Research for climate change adaptation

Climate change is being felt globally, particularly in developing countries, with impacts in the form of more frequent and severe flooding, extreme weather, desertification, and rising sea levels, amongst others. These impacts are ultimately affecting water availability, food security, and livelihoods for millions of vulnerable people around the world. While more needs to be done to reduce greenhouse gases globally, communities, governments, and companies alike are already being faced with the challenge of adapting to a changing environment.

IDRC's work on climate change adaptation

IDRC is a pioneer and key funder of research on climate change adaptation in developing countries. The Centre has managed more than CA$190 million in programming in this emerging field since 2006, the year that "adaptation" first appeared on the COP agenda. Over the past decade, IDRC has strengthened research capacity for 165+ institutions and supported 1000+ researchers from more than 70 developing countries across Africa, Asia, and Latin America and the Caribbean.

The IDRC Climate Change program (2015-2019) funds research to find and test solutions to climate change in cities, leads innovations in private sector financing for adaptation, and supports four large, multi-country, and interdisciplinary research consortia through the Collaborative Adaptation Research Initiative in Africa and Asia (CARIAA) – a jointly funded initiative between IDRC and the UK Department for International Development (DfID). These four consortia are working in climate change hot-spots across Africa and Asia, including Himalayan glacier-fed watersheds, major river deltas, and semi-arid regions. The field of adaptation research has rapidly evolved over the last ten years, as has IDRC's programming on this topic:

- The Climate Change Adaptation in Africa (CCAA) program (2006-2012) was a joint initiative with the UK Department for International Development (DfID), focused on participatory action research and community based adaptation.

- The Climate Change and Water (CCW) program (2010-2015) focused on inter-disciplinary research including an emphasis on natural sciences and economics of adaptation, and covered a range of geographies such as coastal regions, mountainous areas, cities, and drylands.

- Through a partnership with the Government of Canada, CA$37.5 million in Fast-Start Climate Finance (2011-2014) supported adaptation research centres in identifying and/or testing adaptation solutions.

- The International Research Initiative on Adaptation to Climate Change (IRIACC) (2011-2015) was jointly funded between IDRC and the Tri-Council and aimed to help vulnerable populations in Canada and in developing countries adapt to climate change.

Generating solutions to climate change adaptation

IDRC is leading the development of climate change adaptation options for different environments by: 1) funding policy-relevant, demand-driven, and Southern-led research, and 2) bridging key actors from different sectors to inform large-scale impact. Examples include the adoption of water conservation measures in semi-arid areas (e.g. drip irrigation and water capture/storage) and protecting people and assets in areas that are at risk of flooding (e.g. improved drainage and early warning systems). In December 2015, IDRC will be launching an interactive online catalogue of 250+ adaptation options stemming from IDRC-funded research since 2006 for use by practitioners, policymakers, and researchers.

Examples of research impact in the developing world

- Award-winning research led by FHI360 in **Uganda** used mobile phones, FM radio, and community loud speakers to share climate information with more than 120,000 farmers, helping them to better plan, respond, and adapt agricultural practices to deal with prolonged drought. Pilot intervention districts saw a 67% reduction in loss and damage, resulting in gains of up to $325 per household per year (read more, see project brief).

- Research led by the Punjab Agricultural University in the **Indian Punjab** provided 525 farmers with simple, low-cost innovations, including tensiometers that help measure soil moisture, to guide irrigation practices. Farmers reported an average of 22% water savings and 24% energy savings, with no decline in yields from using less irrigation. Because of the project's early success, the proven innovations have since been scaled up to include 5000 farmers in 30 villages (read more).

- Research led by Development Workshop Angola used satellite imagery to develop a set of risk maps for current and future conditions in the coastal cities of Luanda, Cabinda, Benfuela, and Lobito, Angola. The maps identify areas that are most vulnerable to flooding, erosion, sea level rise, storm surges, and salt water intrusion. Municipal officials are increasingly using these to inform urban planning decisions, including restricting new development in high risk areas and identifying when and where interventions are needed (read more, see project brief).

- The Private Financing Advisory Network (CTI PFAN), a multinational public-private partnership, is drawing on its experience and success in matching entrepreneurs working in renewable energy and climate change mitigation with private sector investors to address adaptation. PFAN is now testing a new business model that aims to secure private sector financing for viable adaptation innovations in **Africa** in agriculture, water, forestry, and urban development. This model is already showing signs of success, with negotiations currently underway between investors and entrepreneurs involved in 10 adaptation projects that were presented at the 2014 Africa Climate Change Investor Forum.

- The Pathways to Resilience in Semi-Arid Economies (PRISE) research project is minimizing risks and maximizing opportunities for economic development in semi-arid lands, within the context of climate change. Working in six countries across **sub-Saharan Africa and South Asia**, findings are positioned to inform policy and investment decisions by governments, businesses, and trade bodies that help to enable climate-resilient and equitable economic development (read more).

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