematic transition between the different global programs under which each project was developed. Although transition per se was not a problem, the challenge was to analyze projects under different programmatic frameworks and strategies, especially considering that projects under UPE were not climate-oriented. Transition of projects between global programs was a fact. For example, 19 projects in the portfolio began under the UPE program and 14 migrated to the CCW program. Nine projects started their implementation

under the CCW program and two transitioned to the CCP. Two projects initiated during the current CCP are still under implementation (See Annex 1 for information about the project portfolio).

Regarding the **geographic range,** the total portfolio of projects was implemented in 40 countries and in at least 90 cities. Most projects were implemented in Africa (15), involving 18 countries[1]; in Asia, 10 projects were implemented in nine countries;[2] and in Latin America and the Caribbean (LAC), nine projects were implemented in 15 countries[3] (Figure 1). Multi-country projects were common in all three regions[4] while two projects had global reach.

Figure 1: Number of countries and projects implemented per region.
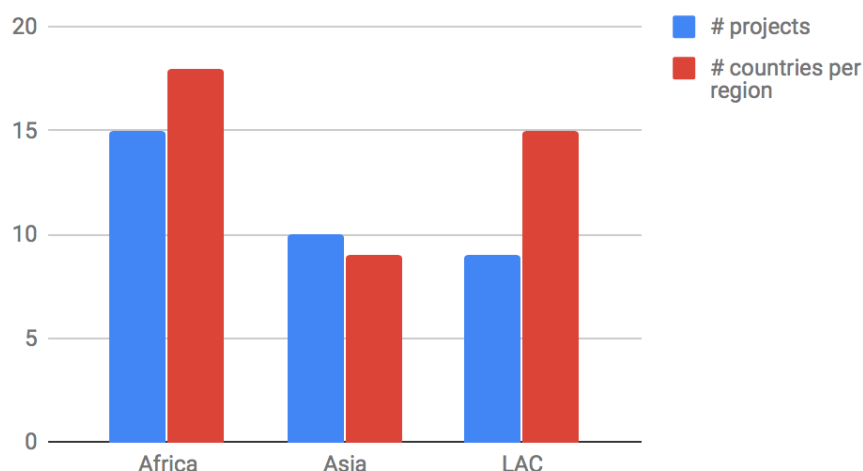
With respect to the total investment made, the 36 projects represented CA$**27,432,233,** of which IDRC's share was CA$24,724,945 and CA$2,707,288 came from other partners. The region that received the most funding was Latin America and the Caribbean (CA$8,890,221), followed by Africa (CA$7,879,200) and Asia (CA$6,240,524) (Figure 2). Considering the range of funds received per project and region, it is possible to observe that projects implemented in LAC received higher funding (five out of nine received more than CA$1.2 million and one CA$1.79 million), funds for Africa ranged between CA$74,900[5] and CA$1,399,000[6] per project, while in Asia, a project received CA$1.2 million and the remaining nine an average of CA$800,000 per project. The two global projects represented an investment of CA$1,715,000.

Co-funding was identified in five projects. The largest donor was the Department for International Development of the United Kingdom (DFID) that contributed directly (CA$886,096) to three projects of the CCAA program[7], and indirectly (CA$1,789,180) through the Climate and Development

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[1] Angola, Benin, Burkina Faso, Cape Verde, Ethiopia, Ghana, Kenya, Malawi, Mozambique, Tanzania, Mauritius, Namibia, Nigeria, Sao Tome and Principe, Senegal, South Africa, Tunisia and Uganda.

[2] Bangladesh, China, India, Indonesia, Lebanon, Nepal, Philippines, Thailand and Vietnam.

[3] Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Mexico, Nicaragua, Panama, Paraguay, Peru and Uruguay.

[4] Five Projects in LAC & Caribbean, three in Asia and five in Africa.

[5] 105839

[6] 106548

[7] 105815, 105836, 105839.

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Knowledge Network (CDKN) for one project in LAC[8]. The other donor identified was the Rockefeller Foundation, which contributed CA$32,012 for one project in Asia[9].

Figure 2. IDRC investments per region
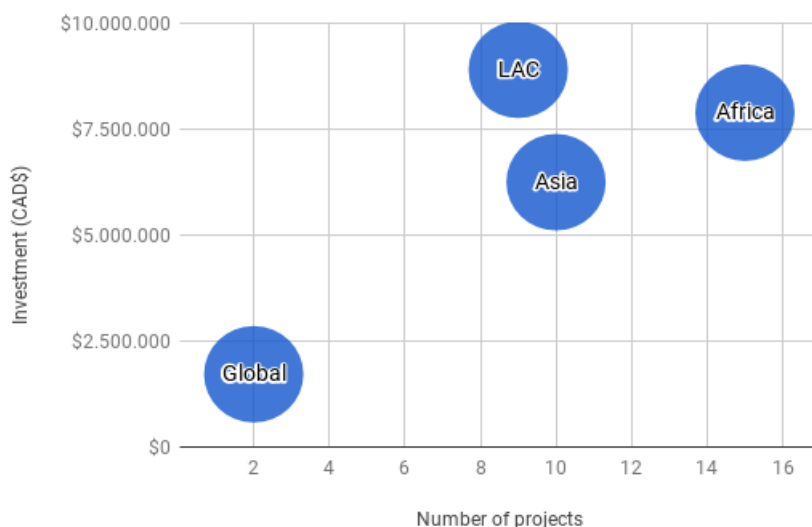
With respect to the **duration of the projects**, 64% of them lasted three years, 14% lasted four years and 11% two and five years respectively.

Since projects are from different periods of time, the impacts, contributions and lessons learned responded to specific international, regional, national and even local contexts that might not exist today. However, for this analysis, "time" was kept constant, to ensure that the synthesis reflects the richness of the existing information.

Report structure

To directly address the analysis questions, this report is divided into five sections. **Section 1** presents a summary of the identified research *impacts* on the research field of adaptation; **Section 2** presents an analysis of the main *contributions* from research projects to local adaptation and mitigation strategies, policies and practices; **Section 3** summarizes the different approaches taken by the projects in addressing *gender-based vulnerabilities*; **Section 4** presents the main *lessons learned* from implementation; and **Section 5** presents the main *gaps*, *recommendations*, and *opportunities* as well as an analysis of the project portfolio in relationship to CCP`s development outcomes to improve the strategic programming of CCP in the future.

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[8] 108193
[9] 106707

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General theoretical framework for the report

Without any intention to land in the territory of research impact evaluation, a distinction between IMPACTS and CONTRIBUTIONS is pertinent as an introduction to avoid content duplication of sections that answer analytical questions 1 and 2.

Research impact presented in the first section of this report refers to the effects of the research beyond academia. The Higher Education Funding Council of England (HEFCE) defines non-academic research impact as "any effect on change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia[10]". Even though there is not a unique agreed definition, other authors have defined research impact as "changes in awareness, knowledge and understanding, ideas, attitudes and perceptions, and policy and practice as a result of research[11]", and that it occurs "not only when decisions and actions are taken, but as being evident in changed knowledge, attitudes and understandings…" about a specific context[12]. In addition, different forms of research impact have been identified: changes in access to research, changes in the extent to which research is considered, referred to, or read, citation in documents, changes in knowledge and understanding, and changes in attitudes and beliefs[13].

From a monitoring and evaluation perspective, *contributions* are possible to identify when tracking back the achievements of impacts[14]. Thus, CONTRIBUTIONS are considered factors that have allowed impacts to materialize from outcomes. This also implies acknowledging that there are other factors influencing outcomes alongside research. For the purposes of this analysis and for answering analytical question 2, *knowledge and strategies* would be the "outcomes", and *mitigation and adaptation strategies and policies and practices* would be the "impacts".

Section 1: Impacts of CCP-funded research on the field of adaptation

Analysis question: ***What is the impact of CCP-funded research on the research field of adaptation?***

Of all the projects analyzed, 20 have been identified that by design focused on climate change adaptation topics and thus represent the sample taken for this section (See Annex 1 for details). Projects not included in this sample, in spite of not having a direct link with climate change adaptation, could have increased climate adaptive capacity of cities from the results generated; however, such effects are not considered within the analysis of this specific section[15].

The project implementation period within the sample ranges between 2008 until today, which implies that the programmatic frameworks of the projects included UPE, CCW, CCP and CCAA. Topics addressed in the sample include water vulnerabilities due to climate change, flooding, sea

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[10] King's College London and Digital Science (2015).
[11] Morton (2015)
[12] H. Davies, et al., (2005)
[13] IDRC, no date available.
[14] Simister, no date available.
[15] This also responds to the lack of information that assesses impacts after project closure.

level rise, food security, and links between climate change and development. Geographically, the projects implemented activities at several levels and combinations of levels, with community involvement in upper river basin communities, peri-urban areas, informal settlements, cities, Small Island developing states (SIDS), groups of cities within and between regions, and regions as a unit.

From the analysis performed, it is possible to conclude that impacts within the sample can be represented by a pyramid (Figure 3). This pyramid is a way of representing all the impacts identified within the sample and includes a rough percentage that represents the number of projects that have shown the different categories of impact. The figure does not imply that there is a linear process behind these impacts, nor that they follow a logical sequence. For example, some projects may have shown impacts in awareness and policies but not necessarily in practice.

The pyramid's base represents the majority of changes identified from the sample; 60% of the projects showed changes in the awareness of citizens, key actors and government representatives. This was followed by changes in governance in 40%, while the incidence at policy level was 20%. Information in this section is organized around the four main stages of impacts, and "change" is used as a proxy for describing different impacts.

Figure 3: Impacts of research projects
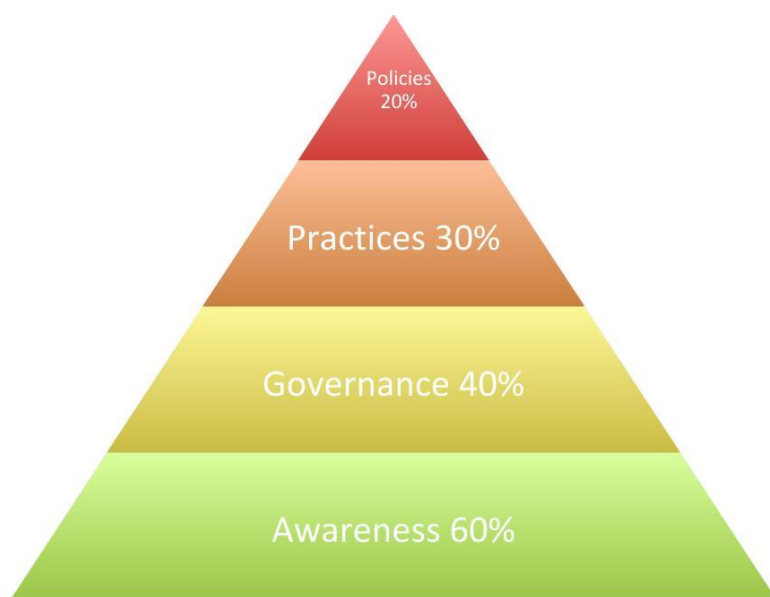
1.1. Impacts in awareness of key actors

In general, climate data analysis is concentrated at aggregate level (subnational, national, and regional) and standardization of climate impacts within those levels is common practice. Most of the CCP-funded research projects within this sample have allowed the downscaling of the **climate analysis to be site-specific and sector-specific;** and under this context, the impact that these projects have generated in making available new site-specific knowledge is outstanding.

Measuring the number of beneficiaries of this type of impact was not possible as information about each project was uneven. In spite of this, it was possible to identify changes in awareness of local actors and government representatives in 45 cities in Latin America, Africa and Asia. From the sample of projects analyzed (20), half of them showed clear changes in citizens and government representatives' awareness of the vulnerability of their cities to climate change, in 35 and 43 cities respectively (Table 1 and Figure 4). Due to the extensive list of cases that apply to this type of impact, examples are summarized in Annex 2.

Table 1: Projects and cities that showed impacts on awareness

Project code	City	Country	Changes in awareness	
			Citizen	**Gov**
104683	**Bani**	Burkina Faso	✓	✓
105674	**Cape Town**	South Africa	✓	✓
105815	**Cotonou**	Benin	✓	✓
105836	In Tanzania: **Dodoma and Irigna** regions. In Malawi: **Blantyre city** and urban areas of **Chikwawa, Mulanje, Thyolo**	Tanzania and Malawi		✓
105839	**Aba**	Nigeria		✓
105868	**Cape Town, Dar es Salaam, Maputo, Windhoek and Port Louis**	South Africa, Tanzania, Mozambique; Namibia and Mauritius.	✓	✓,
105869	**Accra - Addis Ababa**	Ghana & Ethiopia	✓	
106248	**Gurgaon** and **Hyderabad** (India), **Kathmandu** (Nepal) and **Khulna** (Bangladesh).	India, Nepal and Bangladesh	✓	✓
106960	**Sta Rosa** city, (the Philippines); Krachang in **Bangkok,** (Thailand); and villages of Van Mon Commune in peri-urban area of **Hano**i, Vietnam.	The Philippines, Thailand, Vietnam		✓
107026	Yeumbeul Nord – a suburb in **Dakar**	Senegal	✓	✓
108193	**Coyuca** (México), **Santa Ana** (El Salvador), **Dosquebradas** (Colombia), **Iquitos** and **Tarapoto** (Peru), **Abaetetuba, Ponta de Pedras, Santana, Mazagão** and **Foz de Iguazú** (Brazil), **Ciudad del Este** (Paraguay), **Puerto Iguazu** and **Santo Tomé** (Argentina)	Latin America	✓	✓

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108212	**Dhulikhel** and **Dharan** in Nepal & **Mussoorie** and **Haldwani** in India	Nepal and India	✓	✓
106707	**Da Nang, Quy Nhon** and **Can Tho**	Vietnam	✓	✓

The **knowledge generated** within the above sample has come from peri-urban/urban-rural areas[16], where **local actors are more aware** of how climate change variables (heat, rainfall, humidity, evapotranspiration) and social, economic, political and institutional variables are increasing water stress and thus challenging water provision in those areas. There is more understanding about how unplanned urbanization is increasing challenges in water management, quality and uses, while at the same time increasing risks to the health and livelihood of people. The other set of projects in the sample contributed to understanding of the vulnerability of cities around flooding[17], sea level rise[18] and water[19]. In addition, the projects have made interesting contributions by linking climate vulnerability research with anthropological analysis to highlight the perceptions of the community about climate and vulnerability, its root causes and the factors that support, enable and constrain local adaptation actions.

Government representatives have improved their understanding about how certain characteristics of the geographic area where communities are settled increases their vulnerability. For example, policy makers in specific cities in South East Asia have a better understanding of what peri-urban areas are[20] -- beyond the spatial periphery of growing cities, the area that is intimately connected with the "urban" through the flow of resources (food), services (water and other ecosystem services) and people, and one that suffers from an institutional and governance vacuum that prevents effective urban planning in the context of climate change. This new perspective, together with the understanding about the multiple drivers of vulnerability and the factors that shape autonomous adaptation actions due to climate-related water stress, have helped local governments to understand the risks that climate change poses to their rapidly expanding city peripheries.

Another example that illustrates the impact of new knowledge among government representatives is the decision that the Cabinet Council of the Republic of Panama[21] made in declaring a state of emergency to face the effects of El Niño in 2015-2016, based on the information generated by an integral management water resources approach for assessing impact on water.

Figure 4: **Number of cities per country that have showed changes in awareness of citizens, stakeholders and government representatives on climate change issues**

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[16] 104683, 105836, 105839, 105869, 106248, 106960.

[17] 105815, 105836, 107026

[18] 105674

[19] 106002, 107083, 107084, 108212

[20] 106248, 106960

[21] 107084

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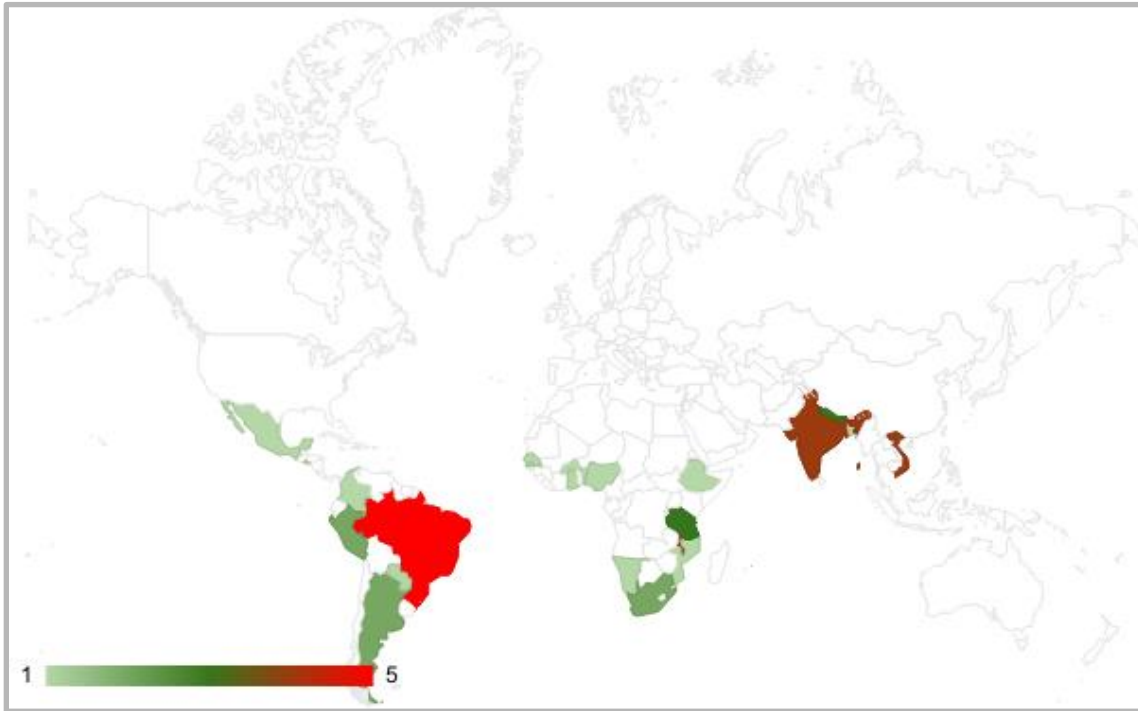
Research projects contributed also to the **increased awareness of research institutions and teams** that were part of their implementation. For example, researchers and students involved in projects have increased their understanding of issues like specific vulnerabilities of people and cities due to climate change[22], and how poor urban-coastal and peri-urban populations adapt to climate change as it affects their livelihoods, food security and health[23]. They have a better understanding about the relationship between autonomous and planned adaptation actions[24] and the risk aversion local communities have in investing in adaptation technologies[25].

In relation to **new capabilities**, research project teams have learned and strengthened their knowledge and abilities in climate change research and analysis[26], technology and modeling for processing large volumes of data[27], conducting environmental modeling, weather forecasting, and the use of spatial and economic tools[28]. Additionally, efforts were conducted for learning new methods or approaches around participation,[29] like participatory action research (PAR)[30], gender, and building relationships with new actors to influence policy.

Within the sample, two projects were designed to build capacities of students and research institutions. The Adaptation H2O Program[31] provided fellowships to 16 students from Africa and

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[22] 105674
[23] 106848
[24] 106960
[25] 107083
[26] 106248
[27] 107084
[28] 106248
[29] 105839
[30] 104683
[31] 106299

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Asia in different areas of adaptation research. In Accra[32], a project applied active and participatory learning in climate change science, particularly as it interfaced with social and health development, while implementing research activities, in three communities. This was achieved through direct engagement in fieldwork, mentoring, workshops and formal training using a diversity of innovative techniques, including online training. The project supported eight MPhils, four PhDs, three Africa diaspora scientists and three post-doctoral researchers. It carried out specialized short courses attended by 64 personnel, and workshop training for over 100 people. Furthermore, the grantee has increased its capacity to attract grants and new research topics on climate change. The most significant legacy of the project is the establishment of the Climate Change Resource Center (CCRC) as a physical facility to make climate change resources and information available to a wide range of stakeholders. The Center has been transformed into an accredited UNFCCC observer agency and a focal point for climate change research networking.

1.2. Impacts in local participation and local governance

For the sake of the analysis in this section, participation and governance are considered two sides of the same coin. Participation is one of the key principles of governance and it is a precondition that will allow decision-making by the various actors regarding a problem, project or common concern. It exceeds the sole provision of information from the project to participants, as it is an inclusive process where actors can "be part of, have part of, and take part in processes and in decision making"[33]. Participation can be represented as a ladder with different levels, from basic (participation) to more advanced processes; and to be effective, actors should be able to influence project decisions and implementation[34]. Having said that, projects were examined for impacts that were generated in promoting effective participation processes, meaning those that went beyond involving actors for answering surveys or for providing and validating information. Thus, attention was put on projects that facilitated processes where different actors were able to have a real influence on the use of the information provided by the project, on the generation of alternative solutions to the problems that were analyzed, and on the joint management of actions or public policies. A higher level of participation is recognized, where actors follow up on these agreements through social control and oversight mechanisms. However, due to project duration, this type of impact was not found within the sample.

In general terms, **participation is embedded** in all the analyzed projects[35] in different ways. Most projects have adopted an approach where they used scientific research information, and in some cases community perceptions, to promote the understanding of the different drivers around climate vulnerability. Local actors were involved in processes to analyze and validate the findings, and to foster further discussions around their understanding of their risks based on the newly provided information. This has been mainly achieved through the formation and facilitation of multi-stakeholder platforms, committees and consultation bodies, shared learning dialogues, and participatory focal groups. From that point, some projects promoted the identification and possible

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[32] 106548

[33] Cabrera, Dumas, Heylings, Kakabadse (2010).

[34] Cabrera, et al. (2016).

[35] This refers to all of the projects of the sample constructed for the analysis in this Section.

implementation of local actions aiming for solutions to tackling climate change impacts or for strengthening resilience. Examples of this type of impact are summarized in Annex 2.

In relation to **governance**, the following definition is used for analyzing project impacts at this level: "all collaborative mechanisms and processes that determine who exercises authority over a territory, process or project; how decisions are made; what the power relations between actors are; how the differences are mediated, how accountability takes place, and to whom"[36]. In other words, governance is a set of mechanisms and processes to make decisions and manage impasses, which define actors, roles and responsibilities.

Some projects within the sample have devoted efforts for strengthening local governance structures to manage climate change impacts and to strengthen the role of civil society. A good example is in Cape Town[37], where the project aimed to understand and strengthen the governance systems that influenced decisions with regards to flooding and sea-level rise in the city. For this purpose, a collaborative governance framework was used to unpack various mentalities, technologies, resources and institutional arrangements of different actors at the municipal level. Based on this, the project further improved the governance of the flood and storm task team of the municipality, changing it from a space for disjointed department-led interventions to a single organism operating according to a unified budget and a common list of outcomes.

Another example of how this governance lens produced interesting outcomes was through a project that involved five cities in Africa[38], where three stakeholder platforms (local government, local communities and local academic institutions) and project steering committees (PSCs) were established in each city to ensure participation from a broad range of actors within each local system. The outputs produced were working tools, developed in an effective participatory way, enabling their practical use by municipalities and laying the basis for the creation of permanent multi-stakeholder forums that informed cities at different levels of necessary adaptation actions at the local scale. Additional examples are summarized in Annex 2.

1.3. Impacts on adaptation practices

In the scale of research impacts (figure 3), after those in local governance, there is the possibility that projects have identified adaptation measures or actions to increase the resilience of the population affected by climate change. Being able to pilot or implement those types of activities, involving different actors, is undoubtedly a desired impact since the evidence generated serves both informing decision makers and promoting replication and scaling up.

Projects have piloted activities in rural-urban areas, informal settlements, river basins and cities, aiming to adjust agricultural practices, crop patterns and irrigation techniques to climate change. Other projects tested the use of technology for water access, storage and distribution, and developed some governance arrangements to address water scarcity such as the establishment of new norms for water allocation, sharing and distribution. Other coping capacities included the repair and maintenance of roads and drainage structures, reclaiming marketplaces, developing health care

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[36] Cabrera et al, *ibi.5t2q*

[37] 105674

[38] 105868

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facilities and diversifying income. Although almost all the projects in the sample had identified and piloted actions, the level of impact of these interventions is unknown to the extent that there is no information after the closure of the projects. More detail on the scope of these practices is provided in Section 2.4.

1.4. Impacts on policies

As mentioned previously, the knowledge generated by some projects has informed government representatives about climate impacts and vulnerabilities. In some cases, this has raised their awareness on the topic, mobilized their participation on specific platforms and fora, and put climate change on local and national agendas. However, for most of the projects at this level, it has been difficult to determine concrete climate change or development policies. For those that have impacted the policy sphere, it has been around sectoral, not climate change, policies. Examples of direct research impact[39] from CCP-funded projects at this level are:

- In Cape Town[40] the **Integrated Coastal Management Policy** was developed thanks to the knowledge generated about flood risks and sea level rise. Further, the National Treasury has included sea-level rise and flooding impacts in their long-term adaptation scenario planning, which would result in additional financial allocation (from 2014) for coastal cities under risk for adaptation interventions.

- In Panama, the **Hydrological Security National Program 2015-2050** was built and benefited from the knowledge generated by a regional research project[41] that combined integrated management of water resources models with climate scenarios to assess water vulnerability to climate change. The project highlighted the meaning of hydrological security, which was used in the program.

- In Cochabamba, the **Integrated Solid Waste Management Plan**[42] was adopted by the municipality, which included inputs from the pilots conducted by the project. The plan for the regulation of solid waste management was approved in December 2008 by the town council of Cochabamba and adopted for implementation in the city.

Section 2: Contributions to climate adaptation and mitigation strategies, policies and practices[43]

Analysis question: How do the knowledge and strategies generated by CCP-funded research **contribute** to local adaptation and mitigation strategies, policies and practices to improve the lives of the people living in small and medium-sized cities?

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[39] Indirect impacts from projects are not included in this section; for example, invitations that grantees have received for participating in processes for elaboration of policies or programs not related to the direct activities of the CCP-funded projects.

[40] 105674

[41] 107084

[42] 104395

[43] The content in this section differs from the previous one (Impacts) in two ways: i) the previous section focused solely on research impacts around adaptation, for which a sample of 20 projects was used; and ii) contributions analyzed in this section are in "adaptation and mitigation strategies and for policies and practices", and the 36 projects of the portfolio were used.

Linked to the theoretical framework presented in the introduction of this report, contributions are identified in the form of *knowledge and strategies*, as elements and factors that have allowed the achievement of impacts at the level of mitigation and adaptation strategies, policies and practices.

Two additional distinctions are needed in this section: i) contributions in the form of *strategies* will refer to tools, approaches and methodologies that research projects have used to implement activities; and ii) policies and strategies from an impact perspective refers to local or national planning frameworks in which research projects have tried to impact such areas as climate mitigation or adaptation plans, or sectoral development plans that have included climate variables, among other aspects. Strategies represent instruments for policy implementation.

Considering that the knowledge and strategies developed and strengthened by CCP-funded projects have contributed to adaptation and mitigation strategies, policies and practices in different ways, this section is divided into four parts for presenting contributions within each of these four impact areas.

2.1. Contributions to climate mitigation strategies

CCP-funded projects have contributed to mitigation strategies in the areas related to greenhouse gas (GHG) emission reductions from solid and water waste management, specifically **with the generation of (new) methodologies** from *solid* waste management and with **knowledge and test of methodologies** in relation to *waste water* management.

In relation to *solid waste management*, a project in Indonesia contributed with methodologies to incorporate composting for waste management projects within the UNFCCC and certifiers at the voluntary carbon market[44]. Thus, changes for the clean development mechanism (**CDM) baseline methodology AMS.III-F[45]** were successfully approved by the UNFCCC in 2012, contributing also to making CDM accessible for approaches that introduced *decentralized* solid waste management systems in poor neighborhoods. In addition, the proposal for widening the scope of projects to include composting for waste management was adopted by the **Gold Standard Foundation**.

In relation to *wastewater management*, a regional project in LAC[46] developed and tested the **social life cycle assessment (S-LCA)** as a tool to measure socio-environmental impacts of climate change when evaluating infrastructure investments in *water and sanitation[47]*. In addition, a **simulator** (software) for the design of the most feasible technologies for an optimal wastewater treatment plant was developed as well as a **guideline manual** for the selection of technologies for municipal wastewater for small and medium cities. The same project contributed new knowledge to local mitigation strategies in 2012 by conducting a **state of the art of municipal *wastewater* treatments plants (WWTPs) and technologies** review in the LAC region. This provided evidence about effective technologies for wastewater management in the context of climate change. As a result of this diagnosis, it was possible to conclude that in the region, small plants were built and the predominant technology in terms of numbers is the stabilization pond.

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[44] 105813.

[45] The methodology is for measuring avoidance of methane emissions through controlled biological treatment of biomass.

[46] 105707

[47] GEG emissions reductions were estimated for each of the 9 scenarios, although not necessarily as part of the S-LCA.

Contributions from **waste management** to improvements in the lives of poor people proved to vary depending on the context. Evidence from the Focus City project implemented in Cochabamba[48] concluded that the strategy of incorporating scavenging communities into well-organized recycling activities does not necessarily enable them to exit the poverty cycle due to the value chain of the solid waste materials in this city. The project in Tangerang, Yogyakarta and Surabaya in Indonesia[49], although recognizing the value of community-based waste management initiatives like KIPRAH, concluded that external funds were needed to sustain key processes conducted by waste collectors. From another perspective, an assessment of the role of scavenging groups in solid waste collection systems in urban areas in Sao Paulo and Montevideo[50] showed that the activities performed by them had positive economic and environmental impacts, as well as improvements in hygiene and public health.

2.2. Contributions to climate adaptation strategies[51]

Contributions to adaptation strategies from CCP-funded research projects have mainly been around water-related issues. The contributions have come as **knowledge** at regional and local levels (including rural-urban interphases) from vulnerability assessments, in terms of **methodologies** for the generation of such information, and as **participatory approaches** for the generation, validation or use of information and proposals.

Knowledge generated from vulnerability assessments is rich and extensive in detail and it is useful for the locations and areas of focus where studies have been conducted. The analysis in this section does not present such information but rather concentrates on novel methodologies and approaches that have promoted the use of it, with a potential to inform or target local or national adaptation strategies.

In the Latin America and Caribbean region[52], a project combined work at regional, national and local levels (at basins level) analyzing the climate vulnerability of water resources (quality and quantity) from a perspective of water security. At regional and basin levels, the project modeled water vulnerability under different climate scenarios; at the national level, a water policy assessment was conducted, and at the municipal level, the focus was around water public investment. At the local level, **participation focal groups** were promoted to facilitate the exchange of traditional and technical-scientific knowledge and to build consensus between different stakeholders. Local adaptation measures were identified using the analytical technical tool **"Pressure – State – Response"**, which allowed understanding of the cause-effect relationship of the different factors that determine water security. As a result, the project contributed to the creation of a baseline of public policies on climate change and water at the regional level, which uses hydrological indicators for comparative purposes between countries. It also built a virtual learning community that is still

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49 105813

50 105183

51 CCP-funded projects have used different terminology for adaptation actions identified, proposed and implemented by the projects (adaptation activities, measures, strategies, plans, etc.). In this section, adaptation strategies refer to the policy instrument, either at local or national level that orient a set of organized activities within a territory or sector.

52 107084

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available at: http://seguridadhidrica.cathalac.org/. At the local level, the project contributed with inputs for adaptation strategies.

In five African cities[53], vulnerability studies on water and sanitation, energy, transport, health and livelihood sectors were conducted, leading to the development of climate risk assessments for each city. Within the project, **local climate adaptation frameworks** were developed, providing necessary tools to facilitate debate in each city aiming to find solutions to climate risks, leading to the preparation of **local climate adaptation strategies and action plans** in each city. In addition, **a climate resilient handbook** was produced, providing municipalities and targeted communities with the recommended and necessary steps to enable the future extension of participatory approaches for the implementation of climate change adaptation strategies and plans.

In Accra and Addis Ababa[54], the project strategically used the results of research for building adaptation strategies in a participatory manner. It developed an **analytical framework** combining climate information at city level, hydrological modeling to understand water availability under different climate and basin water use scenarios, and water balance studies to understand the water supply-demand gap and water-wastewater interactions. Additional modeling was used for assessing flooding risk and to understand urban-rural relations. This and other research information was translated into strategic actions by the use of **science-policy dialogue platforms (RE-SAP)**, which allowed the production of **adaptation strategies** for each city, which in the case of Accra was endorsed by the National Climate Change Coordinating Committee. Although these platforms were not intended to be permanent structures, they helped build relations between key stakeholders that led to agreement on strategic objectives in each city. These objectives would eventually require further research work on issues around urban water systems' adaptation to climate change.

Other CCP-funded projects that did not reach adaptation strategies identified adaptation options, practices and activities, through the use of innovative tools and approaches[55]. For example, in Cape Verde and Sao Tome and Principe[56] the use of **spatially explicit maps** and **climate scenarios** proved to be very effective in identifying vulnerabilities, raising policy awareness and helping to incorporate climate change in urban planning. In the triple frontier of Argentina, Paraguay and Brazil[57], a holistic approach was used, combining climate models at city level, stakeholder perception surveys, and focus groups that concluded that flooding and extreme weather events will increase in the coming years. As result, 20 adaptation solutions were identified, validated and prioritized by local multi-stakeholder committees established in each city. A similar approach was used in Dakar[58] where adaptation actions designed to cope with flooding were identified through a survey and focus group discussions. These actions were used before, during or after flooding events.

A common method identified in a set of projects that promoted effective participation was the participatory action research (PAR)[59] method. This method provided a concrete scenario to involve

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[53] 105868

[54] 105869

[55] Adaptation actions in the form of pilots, demonstration activities and trials are presented in the sub-section on "Contributions to practices".

[56] 105838

[57] 108193

[58] 107026

[59] 104683,105836,105839,105868,106002,107026

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members of a community in the very process of development in a non-traditional way, as agents of change and not as objects of study or information. In an urban settlement in Lima, the **PAR** methodology was combined with the social system analysis (**SAS2**)[60]method for promoting the empowerment of different actors through the information generated by the project. Vulnerability maps from matrices that included elements of the physical, environmental and socio-economic dimensions supported discussion and identification of actions to reduce risks that the population was facing. These were inputs for the design of the concerted development plan with a **disaster risk management approach** and for the local development strategy. Above all, this project offers a reflection that is applicable to many others within the analyzed portfolio—that participatory processes to reduce poor people's vulnerabilities lead to actions that are actually linked to development plans at the local level. Thus, investing in actions to reduce general risks over the population, especially those closely related to basic needs, is effective for further climate vulnerability reduction efforts.

2.3. Contributions to policy

There have been several[61] **contributions** from CCP-funded research projects to policy. Contributions range from tools and approaches, to policies on issues related to water, groundwater, coastal management, urban development and territorial ordinance.

A **flood risk management initiative** with a governance lens was promoted in Cape Town[62], to understand and support governance systems that influenced decisions relating to inland flooding and sea-level rise. As a result, an integrated coastal management policy was drafted. In Nepal[63], **the combination of capacity building strategies with empowerment of participatory platforms** with multiple actors, including local and sectoral authorities, was successful in influencing the groundwater management policy, while in Bangladesh, the same approach led the local authorities to support an advocacy campaign to save the Mayur River.

The **Soil and Water Assessment Tool** (SWAT)[64] was used in Panama and Guatemala to test impacts of climate change on water flows in watersheds, and from there, the impacts on agriculture and forestry practices. The learning and experience achieved was replicated to evaluate the effects of the land use plan on water resources of the municipality of Quetzaltenango, Guatemala and in the generation of water balances in watersheds in Panama.

The same project supported the development of a new approach of **integrated management of water resources** to contribute to water security and adaptation to climate change in Central America. This approach was used for the evaluation of water security at the municipal level and for the later development of municipal plans for adaptation of water management for water security in four municipalities in Guatemala. In addition, a hydrological model with prediction capacity for 2050

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[60] 104397

[61] "Effective" within the context of the present analysis implies that the knowledge and strategies developed by CCP-funded projects have generated a change in policy, and that there is evidence in reports about it. The possibility of influencing a policy is not an effective impact within this framework, since the change has not happened yet and it is not reported.

[62] 105674

[63] 106248

[64] 107084

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was built for Central America[65] allowing for updating of national water plans or adaptation strategies within the water sector.

A final interesting contribution to policy was the engagement to coordinate the African Mayors Climate Change Declaration[66] that calls on nations to recognize the local governments of Africa as pivotal partners in implementing climate change action. This declaration was presented at the UNFCCC COP17.

2.4. Contributions to practices

CCP-funded projects have made substantial **contributions** to actual practice through pilots, case studies, trials, demonstration experiences and direct implementation of actions and adaptation measures. The purpose behind those actions at the local level varied from the generation of evidence, testing of actions, or simply supporting communities with concrete activities for improving their livelihoods and reducing climate, social and environmental vulnerabilities. Table 2 summarizes the diversity of practices that were supported by CCP-funded projects, the themes of the practices, and the cities where activities took place.

T**able 2: Type, themes and cities of practices supported by CCP-funded projects**.

# of projects	Type of practice	Themes of practices	Cities and countries involved
9	pilots, tests, learning activities[67]	Flooding management; rain water harvesting; solid waste management; water sanitation; integral water management; agriculture practices	LAC: Cochabamba (Bolivia); Santa Cruz Muluá, Quetzaltenango (Guatemala); Tamayo & Guayabal (Dominican Republic). Africa: Cape Town (South Africa), Dar es Salaam, Dodoma and Irigna (Tanzania), Maputo (Mozambique), Windhoek (Namibia), Port Louis (Mauritius), Dakar (Senegal), Blantyre, Chikwawa, Mulanje, Thyolo (Malawi), Cotonou (Benin). Asia: Jakarta (Indonesia), Ariana-Soukra (Tunisia), Tripoli (Lebanon). Delhi (India).
3	Case studies[68]	Water sanitation, vulnerability and governance	Asia: Sta Rosa (Philippines); Bangkok (Thailand), Hanoi (Vietnam). Africa: Durban (South Africa), Maputo (Mozambique), Nairobi (Kenya). LAC: Cochabamba (Bolivia), Alta Guajira (Colombia), TepozEco (Mexico), Asuncion (Paraguay), Lima (Peru)

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[65] 107083

[66] 105868

[67] 103796, 104395, 104396, 104899, 105524, 105815, 105836, 105868, 107026, 107084

[68] 106960, 106002, 105185.

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2	Demonstrative activities[69]	Flooding and agriculture	LAC: Rosario (Argentina), Montevideo (Uruguay), Lima (Peru). Africa: Mindelo (Cape Verde), Sao Tome (Sao Tome & Principe)
1	Trial[70]	Monitor carbon emissions from eight solid waste treatment units	Tangerang, Yogyakarta, and Surabaya (Indonesia)
1	Good practices[71]	Waste management	Cochabamba (Bolivia), Lima (Peru), Montevideo (Uruguay) and Sao Paulo (Brazil).
3	General practices[72]	Farming, agriculture and integral sustainable development	Africa: Yakouta, Bani (Burkina Faso), Dakar (Senegal), Accra (Ghana)

In relation to **flooding**, practices in the suburbs in Dakar, Senegal and at urban-rural communities in Aba, Nigeria, were oriented to ensuring clean paths for floodwaters, completing drainage channels and removing debris from drains[73]. In Dakar, the pilot included a microfinance scheme for women, benefiting more than 170 women with funds for their home repairs. In Aba, within the demonstration activities, a health care center was improved. In both cases, practices contributed to reducing the risk of flooding and improving the livelihoods of people. In Dakar, this implied reducing the budget needed to repair flood damage and in Aba, it provided access to roads and transport, allowing community markets to be active daily.

Practices in **agriculture** in rural-urban interphases piloted[74] options in drylands and semi-arid zones in support of food security and livelihoods of communities. For example, In Malawi and Tanzania, farmers learned new techniques and solutions to traditional agricultural practices under climate change impacts and as result, farmers increased their maize yields (from 4 to 14 tons) and incomes (300%). Another example comes from Burkina Faso, where farmers adopted shorter-cycle improved varieties of maize, known for being more tolerant to drought. In Tunisia[75], the project tested means for collecting rain water and treating wastewater for agriculture purposes in peri-urban areas facing pressure from urban expansion. The pilots required material that was provided by new businesses set up by members of the area, creating more than 50 temporary jobs.

In Lebanon, pilot projects were developed after a comparative analysis between two communities in Jordan and Tripoli to solve **water, sanitation** and housing problems[76]. Pilot activities included the

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[69] 105839, 104347
[70] 105813
[71] 105183
[72] 104683, 104908, 106548
[73] 107026, 105839
[74] 105836, 104683
[75] 104396
[76] 104899

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installation of new rooftop water tanks in 19 buildings and the installation of new household water piping systems in four households. A water quality monitoring program managed at household levels complemented this.

In relation to solid waste management in Cochabamba[77], three pilot units were established for the storage, classification and commercialization of solid waste to serve more than 8,000 people in two neighborhoods. In total, 45 scavengers participated and 60 women received training and established the scavenging association of women, "El Porvenir", for the recycling of paper for the production of Christmas cards and handicrafts. In Indonesia, trials for the implementation of carbon monitoring were held in the eight projects[78], where, in addition to measuring the oxygen content from compost piles, the monitoring included weighing daily processed organic waste and measurement of moisture level of each compost pile. The local government, motivated by the results of the project, supported the installation of 90 centers for solid waste recuperation.

Section 3. Gender

Analysis question: ***How have project interventions helped address gender-based vulnerabilities?[79]***

The incorporation and treatment of gender within the CCP-funded projects analyzed for the climate change adaptation synthesis are not uniform. Eight CCP-funded projects within the portfolio analyzed included gender-related objectives within their planning frameworks[80]; five used gender approaches within their methodologies without necessarily having a gender objective[81], while nine projects just reported back on the number of women (and men) that were beneficiaries of the project activities, including training, participation spaces and pilot activities[82].

The CCP-funded projects that have incorporated a gender approach from the design phase have used methodologies that have allowed the generation of sex-disaggregated information, including information related to climate vulnerabilities. Others have used specific tools to foster the participation of women in specific tasks and processes, supporting them to be part of decision-making in the identification and implementation of solutions to cope with climate, social and environmental vulnerabilities.

To deepen the analysis in this section, a *framework for action towards improving the links between gender and climate change* has been built, based on a UNDP framework presented in 2013[83]and illustrated in Figure 5. Such a framework allows analysis of how projects have incorporated a gender

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[77] 104395

[78] 105813

[79]The gender analytical framework developed by Nordehn C. and Rubin D., (2018) for the Synthesis of IDRC's Research on Gender and Climate Change is not used for the analysis in this section since it was developed at the same time that this Analytical Synthesis on Climate Change Adaptation.

[80] 104395, 104396, 104908, 105183, 105524, 106248, 106592, 106960.

[81] 108212, 108193, 106707, 104347, 105839

[82]107026, 106548, 106299, 105836, 105707, 105674, 104397, 103796

[83] From UNDP, 2013.

perspective during preparation and implementation as stages or areas of work. The methodologies and approaches used by projects for that inclusion are presented in the following pages.

Figure 5: Framework for analyzing the links between gender and climate change
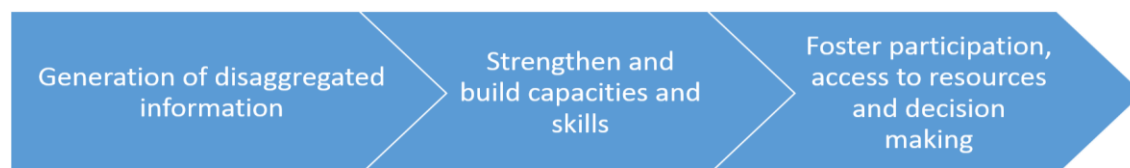
3.1. Tools for the generation of sex-disaggregated information

Research projects with direct gender objectives included projects in integral development, water vulnerability, water and food security and water and solid waste management. The most commonly used methodologies for the collection of sex-disaggregated information have been surveys, in-depth interviews and the use of the gender roles frameworks[84].

Structured household surveys[85] that collected gender-disaggregated data on water consumption at household level in peri-urban communities in Bangladesh, Nepal and India, concluded that in this specific context, gender-differentiated vulnerabilities intersect with caste and other power relationships to determine access to the resources, to information and to institutions that shape adaptation and adaptive capacity of actors. Another interesting conclusion was that the primary source of drinkable water remained the same regardless of the gender of the respondent, although women have developed adaptation measures to overcome water scarcity; for example in Kathmandu, women devised several innovative and informal mechanisms for allocating water in the face of scarcity, including rationing and determining the number and size of buckets for collecting water from public sources.

Mixed focus groups[86] combined with **in-depth interviews** targeting women only were used to understand the impacts of water stresses on different community members in the Philippines, Vietnam and Thailand[87]. The combination of these tools has allowed us to understand that women were largely expected to respond to water crises, to the health effects of flooding, and to manage water conservation at home in anticipation of water shortages. It also concluded that women were the ones responsible for linking up with formal and existing support systems.

In-depth interviews were also used in Bolivia, Peru, Brazil and Uruguay in a solid waste management project in urban and peri-urban areas[88]. Collected information showed that men and

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[84] Also known as the Harvard Analytical Framework. It offers one of the first efforts to disaggregate data by gender and capture differences in positions and roles of men and women. While the tool is gender-aware and makes more visible the differences between the labour of men and women, it does not analyze the roots of gender inequality and power imbalance.

[85] 106248, 106592, 108212.

[86] Including men and women.

[87] 106960

[88] 105183

women had differentiated access to and control of the ownership of the means of production (traction vehicles, horses), and that such differences were not captured by "formal and official" sources of information, like censuses. Consequently, the level of participation of women in solid waste management became invisible, with the risk of being excluded in any attempt to formalize the solid waste recovery activity.

The **gender roles framework** was used In Nepal and India[89] for a better understanding of the type and amount of work women did in relation to water, and of gender relations affecting its access and use. Conclusions reinforced that women and girls were more responsible for water collection and for other water-related chores at the household level than their male counterparts, while men were in charge of decisions in relation to water management. Also, the lack of understanding from personnel in institutions working on water management, supply and sanitation about gender issues affected women directly. For example, during water scarcity periods, women used to line up at odd hours due to the lack of information issued by these institutions, thus affecting other household chores women were responsible for.

3.2. Means for developing and strengthening women's capacities and skills

Training has been the most common means that CCP-funded projects have used for building knowledge and skills of women, and the modalities that have been used included sessions and learning-by-doing activities. For example, considering the role women had in water collection in Hyderabad[90], they were trained on health issues related to water and how to protect the storage systems within the home from contamination. In Cochabamba[91], artisans (women) benefited from a six-week teaching cycle in a practical workshop on business development and creativity, where they learned how to make new items with different materials (cardboard, paper, plastic), and learned new concepts of quality control, design, and colour theory, among other topics. In addition, sixty women received training and established the scavenging association of women "El Porvenir" for the recycling of paper for the production of Christmas cards and handicrafts.

In Nepal and India[92], a project aimed to ensure the future integration of women in decision making processes by identifying and preparing water leaders/champions. The project also provided seven Master's thesis awards, which supported the enrollment of four female students in various aspects of water, urbanization and climate change. In the Adaptation H2O Program[93], half of the grants provided for fellowships targeted women.

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[89] 108212
[90] 106248
[91] 104395
[92] 108212
[93] 106299

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3.3. Means for fostering the participation of women, access to resources and decision making

CCP-funded projects that have mainstreamed gender have used specific tools to ensure the right of women to information and participation in different spaces and pilots, and have empowered women to make decisions around governance arrangements to improve and explore productive alternatives.

In two re-location colonies in India, three **methodologies for improving the dialogue** between poor women and their local governments were tested[94]: 1) women's safety audit; 2) demanding accountability; and 3) gender budget analysis. The **women's safety audit** empowered women to use their knowledge and build their capacity to engage with local services and government bodies in the water and sanitation sector. The **"demanding accountability"** methodology proved to be effective in terms of raising awareness of the basic rights women have to access water and adequate sanitation. As a result of this, women in Bawana filled **four 'right to information'** applications for: i) information on who was responsible for maintenance of the community toilet complexes, ii) information on who was responsible for the maintenance of drains, iii) attendance records for drain cleaners and iv) a copy of the sub-zonal plan under the Master Plan. Finally, the **gender budget analysis** was used to understand how the public provisioning of water and sanitation services was conducted, concluding for instance that policies and schemes regarding urban water and sanitation did not have anything for women and girls except for the Urban Sanitation Policy (2008) and the National Urban Habitat and Housing Policy (2007). In addition, it showed that in spite of overall budgetary allocation for water and sanitation in Delhi from 2007/08 to 2010/11, in absolute terms funding went down over that period from 7.4% to 6.1%.

The participation of women was also promoted through the implementation of specific pilots or demonstration activities around agriculture, productive and infrastructure activities. In Ariana (Tunisia)[95], the involvement of women in agriculture was strongly promoted for demonstration activities to cope with water scarcity and soil salinity. Consequently, six out of the 22 agricultural micro-enterprises established by the project were fully managed by women and seven of them occupied the position of farm manager. In Yeumbeul Nord (Dakar)[96], pilots supported community members in building actions to reduce their vulnerability to flooding. One of the pilots was a microfinance scheme for women, providing in total $17,000 for 170 women beneficiaries and $1,300 as a micro-fund for textile-dying work, helping them directly to improve the well-being of their families. In Malika[97] one of the three lab projects on integral housing and productive practices supported the transformation of the "Women's House" and led to an increase in women's awareness and knowledge. The women took ownership of the activities promoted by the project.

In relation to **decision making**, women were empowered to strengthen governance structures around productive activities. For example, in Accra[98], two fish smoking facilities were constructed to

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[95] 104396
[96] 107026
[97] 104908
[98] 106548

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preserve fish during bumper harvests, as an adaptation intervention, which served 100 women a day. As a result, women decided to form a cooperative to put in place measures to ensure sustainability of the smoking facilities and to arrange credit mechanisms for alternative livelihood options considering the decline in the fish catch. In Aba[99], rural-urban community associations, including those of women, were included in processes for identification and validation of actions to reduce vulnerabilities of population to climate change. Subsequently, women became actively involved in project activities and thus strengthened their role in community. Evidence of this was that the Women Weaving Cooperative Society received new members and started communication with the local government council to present their concerns and requests.

Section 4. Lessons learned from implementation

Analysis question: ***What are the main lessons learned from implementation in achieving resilience and adaptation?***

Lessons learned reflect the learning that comes from experience[100]. They suggest how and why different strategies work, or do not work, in diverse situations. Findings that arise during the project become new knowledge in relation to the context, method, problems or people involved. When these changes are expressed in a clear and accurate way, the lessons learned are built as a generalization that can serve others if they are in similar situations. Lessons do not come only from best practices or successful experiences. Reflection upon failures is also important as it allows us to change the course of action.

Lessons learned are conclusions drawn from the analysis of work during the comparison of results against pursued aims, which take into consideration the invested time and effort. They can become recommendations that serve those who want to develop a similar project.

For developing the lessons learned in this report, the following steps were completed:

- Project documents (PCRs), final technical reports and relevant selected outputs that could bring more clarity and insight were analyzed. Learnings of POs (program officers) and grantees on project implementation were valued but were not the only elements considered.

- Lessons learned were also built based on the overall analysis made to answer the key questions of this synthesis.

- The way lessons learned are presented shows a general principle, which can be applied to other situations. Whenever possible, examples of projects are either described in the text or found in Annex 2.

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[99] 105839
[100] Gomez, N. and Pacha, MJ (2013).

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Lessons learned in this section relate to those identified around achieving research impact, project sustainability, knowledge sharing and cross learning, policy influence, and scaling up. Annex 3 presents other lessons learned around implementation.

4.1. On achieving research impact

1. **For increasing awareness of local actors, projects' methodological proposals have combined climate vulnerability research with social and anthropological approaches.** Such a combination has allowed a feedback loop process beginning with collecting and reflecting about local actors' perceptions, to presenting and validating new scientific research information, and then building a new understanding about the different drivers of climate vulnerabilities. In some cases, processes were extended to reflect on the causes and factors that support, enable and constrain potential local adaptation actions (see Annex 2).

2. **Research impact in the form of changes of awareness in government representatives** on the factors that influence climate vulnerability has been possible when: (a) by design, their participation has been considered within the methodological and strategic frameworks of research projects; (b) when there has been better and effective access to the scientific knowledge generated and digested in adequate formats; (c) when government representatives could validate the knowledge generated by the project and put it into practice in their own context; and (d) government representatives understand the factors that are determining the governance structure of a territory.

3. **Research impacts in the form of effective governance have been achieved by strengthening existing community platforms rather than by creating new ones**. This is because different actors already knew each other, and trust-based relationships were in place. When by design projects include a governance objective, the identification of adequate methodologies, like PAR, effectively promoted participation of multiple stakeholders through existing platforms.

4. **Combine short-term concrete solutions on adaptation to climate change with longer-term research and policy outcomes for ensuring changes in practices**. Some of the research projects dealt with issues around climate vulnerabilities that required urgent attention. Demands for such actions were expressed in different ways and degrees by stakeholders who were directly involved in project implementation. In the city of Malika, Senegal[101] the project team focused on immediate urban and housing problems, by implementing two laboratory projects related to the improvement of housing and construction practices that had immediate effects on community livelihoods. Members of the community, who kept supporting other activities of the project, welcomed such actions. Thus, the identification of concrete results that could be achieved in the short term helps to ensure that members of the community are not frustrated with the time urban interventions and policy changes take to make improvements on the ground.

5. **Investing in local actions to attend basic needs of the poorest populations is effective for further climate vulnerability reduction efforts.** This stands for projects that have used participatory processes for promoting the identification of local actions aiming to reduce

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[101] 104908

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poor people's vulnerabilities, which have resulted in the support of actions linked to local development plans.

4.2. On project sustainability

1. **Autonomous adaptation actions in communities can be improved and up-scaled when involved stakeholders have access to information and practical solutions.** In several projects analyzed, vulnerable members of communities are "not passive victims of climate risks"; they adapt within their own circumstances and capabilities. Evidence shows that the provision of better information and low-cost technologies can support and strengthen their adaptation strategies[102].

2. **Promoting the incorporation of cities into regional or global city-related initiatives could generate appropriate scenarios for the continuity of the project.** In Latin America, several cities of the Climate Resilient Initiative[103] made links with the United Nations International Strategy for Disaster Reduction (UNISDR) and made sure that local governments are committed to tackle risk reduction strategies by becoming part of the international campaign "Making Cities Resilient: My City is Getting Ready". This campaign can provide capacity, tools and advice to cities on how to build a local strategy on resilience.

3. **Participatory approaches can broaden the scope and time of the project significantly while ensuring empowerment and sustainability.** In Aba, Nigeria[104], six committees or platforms grouping civil society and governments were formed to discuss mechanisms through which the local governments could support local efforts to adapt and to assess how urban and rural communities could work together to reduce vulnerability. The adaptation options chosen by the communities were successfully implemented in most cases.

4.3. On knowledge sharing and cross learning

1. **Projects within a global or regional initiative or with a multi-country scope could benefit from knowledge sharing and cross learning.** Building adaptive capacity in cities demands partnerships and innovative approaches, and projects are learning by doing. This makes cross learning[105] and co-production of knowledge[106] vital components within and between individuals, organizations and wider networks. It was observed that knowledge exchange and cross learning was not a priority in projects, even in those that had common approaches, like the Focus Cities Initiative[107], where multi-stakeholder teams worked in partnership to test innovative solutions to alleviate poverty and improve the environment.

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[102] 106248

[103] 108193

[104] 105839

[105] Learning can be described as the uptake of information based on prior experiences and/or observations to regulate behaviour (Bandura, 1971).

[106] Collaborative production of knowledge, co-production of knowledge, is bringing together different knowledge sources and experiences from across different disciplines, sectors and actors to jointly develop new and combined knowledge.

[107] Moreno, Argentina (103554); Jakarta, Indonesia (103796); Dakar, Senegal (103801); Colombo, Sri Lanka (103795); Kampala, Uganda (103794); Lima, Peru (104397); Cochabamba, Bolivia (104395); Ariana-Soukra, Tunisia (104396)

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The opportunity for cross learning was not developed enough and cities would have benefited more from sharing their experiences.

2. **Synergies between two or more IDRC research projects with similar objectives or methodologies require additional work for promoting and facilitating interaction.** Ideally, learning between similar research projects could be encouraged to maximize the impact. In some projects[108], the responsibility for such a liaison has relied on the PO, and from there to the grantees, with no particular expertise in knowledge management. As developed later in the recommendations section, a dedicated knowledge manager could create links between projects and develop methods and tools to ensure cross learning.

4.4. On policy influence and regional upscaling

1. **Assessments around local institutional and governance contexts are good early actions for designing engagement strategies**. In the project implemented in Philippines, Thailand and Vietnam[109], the research team did not collect, in the early stages of the project elements, information about institutional governance arrangements, and implemented the same engagement strategy in all sites of the project. This limited the possibility of generating any impact in the policy sphere.

2. **Scaling up research findings from pilot projects requires partnering with institutions that can fund the expansion of used methodologies and approaches to other areas.** There was a positive lesson for scaling up in the Five-city Network project in Africa[110], where further funding was available through the establishment of new collaborations and complementary efforts by UN-Habitat and the International Water Association (IWA). They were thinking of expanding the project approach to other municipalities. Something similar happened in LAC[111] where multilateral agencies, such as the Inter-American Development Bank (IADB) and the World Bank expressed their interest in scaling up findings.

Section 5. The road ahead

In this section, the following question is answered: ***What are the main gaps and recommendations for improving the strategic programming of CCP?***

5.1. Gaps

Gaps included in this section are the result of the analytical synthesis and the reference to the CCP impact pathway. The section's formulation comes from an external perspective, and also considers principles around sustainability, long-term impact and coherence with the international climate and urban agenda. Gaps are based on the consultants' understanding of the role(s) IDRC and the CCP have within the research and development agenda.

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[108] 104397
[109] 106960
[110] 105868,
[111] 105707

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1. From the analysis performed, there is not enough evidence that projects had carried out concrete **actions for scaling up solutions**. A scaling-up strategy could promote adaptation solutions already tested by previous CCP-funded projects that have had positive results in reducing climate vulnerability. Since scaling up is a priority for the CCP as it is shown in its impact pathways at the output level,[112]the following are key steps for moving forward in this area: (1) define criteria for choosing solutions (best practices) that can be scaled; (2) systematize experiences to capture lessons learned in implementation and understand how the best practice was developed; and (3) develop a toolbox with a set of guidelines and tools for the implementation of the chosen solution in other contexts.

2. The CCP has made large investments supporting the identification of adaptation solutions through its research projects. However, there is no guarantee that those proposed solutions, plans or strategies have been implemented. Although its financing should be a joint responsibility between grantees and beneficiaries, IDRC could recognize its potential role in **making identified adaptation solutions a reality.** The CCP team could assess the possibilities within IDRC's mission to ensure its investments around climate practices are sustained in the long term.

3. Research projects have not necessarily been built over a clear **demand from decision makers,** and yet the immediate outcomes of the CCP Impact Pathway imply that research results should target that level. From other experience[113], when the research priority aims to fill gaps of knowledge and information that are needed by local or national decision makers, there is a guarantee of buy-in and use of the research results for concrete policies. Future CCP research calls could integrate this type of recommendation.

4. There seems to be a gap between **project implementation at local scale and the intention of the CCP to contribute to international climate and development policies**. Because this analysis concentrated exclusively on the CCP project portfolio, there were not enough elements to visualize the contribution individual projects could be making to international agendas. In spite of recognizing that limitation in the scope of the analysis, the CCP could use intermediate-level interventions, either at thematic or geographic levels, to make more evident strategic contributions to international prioritized agendas. More reflection around this is included in Section 5.3 of this report.

5. Gender is a priority for the CCP; however, from the portfolio analyzed, it seems that projects have not necessarily had a **strategic orientation from a gender perspective to allow** for alignment to program goals. In support of current program efforts, the definition of a set of targets could orient project contributions towards CCP gender objectives. In addition, half-year, annual reports, and PCRs could have a specific section on project contributions to CCP's gender outcomes/targets.

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[112] Tested examples of applicable, scalable, bankable adaptation/mitigation solutions.

[113] The Climate and Development Knowledge Network (CDKN) supported a wide range of demand-led, policy-relevant, applied research projects, led and implemented by a wide range of universities, private sector partners, NGOs and international agencies. CDKN looked for projects that could not only demonstrate scientific excellence, but could also clearly respond to identified developing country needs and to high policy impact. More information in www.cdkn.org

5.2. Recommendations for improving the strategic programming of CCP

This subsection presents a set of recommendations drawn from the richness of information analyzed and the current international context. Aware that the final strategic decision on which to accept belongs to the CCP team, the recommendations are presented from an external perspective.

5.2.1. Strategic decisions for the CCP implementation

1. In order to move forward on the CCP impact pathway and its development outcomes, future investments could focus on climate actions that lead to improved natural resource management in climate change vulnerability hotspots to provide evidence for the first development outcome. For example, a **specific niche could be ecosystem-based adaptation solutions for cities**. Also, moving forward on the second development outcome, CCP could diversify strategies to ensure equity and justice for women and vulnerable groups for ensuring access, control and decision making around healthy food, renewable energy, safe housing and clean water. In addition, projects could also focus on bringing specific solutions to improving access to *renewable energy* and *safe housing* linked to equity and justice.

2. For future research projects, the CCP could transform the intention given in its impact pathway on **gender, participation and policy influence** into a document for external audiences, such as grantees and project partners. This document would provide **clear guidelines** on what goal research projects should contribute to, so they can also design interventions based on these priorities. For example, this could take the form of a guide with (a) a clear overview of the importance of the topic globally and linked with international agendas, (b) the objective(s) that the CCP aims to achieve, (c) expected results and outputs from addressing this topic, and (d) examples of methods, references and available tools.

3. From the analysis conducted, the **need for technical assistance** on gender, participation and policy influence for project grantees was identified. To meet that demand, the CCP could provide a toolkit with online training and tools on specific subjects that grantees can access at any time. For example, projects that had the challenge of using the PAR methodology could have benefited from an organized provision of support. From there, the CCP could have contributed to a more effective project implementation.

4. To achieve policy impacts and scaling up, **project duration could be extended or stricter assessments could be conducted** by the CCP team in relation to objectives that could be achieved within a 36-40-month project duration. Most of the analyzed projects had a three-year duration and this has proven to be challenging for generating policy results and upscaling them to impacts. In fact, an analysis made by King's College London indicates that it takes an estimated three to nine years for research to have an impact on society, and that the speed with which that impact occurs varies by discipline. This is a contested issue, as it can also be argued that mechanisms to ensure impacts should be included from the project design phase. But in the Global South, there are challenges that are external to the project, and they need to be integrated into its implementation, e.g. high government rotation, lack of engagement of key actors, and lack of political and social stability.

5. Recognizing that grantees do not always have a strong understanding of the local context, it is recommended that the CCP team request that **local and/or grassroots organizations be included in the project implementation process**. This could ensure that the project rightly contextualizes planning within the local reality and also allows a better understanding of governance structures and how they need to be strengthened.

6. The CCP could develop a basic set of **standards for promoting equitable engagement and participation between North-South partners** for project implementation. From the analysis performed, it was observed that some northern grantees maintained inequitable power relations with their southern partners, causing discomfort among members of the research team. Key and critical decision-making processes could be made jointly between the grantee and its research partners, like changes in scope, approaches, methodologies, activities and timeframe. One option is to include within the Terms and Conditions of IRDC, or as an Annex to it, a section that sets minimum standards or principles for North-South cooperation between partners, including transparency, fairness, and equitability, among other aspects.

7. Climate change and its complexity highlight and exacerbate development and well-being issues**.** There is an opportunity in promoting **integral approaches** that can add value to the climate change and development discussion. For example, the **nexus between food, energy and water** in urban-rural contexts for understanding climate change impacts, moves discussion and analysis beyond the single box approach. Some specific research has been done in the [Amazon region](#).

5.2.2. Recommendations for achieving policy influence

Research impact at the policy level was a challenge in most of the CCP-funded projects analyzed. It is mentioned repeatedly in the PCRs that influencing policy is not within the core capabilities and experiences of the research organizations, and yet the CCP impact pathway expects that research results will feed national and international policies. In spite of the complexities research projects face in their attempt to contribute to policy, there is room for improvement and some recommendations from different organizations[114] are summarized below.

1. Research teams need to have a **clear understanding about what and who to influence**. This implies on the one hand, seizing the theme or process the research project wants to change at policy level, and on the other hand, understanding the governance context, policy needs, institutional landscape and power relations around decision making in the area the project aims to influence.

2. Based on that understanding, research teams could prepare a **clear and realistic strategy for influencing policy,** ideally as part of the project proposal[115]. Part of the challenge is making a clear decision about what is achievable in the 36-40 months of the project's duration. Building this strategy will imply understanding the political factors that might enhance or impede research uptake to policy level, learning about the best means to engage the target audience, and seizing the best opportunities for making information

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[114] Tilley H., et.at., 2017; Kirbyshire , A and Roberts, L 2017; Young, 2011; Pellini & Serrat, 2010.

[115] Recognizing that not all grantees are familiar with the context where projects take place, the CCP team should consider if the development of such a strategy could be integrated within the project work plan.

generated by the project most useful. By doing this, the project will properly plan and budget for influencing policy.

3. Research teams could be required to prove their experience in influencing policy. The principal research institution could assess if **capabilities and experience** for influencing policy exist in-house, or if there is a need for partnering with a local organization[116]. In fact, building a network of organizations or people with capacities for influencing policy offers an opportunity to develop a joint plan for this purpose.

4. **A knowledge and communications plan** could be carefully defined, for ensuring that specific products are made available for the target audience identified. In addition, transforming research findings into a language that is adequate for policy makers is fundamental and professionals with that profile could be considered for that set of activities.

5. Influencing policy is indeed a medium- to long-term process and research projects should be able to **ensure minimum sustainability elements** to make this happen. This includes building key actors' capacities, strengthening governance structures, and testing practices or approaches[117] for either fostering replication, up-scaling or systematization of lessons learned.

5.2.3. Recommendation on monitoring and evaluation

1. CCP could explore expanding its monitoring and evaluation systems to revisit projects after a certain time following closure to **assess middle- and long-term impacts**. Current practices (PCR) do not allow for assessing if long-term changes have occurred after the closure of the project. A good example of this practice was the M&E System CDKN had in place with the support of INTRACT[118], through which surveys were sent to project beneficiaries six months and one year after closure of the project.

5.2.4. Recommendations on knowledge management

There is a raft of promising strategies for tackling the effects of climate change but the international context in which climate negotiations unfold is characterized by its complexity and uncertainty. It's a non-linear, unpredictable and poorly understood process. Social, economic, political and cultural factors influence how climate policies are implemented locally. In this ever-changing context, professionals working on climate change and organizations – public, private and non-governmental – are learning the best ways to prepare for the consequences of a changing climate. It is therefore crucial that l**essons learned about what works and what does not, are collected, analyzed and**

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[116] Working with an experienced partner in supporting development or implementation of public policies has been a reiterative recommendation in PCRs.

[117] This recommendation relates to the approach used in Section 1 of this report. Thus, if projects focus on achieving results at the first levels of the "incremental chain of impacts", then, if not directly the projects, other actors would find better conditions for reducing the gap between research and policy making.

[118] "The monitoring and evaluation system established has been assessed as "robust, transparent and providing adequate scrutiny to the operations of the program". https://www.intrac.org/projects/establishing-monitoring-evaluation-framework-climate-development-knowledge-network/

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incorporated into national and international debates that influence climate change. **Learning and sharing knowledge are the keys to the success of efforts to reduce global emissions[119].**

IDRC's slogan of "knowledge, innovation and solutions" has the capacity to bring answers to the challenges of today. CCP-funded projects generate valuable scientific knowledge that needs to be digested, translated and transformed into practical and policy-relevant information for decision making. In its strategy, CCP states that the generation of knowledge and capacities are the key mechanisms to provide solutions to different challenges. From our analysis, very few projects have diversified their products to include different audiences; most have focused on producing scientific papers that have a specific audience and reach. Therefore, **knowledge management could be an integral part of the CCP program** so knowledge is shared and cross learning between different projects is possible.

1. Learning is a cross-cutting component in the design and implementation of climate strategies and plans, linking all scales, geographies and disciplines. It is critical to minimize duplication, maximize the flow of knowledge and encourage active learning. To facilitate these processes, it is recommended that the CCP **build or strengthen a team to support learning, knowledge management and communications**. Its main task would be the production of materials that can support a better understanding of the complex information used in climate change and generate learning processes, knowledge exchange and material to support decision-making processes effectively.

2. This team could design an **integrated learning, knowledge management and communication strategy** that could help replicate and scale out frameworks, tools and approaches resulting from research projects. It is recommended that all activities around communication, learning and knowledge management **be planned in a coordinated way** for ensuring that information generated by research projects is presented, understood, disseminated and used by different actors, aiming also for good practices to be replicated. This could be done through knowledge exchange seminars that can take place on a yearly basis where project teams are invited to share their research, challenges and lessons learned. It could also involve using online tools like webinars to share knowledge between projects, promoting co-production[120] of knowledge through reflection pieces about key topics, like gender, participation, and methods, among other topics.

3. **CCP could foster systematization practices to better capture the learning that comes from projects**[121]. This approach helps to deeply and critically interpret experiences, and places equal importance on both the process and the result of knowledge development, while also exploring how it was possible to achieve what was realized—what worked and what did not work? What were the key factors for success? What could have been different and why? It also considers the difficulty teams may have to interpret experiences in a critical way. It is suggested that systematization becomes a prerequisite and forms part of the

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[119] Pacha, 2015.

[120] Co-production is combining different knowledge sources and experiences from across different disciplines, sectors and actors to jointly develop new and combined knowledge. In BRACED, 2016.

[121] Systematization of experiences is a methodology emerged in Latin America in the 1970s. It combines popular education learning concepts with participatory action-research social intervention tools to encourage critical and thoughtful interpretation in the process of identifying lessons learned. In Gomez, N, Pacha, MJ (2013).

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standard reporting process. For example, in the Climate Resilient Cities Initiative[122], systematization is integrated in the final impact report where project teams need to reflect on the implementation process and refer it back to the original context.

4. **CCP could incorporate cross-project learning practices for expanding the learning process within individual projects.** New knowledge, lessons learned, and challenges and opportunities from projects working on similar topics could be shared. This also could allow the co-elaboration of joint knowledge products, such as syntheses, guides and scientific papers. A transversal theme could be used for enhancing project exchange, as was the case for gender in CCP-funded projects which promoted exchanges between teams in an effort to build or strengthen capacities, knowledge and skills of research teams[123].

5.3 Opportunities

There are different international agendas on climate change, development and cities that could be useful for CCP to move forward in the achievement of its impact pathway and in the inclusion of new topics in its agenda. Although acknowledging that the team might be already involved in many of the items presented below, the following section highlights some opportunities that arise from the analysis conducted.

- **New Urban Agenda and SDGs.** The New Urban Agenda (NUA) is the new mandate for the development of cities and human settlements for the next 20 years. It proposes key guidelines for achieving safe, inclusive, sustainable, resilient and participatory cities. It is considered an accelerator of the Sustainable Development Goals and the 2030 Agenda. UN Habitat has developed tools to support its implementation processes (regional action plan in Latin America and the Caribbean, sub-regional action plan, urban platform and cities). CCP could take advantage of the tools developed by the NUA in its research and at the same time contribute to the achievement of the Agenda.
- **Talanoa Dialogue**. This is an important international conversation in which countries check progress and seek to increase global ambition to meet the goals of the Paris Agreement. The dialogue will consist of a preparatory (January-December 2018) and a political phase (COP24). On January 2018 the UN opened an online portal where all countries and other stakeholders, including business, investors, cities, regions and civil society, are invited to make submissions to the Talanoa Dialogue around three central questions: Where are we? Where do we want to go? How do we get there? CCP-funded projects could share their stories and support this international effort focusing on cities.
- **Nationally determined contributions (NDCs).** 195 parties of the UNFCCC have signed the Paris Agreement and while its ratification is taking place, countries are preparing or increasing the ambition of their NDCs. CCP-funded projects could contribute to the NDCs in each country, and start building links between local and national policies, and from there, to international agreements. For example, CCP-funded projects could contribute with metrics to measure reduction in climate vulnerability, which is still a work-in-process within the UNFCCC.

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[122] 108193
[123] 106248, 105524, 105183

- **The UNFCCC Gender Action Plan (GAP)**. Adopted in the last COP23 of the UNFCCC, this plan supports the implementation of gender-related decisions and mandates in the UNFCCC process. It has five priority areas: (i) capacity-building, knowledge sharing and communication; (ii) gender balance, participation and leadership of women; iii) coherence; (iv) gender-responsive implementation and means of implementation; and (v) monitoring and reporting. The CCP could make important contributions to the implementation of this action plan ranging from the local to the international level. For example, the CCP can use the GAP to define objectives and goals in terms of gender in its programming.
- **The IPCC Cities and Climate Change Conference** (Edmonton, Canada in March 2018) produced the **Edmonton Declaration** which is a call to action for cities of all sizes to seriously consider the role of scientific research and data in building ambitious climate action plans. This declaration: (a) reinforces the importance and role of cities in achieving the targets in the Paris Agreement; (b) calls on the scientific community and other levels of government to provide better data and tools for science-based decision-making; and (c) asks cities to look beyond their borders at the impact of consumption on GHG emissions. These three points indicate that CCP could concentrate on providing answers to the current problems decision-makers face in cities by taking a demand-led approach.

  The specific research agenda on science in cities and climate change suggested by the IPCC Conference is not yet available to present in this synthesis. It will be presented to the IPCC as part of the official Meeting Report on the Cities IPCC conference during the 48th Plenary of the IPCC, which will take place in October 2018 in Incheon, South Korea.

- The **ICLEI World Congress** (Montreal, Canada in June 2018) can provide guidance on what topics are important for cities and climate change.
  The ICLEI Montréal Commitment and Strategic Vision indicates that *there is a need to dig in and build stronger links between climate science, urban policy and practice*. The interconnection between the three perspectives is critical to creating coherent policy frameworks driven by hard data and scientific evidence, and informed by practitioner expertise. The three key ways to bring evidence-based policy to the fore are:

  (a) **data to inform climate policy at all levels**: there is a need for up-to-date data from cities, towns and regions on their targets, actions and impacts, which interconnect to build a holistic picture of climate change mitigation and adaptation within a region or country – and across the world;
  (b) **networking across science, policy and practice**: there is a need to carve out space that invites three-way dialogue between local policymakers, practitioners and the scientific community to ensure they work and plan in close collaboration; and
  (c) **evidence-based advocacy for multilevel and holistic climate action:** it is important that national climate policy and the global climate action architecture are informed by reliable, up-to-date data from the ground.

This framework ratifies the recommendations presented in this report around the need to improve impacts at policy level, and from there to improve advocacy activities to achieve policy outcomes. The CCP team could explore the possibility for directly providing knowledge management services to decision makers at city level on systematizing good practices from the Global South. This could

be an additional line of work that could complement research and provide links between research, urban policy and practice.

The ICLEI Strategic Vision suggests five strategic pathways and their activities that could provide further topics where CCP could focus in the future. The five main principles relate to low emission development, nature-based development, circular development, resilient development and equitable and people-centered development. The table below summarizes those activities that are considered in line with CCP priorities.

Table 3. Summary of activities in relation to the five strategic pathways as stated in the ICLEI Vision.

Strategic pathways	Some of the activities that could be of interest for CCP
1. Low emission development	Reduce our greenhouse gas emissions from heating, cooling, lighting and food systems.
	Promote sustainable passenger and freight mobility, prioritize clean fuel policies and electric vehicles from renewable energy.
2. Nature-based development	Deploy strategies and plans that use the potential nature has to provide essential ecosystem services.
	Apply nature-based solutions, use blue and green infrastructure options and promote green zones to reconnect and engage with nature in our new urban world.
3. Circular development and new models of production and consumption.	Work with the business sector from early-market engagement to the delivery of solutions that support local sustainability goals and that meet the needs of all citizens.
4. Resilient development	Make resilience a core part of municipal strategies and prepare for new risks and impacts, taking into account the rights and needs of vulnerable sections of our society.
5. Equitable and people-centered development	Support processes and patterns of an "inclusive development for all" that safeguard the natural support systems for human life. Pursue secure and safe access to food, water, energy, and sanitation for all.
	Promote natural and built environments in and around cities that improve livability and safety, mitigate disease, and promote human health and well-being

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- **Innovate4Cities – A Global Climate Action Accelerator.** The Global Covenant of Mayors for Climate and Energy has taken the lead on developing a global climate action accelerator, which will address critical knowledge, data, and innovations gaps that cities experience. CCP could explore this platform for sharing knowledge and practices on cities.

5.4 Relationship between the project portfolio and CCP´s development outcomes

In this section an analysis is done to draw out insights, based on the pool of projects analyzed, to determine if CCP is moving in the right direction to achieve its **development outcomes** as stated in the CCP Impact Pathway.

Development outcome 1:

Enhanced environmental sustainability: climate actions lead to *improved natural resource management* in climate change vulnerability hotspots.

From the pool of analyzed projects, CCP projects are moving forward on tackling natural resource management indirectly through water issues. When looking at the CCP impact pathway diagram, there is no clear relationship with the intermediate and immediate outcomes, outputs and activities to achieve it. The only program directly related to natural resource management is the CCW program that concentrated on water issues; however, its focus was more *to support applied, policy-relevant research to help people adapt to the water-related impacts of climate change*. In general, natural resource management has not been the focus of the projects implemented in cities. The approach of most projects under this program was to understand the vulnerability of communities in poor peri-urban areas to climate change related to water availability, secure water consumption and water governance.

Development outcome 2:

Improved safety, security and inclusivity / increased gender equity: inhabitants of climate change vulnerability hotspots, particularly women and girls, *have improved access and control over healthy food, renewable energy, safe housing and clean water*.

On the issue of providing safety and security of vulnerable populations, there is more evidence that the CCP-funded projects are moving in the right direction, especially in fostering improved access and control over healthy food and clean water, but less on renewable energy and safe housing. Some projects also concentrated on understanding the relationship between rural-urban or peri-urban food security and major cities.

More projects in the future need to focus on renewable energy and safe housing. It is worth noting that solid waste management is not included in this development outcome, despite the fact that it is a basic service that needs to be tackled in developing countries to provide safety to the population.

In several projects[124], it was considered as one aspect that makes cities more vulnerable to climate change.

Although gender is a key component in the CCP theory of change, the majority of analyzed research projects approached gender in a superficial manner. Almost 40% of the CCP-funded projects did not include any gender consideration within their methodologies or interventions. In fact, eight projects had gender-related objectives within their planning frameworks and five used gender approaches within their methodologies without necessarily having a gender objective[125].

The inclusion of gender considerations within the methodologies of CCP-funded projects has led to different levels of intervention within a framework towards action. From the analysis conducted, it was possible to acknowledge that projects fostered action by including gender within their methodologies and interventions, specifically for the generation of sex-disaggregated information, to ensure the access of women to information and participation and fostering their empowerment in decision making.

Development outcome 3:

Improved governance for better policies and services: small and medium-sized urban centers in developing countries have *increased resilience* for their vulnerable population by effectively *integrating evidence-based and gender-sensitive climate considerations in development planning.*

As mentioned in Section 1 of this report, almost 30% of projects in this portfolio showed changes in governance through effective participation. However, it was more difficult to integrate evidence-based climate consideration in development planning, and only one project in South Africa managed to influence planning in Cape Town[126]. The causes were several and were analyzed in more detail in section 1, while recommendations are provided in section 5. In general, there is a clear need to more closely link governance with policy and practice.

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[124] In 108193, Climate Resilient Cities Initiative, consultation processes with key stakeholders indicated that solid waste management is one of the problems that need to be tackled to make cities more resilient to climate change. 0ther projects have also focused on this topic; for example 103796, 104395, 105183.

[125] For details, see the Section on Gender.

[126] 105674

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Information about the consultants

Consuelo Espinosa Proaño is an environmental economist with two decades' experience in the design, coordination, monitoring and evaluation of environmental, forestry and climate change projects. Her professional career has been built in international conservation organizations such as the International Union for the Conservation of Nature (IUCN) and Flora & Fauna International (FFI), in global initiatives such as the UN-REDD + Joint Program and the Climate and Development Knowledge Network (CDKN), as well as in regional organizations such as Fundación Futuro Latinoamericano. She is an international trainer in forestry and climate change issues, facilitator of dialogues with multiple actors at different geographic scales, and processes for the management of climate knowledge.

María José Pacha is a biologist and has a Master of Science in Environmental and PhD from the University of Lancaster (UK). For 15 years she has worked on issues of protected areas, climate change and REDD+. For the last two years she has been the Knowledge and Network Coordinator of the Climate and Development Knowledge Network (CDKN) for Latin America and the Caribbean. She has also coordinated activities for Climate Knowledge Brokers for the region. She collaborated with UNDP, FAO and other international agencies. She is currently the Knowledge, Learning and Communication Coordinator of the Climate Resilient Cities Initiative (CRC) a 30-month program funding research in 13 cities in Latin America that are working towards urban climate resilience supported by CDKN and the International Development Research Centre (IDRC).

Annexes

Annex 1: Project portfolio and sample

This annex contains the details about the 36 projects between 2006 and 2018 that were reviewed and the sample of projects for the analysis in Section 1 of the Report on Impacts of CCP-funded research on the field of adaptation.

Table 1: Portfolio of projects reviewed

Project #	Project code	Project name	IDRC program
1	103710	ECOPOLIS Graduate Research and Design Competition	UPE - CCW
2	103796	Focus Cities: Economic Incentives for Improving Water, Sanitation and Solid Waste Services in Jakarta (Indonesia)	UPE
3	104347	Strengthening Three Peri-urban Agricultural Producer Organizations in Latin America	UPE
4	104395	Focus City: Urban Waste Management in the City of Cochabamba, Bolivia	UPE - CCW
5	104396	Focus City: Rainwater and Greywater Harvesting in Urban and Peri-urban Agriculture in Ariana-Soukra, Tunisia	UPE - CCW
6	104397	Focus City: Integrated & Participatory Research Aimed at Reducing Vulnerability, Poverty and Environmental Loads in Cercado de Lima, Peru	UPE - CCW
7	104683	Rural-Urban Cooperation on Water Management in the Context of Climate Change in Burkina Faso	CCAA
8	104899	Participatory Improvement of Water and Sanitation Services in Tripoli through a Comparative Analysis with Irbid	UPE- CCW
9	104908	Vers une collectivité productive à Malika (Sénégal) : une expérience d'aménagement participatif	UPE - CCW
10	105183	Gender Dimension in Solid Waste Management in Urban and Peri-urban Areas (Latin America and the Caribbean)	UPE - CCW
11	105185	Assessing Multi-stakeholder Partnerships in the Water and Sanitation Sector within the Context of Urban Policies in LAC	UPE - CCW
12	105191	Prefabricated Engineered Bamboo Housing for East Africa	UPE - CCW
13	105524	Women's Rights and Access to Water and Sanitation in Asian Cities	CCW
14	105673	Poverty and Environmental Vulnerability in Angola's Growing Slums	UPE - CCW
15	105674	Managing the Risk of Flooding and Sea-level Rise in Cape Town: The Power of Collective Governance	UPE/CCW/CCAA
16	105707	Water and Sanitation: LAC Cities Adapting to Climate Change by Making Better Use of their Available Bioenergy resources	CCW
17	105721	Alternative Water Systems Project	UPE - CCW

18	105813	The Carbon Market and Integrated Waste Solutions: A Case Study of Indonesia	UPE- CCW
19	105815	Protecting Cotonou's Urban Community in the Face of Climate Change	UPE/ CCW/CCAA
20	105836	Exploring Urban-rural Interdependence and the Impacts of Climate Change in Tanzania and Malawi	UPE- CCW
21	105838	CapaSIDS: Capacity Building and Knowledge on Sustainable Responses to Climate Change in Small Island States	UPE - CCW
22	105839	Implications of Climate Change on Rural-urban Interactions: The Case Study of Aba and its Region, Southeastern Nigeria	UPE/CCAA/CCW
23	105868	Five-City Network to Pioneer Climate Change Adaptation in sub-Saharan Africa	CCAA/CCW
24	105869	Managing Water in the Rural-urban Interface in Ghana and Ethiopia: The Key to Climate Change Resilient Cities	CCAA
25	106002	Strengthening the Role of Civil Society in Water Sector Governance towards Climate Change Adaptation in African Cities - Durban, Maputo, Nairobi	CCAA-CCW
26	106248	Water Security in Peri-Urban South Asia: Adapting to Climate Change and Urbanization	CCW
27	106299	Climate Change and Water Awards Program – Adaptation H2O	CCW
28	106548	Climate Change Adaptation Research and Capacity Development in Ghana	ECC/ AARC
29	106592	Climate Variability and Access to and Utilization of Water Resources in the Informal Settlements in Ouagadougou, Burkina Faso	CCW
30	106707	Communicating Climate Change Risks for Adaptation in Coastal and Delta Communities in Vietnam	CCW-CCP
31	106960	Gendered Adaptation to Climate-Induced Water Stress in Peri-urban Southeast Asia	CCW
32	107026	Inondations dans la banlieue de Dakar : Vers une adaptation par les ameliorations du bati, des infrastructures et de la gouvernance locale	CCAA/CCW
33	107083	Adapting Community-Based Water Supply in Central America to a Changing Climate	CCW - CCP
34	107084	Water Security and Climate Change in Central America and the Caribbean	CCW
35	108193	Resilient Cities Initiative on Climate Change in LAC	CCP
36	108212	Climate Adaptive Water Management Plans for Cities in South Asia (CAMPS)	CCP

Table 2: Sampled projects for the analysis of impacts on the research field of adaptation

Project #	Project code	Project name	IDRC program
1	104683	Rural-urban Cooperation on Water Management in the Context of Climate Change in Burkina Faso	CCAA
2	105674	Managing the Risk of Flooding and Sea-level Rise in Cape Town: The Power of Collective Governance	UPE - CCW / CCAA
3	105815	Protecting Cotonou's Urban Community in the Face of Climate Change	UPE - CCW / CCAA
4	105836	Exploring Urban-Rural Interdependence and the Impacts of Climate Change in Tanzania and Malawi	UPE - CCW
5	105838	CapaSIDS: Capacity Building and Knowledge on Sustainable Responses to Climate Change in Small Island States	UPE - CCW
6	105839	Implications of Climate Change on Rural-Urban Interactions: The Case Study of Aba and its Region, Southeastern Nigeria	UPE - CCW / CCAA
7	105868	Five-City Network to Pioneer Climate Change Adaptation in sub-Saharan Africa	UPE - CCW / CCAA
8	105869	Managing Water in the Rural-urban Interface in Ghana and Ethiopia: The Key to Climate Change Resilient Cities	CCAA
9	106002	Strengthening the Role of Civil Society in Water Sector Governance towards Climate Change Adaptation in African Cities - Durban, Maputo, Nairobi	CCW (CCAA before)
10	106248	Water Security in Peri-urban South Asia: Adapting to Climate Change and Urbanization	CCW
11	106299	Climate Change and Water Awards Program – Adaptation H2O	CCW
12	106548	Climate Change Adaptation Research and Capacity Development in Ghana	AARC

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13	106592	Climate Variability and Access to and Utilization of Water Resources in the Informal Settlements in Ouagadougou, Burkina Faso	CCW
14	106707	Communicating Climate Change Risks for Adaptation in Coastal and Delta Communities in Vietnam	CCW-CCP
15	106960	Gendered Adaptation to Climate-induced Water Stress in Peri-urban Southeast Asia	CCW
16	107026	Inondations dans la banlieue de Dakar : Vers une adaptation par les ameliorations du bati, des infrastructures et de la gouvernance locale	CCW / CCAA
17	107083	Adapting Community-Based Water Supply in Central America to a Changing Climate	CCW - CCP
18	107084	Water Security and Climate Change in Central America and the Caribbean	CCW
19	108193	Resilient Cities Initiative on Climate Change in LAC	CCP
20	108212	Climate Adaptive Water Management Plans for Cities in South Asia (CAMPS)	CCP

Annex 2: Examples of projects that have shown different types of impacts and changes

This annex illustrates examples from the sample of projects analyzed for **Section 1** of the Analytical Synthesis Report around the four types of impacts illustrated in Figure 3. This description is not intended to be exhaustive; only the most illustrative examples were selected. Examples already mentioned in Section 1 of the report are not included in this annex, unless the information provided complements it.

a) Impacts on awareness of key actors
On citizens and local actors

In the peri-urban locations of Gurgaon and Hyderabad (India), Kathmandu (Nepal) and Khulna (Bangladesh)[127], discussion of the knowledge generated by the project with members of the community helped in increasing awareness around the stressors of water security in peri-urban areas, thus increasing their adaptive capacity. Increase of local actors' awareness in Nepal[128] and

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[127] 106248
[128] 108212

India was around water conservation, sanitation, climate change, rapid urbanization and population growth.

On government representatives

Government officials in a set of cities in Africa[129] had a better understanding of how floods and other climate risks affected populations and this put climate change on the agenda. The officials forged better interactions with communities and realized the increasing impact of climate hazards and the uncertainties surrounding them[130]. This improved their awareness of climate change adaptation and their capacity to develop policy frameworks. Specifically, the project implemented by ICLEI[131] analyzed cities' vulnerabilities and developed tools for the generation of solutions that changed the awareness of municipal officers of specific adaptation challenges.

In Malawi[132] changes in government practices were visible at the local level, where the District of Agriculture and Development Officer modified how extension staff worked with farmers by adopting approaches learned through participation in the project initiatives.

In Latin America, six research projects implemented in 13 cities[133] have increased the level of awareness of policy makers about how vulnerable cities are to climate change. This was done by developing vulnerability analyses and comparing them in three cities[134] and by identifying vulnerable areas and mapping them[135]. In all of these processes government representatives were involved since the beginning and were involved in processes for validating the findings.

In Asia, personnel within the Khulna City Corporation (KCC) in Bangladesh[136] were able to understand the potential that the Mayur River had in ensuring water security for communities living in this urban-rural settlement. As result, governmental representatives prepared an integrated management proposal for the "linear park" around the river.

In addition, projects have increased the capacity of government officials through targeted training. For example, selected government officials in Thailand[137] were trained through an executive master's program in Urban Management and Development at the Asian Institute of Technology in Bangkok.

On research institutions and teams

The ICLEI Climate Change team grew in size and capacity during the implementation of the research project in Africa[138]. CATHALAC, a grantee for a regional program in Central America and the

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[129] 105674, 105868
[130] 105839
[131] 105868
[132] 105836
[133] 108193
[134] In Foz de Iguazu, Puerto Iguazu and Ciudad del Este.
[135] In Dosquebradas, Santa Ana and Santo Tome.
[136] 106248
[137] 106960
[138] 105868

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Caribbean[139], was able to strengthen its capacities in processing large volumes of data, environmental modeling, weather forecasting, and the use of spatial tools for supporting and providing services in the region.

Several projects involved students at post-graduate levels, building their interdisciplinary research capacity. For example, in Dakar (Senegal)[140] ten young researchers and students were part of the team, thus contributing to building a group of young researchers working on adaptation issues in a peri-urban environment. Under the project conducted in India, Bangladesh and Nepal[141], thirty-one young students did internships in the three years of the project and three research associates got PhD positions abroad. Furthermore, the research team won two research projects funded by DFID and the Netherlands Organization for Scientific Research on peri-urban processes in South Asia.

Students and researchers have increased their knowledge around climate phenomena and on issues like community-based adaptation strategies in water management[142], and how poor urban-coastal populations adapt to climate change as it affects their livelihoods, food security and health[143]. In Asia[144], the grantee included along with its methodology the development of a cost-benefit analysis, which led to building capacities of a range of researchers in different organizations on economic and climate analysis. In a set of projects in Africa and Latin America[145], teams have changed their perspectives and approaches by incorporating new methodologies, such as PAR and other participatory approaches for conducting research.

b) Impacts on local participation and local governance

In Aba[146], there was a specific objective to enable existing associations, in selected rural and urban communities, to explore and evaluate strategies and policies to reduce their vulnerability and increase adaptive capacity to climate change. This was achieved by the creation of six local government committees and community-level platforms to discuss the mechanisms that sub-national governments and the state could use to support local adaptation efforts.

In Benin[147], eight consultation bodies at the district level were supported to prevent and fight against flooding in the urban community in Cotonou. These participatory spaces fostered the involvement of local actors in decision making, generating changes in existing governance arrangements. In addition, an early warning committee was formed, which brought together actors from higher levels to inform decision-making and to allow for a critical look at certain decisions and actions that were implemented.

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[139] 107084
[140] 107026
[141] 106248
[142] 104683
[143] 106548
[144] 106248
[145] 105869, 104683, 105836,105839,105868,106002,107026
[146] 105839
[147] 105815

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Under the Initiative on Climate Resilient Cities in Latin America[148], cooperation between government bodies has proven to be key in cities that share country borders. A multi-stakeholder committee was established in the triple frontier between Argentina, Brazil and Paraguay in order to validate research findings and to foster the involvement of government representatives. Also, in Coyuca (Mexico), a multi-stakeholder platform was formed to ensure local buy-in and validation of the adaptation plan generated by the project.

c) Impacts on adaptation practices

As presented in Section 2, Table 2 of the Report, CCP-funded projects have supported around 20 adaptation practices in the form of pilots, demonstration activities, learning activities, case studies, trials and direct adaptation actions. In this section, additional examples to the ones already mentioned in the report are included.

In Asia[149], the project analyzed the effectiveness of autonomous adaptation measures in agriculture, and learned that in Gurgaon, farmers switched to sprinkler irrigation in villages where sandy soils and undulating land made it difficult to pursue flood irrigation. Sprinklers enabled farmers to economize on the use of water and labour. In Kathmandu, women devised several innovative and informal mechanisms for allocating water in the face of scarcity, including rationing and determining the number and size of buckets for collecting water from public sources.

In Latin America, the knowledge generated in six cities[150] was used to develop more than 70 concrete and practical adaptation solutions to reduce vulnerabilities to climate change. These were validated and prioritized by the community and government representatives.

d) Impacts in (adaptation) policies

The report already includes all examples identified in relation to impacts in adaptation policies and contributions to policies (Sections 1.4 and 2.5 respectively).

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[148] 108193
[149] 106248
[150] 108193

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Annex 3: Lessons learned from implementation

On project design

- **Disbursement mechanism and frequency can make the difference in project implementation**. Another interesting element that has been reported for either having a positive or negative impact on project implementation is related to the frequency of disbursements. For instance, for a regional project on water security and climate change, the grantee recognized that "*the design of the budget and the transfer of the total amount of the project at the beginning of it, favored its execution avoiding delays due to lack of liquidity to meet the expenses in the time required and, on the other hand, avoided the generation of additional losses for exchange differences and costs related to the respective monetary transfers[151]*". On the contrary[152], when upfront payment was not the agreed-upon mechanism, the lack of liquidity generated additional burdens to grantees and could be an element affecting the achievement of activities according to the work plan.

On implementation

For IDRC

- **Visits by the PO to project sites have a positive impact on the project administration as it fosters understanding of the local context where the project is implemented.** Meeting project partners on the ground and having first-hand observations are key components for adequate follow-up and for project monitoring duties. POs can appreciate the circumstances under which the grantees implement the project components[153].

- **"Due diligence" on grantees' financial situation for project non-cost extension could reduce risks for effective closure of project activities.** Some grantees, mainly NGOs, might have liquidity problems that could compromise the adequate implementation of activities under a non-cost extension. For instance, in the project led by the local NGO Promoción del Desarrollo Sostenible (IPES)[154] in Peru, there were significant problems when a non-cost extension was requested, but their organization lacked the funds for its implementation.

- **Additional considerations during project implementation are needed when projects include the acquisition of equipment or the development of infrastructure.** For example, new high-processing computing equipment was acquired for climate and hydrological modeling[155] without analyzing the conditions for its proper operation[156]. Greater precautions might be needed when a project includes the development of infrastructure, such as verification that the grantee has previous experience. From these examples, it was learned that the grantee should expand the scope of the risk assessment.

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[151] 107084

[152] 107084

[153] This was not the case in the project in Aba (Nigeria) 105839, which negatively affected the PO's understanding of the project.

[154] 104347

[155] 107084

[156] Continuous sources of power and electricity, cooling system and room with special conditions.

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- **Project partners' internal procedures and policies might negatively impact the implementation of projects, generating important delays**. Partners are usually chosen by their institutional competencies and strengths, and sometimes not much attention is paid to internal procedures related to academic processes as well as administrative and financial policies. For example, the Master's Degree Program in Urban Management and Development, designed at the Asian Institute of Technology in Bangkok[157], suffered considerable delays in starting up due to internal practices associated with launching a new educational program, and later due to administrative and financial policies, as the Institute made unplanned use of financial resources.

On methodologies

- **The lack of capacity of project teams in specific methodologies can have negative impacts on the results and research products.** This often happened in projects where the grantee had never used the participatory action research (PAR) methodology[158], and this limited the delivery of the expected objectives. On the contrary, when training was provided based on the needs of grantees, it was a big support to the project in terms of the analysis and synthesis of the data, and it had a positive effect on project implementation.

On project sustainability

- **When projects seek to test pilot productive activities, it is advisable to ensure integration within the government planning and budgeting cycle to ensure ongoing financial sustainability**. In Jakarta[159], four pilot projects were implemented to provide alternative economic activities to the city's poor that also benefited the environment. These pilot projects had indirect positive economic effects, particularly savings in terms of health care, but they were not sustainable in the long term and would have benefited from government support.

On policy influence and regional upscaling

- **Promoting longer-term projects could have a positive impact on influencing policies and in implementing adaptation strategies.** To have effective policy impact and scaling out and up requires more time than the usual three-year project duration. For some action-research projects[160], time was reported to be a limiting factor to achieve concrete impacts. Though project design can help to achieve impact on policies, it needs to be acknowledged that there are specific conditions in developing countries, such as constant rotation of local authorities and changes in priorities, that make it difficult to achieve impacts in the short term.

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[157] 106960
[158] 105839, 104683
[159] 103796
[160] 105839, 108193

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- **Appropriate planning and budgeting favour scaling up at different levels.** Some projects that included an objective related to regional scaling up have reported difficulties in achieving it[161]. Upscaling is not necessarily the next natural step after testing approaches on specific sites; there is a need for additional resources and specific planning to achieve that aim.

On strengthening research

- **Balance dialogues and knowledge-sharing activities with more traditional research**. In Cotonou (Benin)[162], the social learning process of the project was overemphasized at the expense of the "research" component. While stakeholder platforms may be invaluable for adaptation, they must be measured against the importance of more traditional research inputs that will help inform responses to climate change.

- **To build new scientific knowledge at the local level, it is important to involve local researchers.** In several projects[163] this was not the case and the research component was developed by foreign universities. For instance in Aba, Nigeria[164] the project did not involve local researchers and this affected the sustainability of the project. A good example of how this could be avoided was from Dakar[165], where the project was led by the Université Laval from Québec in Canada and the project involved local studies and research institutions for building local capacities for future research actions.

- **Partnering with universities can be an effective strategy for overcoming the challenge of collection and analysis of data from different countries and/or locations.** In a regional project on water security and climate change covering Central America and the Caribbean[166], the collection of data for performing the intended regional analysis was conducted successfully since the grantee was able to establish agreements with universities to involve students as interns and research associates. This scheme helped to maintain activities and gather information at a distance with people familiar with their surroundings and with a constant presence in the pilot study sites.

On grantee selection and other implementing partners

- **Open competitions provide more opportunities to select the best organization for implementing projects.** In open competitions, IDRC can verify partners' experience in dealing with methodological or partnership issues. Funding by invitation can have its risks and this was the case in some projects[167] where the capacity of the grantee was overestimated in terms of dealing with relationships with LAC partners. This often required further effort to closely monitor it.

- **New partnerships for implementing projects have proven to be challenging.** Most of the projects analyzed were implemented among a group of institutions that in most cases have

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[161] 106960, 105836
[162] 105815
[163] 105815, 105839 104908
[164] 105839
[165] 104908
[166] 107084
[167] 105185

never worked together. Depending on the agreed-upon structure, each partner is responsible for activities in one region, country or theme. Independently of the nature of the agreement, there were challenges in actually integrating teams from different organizations, countries and working styles[168]. There were cases when the lead organization based in the "north"[169] partnered with local institutions that did not have the capacity or expertise to develop the expected activities, resulting in major delays in project implementation.

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[168] 104397
[169] 105838

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