Climate Capacity Building: Risk Anticipation and Minimization

Brazil East Africa Peru India Climate Capacities (B-EPICC)

BACKGROUND

Climate impacts already have tangible and measurable consequences for natural and human systems around the globe. The livelihoods of the most vulnerable people in developing countries are particularly affected.

The B-EPICC project focuses on exploring a variety of climate change-linked factors, and their impacts in human lives and livelihoods. Its focus is on applying cutting edge climate change research to lower precarity in people's lives through informed decision-making. It aims to provide opportunities for project partner countries to reduce the gap between climate research and its application in policy and societal decisions, particularly regarding agriculture, hydrology, biodiversity, and migration issues. Consequently, the project aims to identify, on a collaborative basis, how results from state-of-the-art climate impact research can be applied to national and local needs.

Core issues the project addresses include: How can early forecasting of the monsoon, long-term prediction of El Niño, seasonal prediction models and climate scenarios assist agricultural management? How can forest regeneration and reforestation contribute to biodiversity? Or, how does migration arise, and how can it be addressed, in connection with climate-driven changes to land and forests?

AT A GLANCE

■ **PROJECT NAME**
Brazil East Africa Peru India Climate Capacities (B-EPICC)

■ **DURATION**
Phase 2: Brazil East Africa Peru India Climate Capacities (B-EPICC) – 2022-2023
Phase 1: East Africa Peru India Climate Capacities (EPICC) – 2018-2021

■ **PROJECT AIMS**
The project seeks to work with partners to strengthen resilience against disruptive weather phenomena and climate change impacts at the national, regional, and local level in four partner countries: Brazil, Ethiopia, Peru, India (plus Tanzania in Phase 1).

■ **TARGET GROUPS**
The target groups for Phase 2 are international, national, regional and local actors, especially those working in the fields of research, education and policy in Brazil, Ethiopia, Peru and India. Actors working in climate modeling, adaptation planning and implementation, risk or disaster management, agriculture, hydrology or water, forests and biodiversity, as well as migration might particularly benefit from involvement with the project.

■ **FUNDING**
The International Climate Initiative (IKI) of the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) funds the project with 6.869.213,15 Euros total (Phase 1 & 2).

■ **PARTNERS**
The project is situated at the Potsdam Institute for Climate Impact Research (PIK) in Germany Build and has worked in close collaboration with India's The Energy and Resources Institute (TERI), the Deutscher Wetterdienst (DWD, German Meteorological Service) and countless other research, policy, governmental, non-governmental and community partners.

B-EPICC
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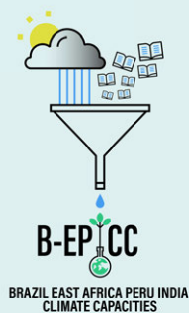
APPROACH

The project, in its second phase, encompasses six modules to be developed according to the demands and priorities of partner countries.

CHALLENGES

The application and relevance of B-EPICC results will significantly depend on the engagement that project partners invest in the project, as B-EPICC's aim is to continue to co-produce research-based capacities to address climate change through adaptive measures.

OPPORTUNITITES

There are significant opportunities for those who engage with the B-EPICC project. In its first phase, it has already contributed to better agricultural planning related to accurate monsoon and El Niño forecasting. New knowledge about better agricultural management under conditions of climate change has also been generated, as have accessible data visualization tools concerning climate impacts in partner countries. Concerning migration, risk reports and other outputs have fed into relevant policy processes.

B-EPICC's trans-disciplinary and multi-country approach will continue to be a springboard for advanced research in the area of climate capacity building.

EXPECTED OUTCOMES & COUNTRY FOCI

Overall, the project will use modeling, mapping and other techniques to better understand climate change dynamics and impacts in partner countries, and to use this information for purposes of disaster risk management and adaptation planning and implementation in key sectors.
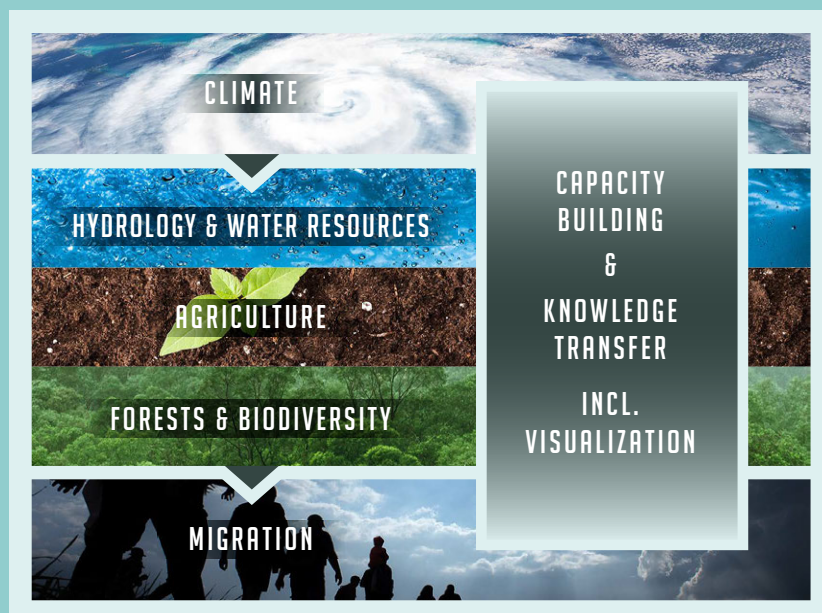
CLIMATE

In the climate module, forecasts for the Indian Summer Monsoon and predictions of the El Niño phenomenon, as well as seasonal meteorological predictions, are made. In addition, broader and longer-term trends caused by anthropogenic climate change are scaled-down into regional scenarios.

HYDROLOGY AND WATER RESOURCES

The seasonal meteorological predictions developed in the climate module are used to determine the impacts of climate change on the water sector, and particularly the water-food-energy nexus. Climate change impacts on hydrology and water are quantified at different scales.

AGRICULTURE

As in the hydrology and water resources module, the agricultural module uses the meteorological data generated to determine the impacts of climate change on the agricultural sector. Assessments of the vulnerability of agricultural systems to climate impacts at different levels and scales are provided, also to aid in the identification of focus regions and initiatives for climate adaptation in the agri sector.

FORESTS AND BIODIVERSITY

A biodiversity module is added in the second, B-EPICC, phase. It adds to existing climate impact data systems in select partner countries by focusing on forest regeneration and reforestation, as well as their role in biodiversity protection.

MIGRATION

The migration module concerns the nexus between climate change impacts and migration dynamics, including how migration in turn affects security concerns. In the second project phase (B-EPICC), the focus is on land and forest change and how these and their changing use in turn interact with migration and, potentially, conflict.

CAPACITY BUILDING AND KNOWLEDGE TRANSFER

This module refers to the strengthening of climate adaptation capacities in all partner countries. The information generated will be fed into existing web-platforms and applications. Along with scenarios and forecasts, GIS applications, maps and risk reports, the project will develop scientific publications, policy briefings, press releases and political advice to stakeholders. To enhance outputs, workshops, study stays and guest expert visits will be arranged.

BRAZIL Brazil is new to the project in Phase 2. The project will work with partners on climate modeling, especially around algorithm-based forecasting of weather phenomena such as monsoon and El Niño. Climate modeling will also inform further data collation and modeling in the hydrological and water sector to better inform adaptation practice and risk management in this and related sectors (food, energy). Concerning forests and biodiversity, the focus is on informing conservation and adaptation strategies to facilitate their regeneration. With migration, the focus is on collating policy-relevant information on the links between climate impacts, changes to land and forest cover (and use), and their further impact on migration and conflict potential.

ETHIOPIA Ethiopia is also new to the Project in Phase 2. The project will work with partners on climate modeling, especially around algorithm-based forecasting of the monsoon and the El Niño phenomenon. Climate modeling will also inform further modeling, data collation and policy advice in the hydrological/water and agricultural sectors, as well as in relation to forest and biodiversity regeneration. A major assessment report modeling links between climate-related impacts, human migration and conflict potential will also be prepared.

PERU Work in Peru continues in Phase 2 of the project. The project will further work with partners on climate modeling, especially around the El Niño phenomenon and its prediction. Climate modeling will also inform adaptation and risk planning and implementation in sectors including hydrology/water, forests and biodiversity. Assessment reporting on migration and modeling around agriculture were concluded in Phase 1 and Phase 2 will see stakeholder training on these topics.

INDIA India also continues in Phase 2 of the project. Early forecasting of monsoons remains a priority, with North India added regionally to this effort. Partner organization TERI will actively support this work. In the agriculture and hydrology sector, the project has worked on vulnerability assessments and risk management. In the migration field, the project advanced understanding of how climate change influences migration decisions or rural agricultural households.

TANZANIA In project Phase 2, we will have finished our project work in Tanzania. Phase 1 focused in particular on co-developing seasonal forecasting of agricultural crop yields to aid in advancing agricultural planning and risk management, including through crop insurance solutions. A major assessment report linking climate change impacts and migration dynamics in Tanzania was prepared with stakeholder involvement.

SHOWCASING MAJOR PROJECT OUTCOMES 2018–2021:
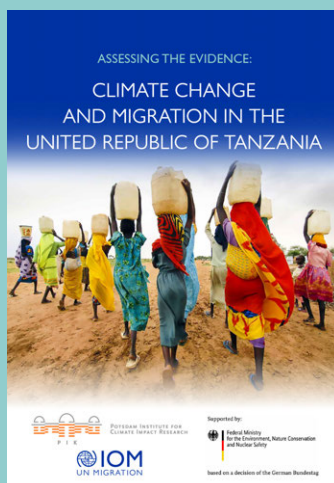
MIGRATION:
RISK REPORTS ON THE CLIMATE-MIGRATION NEXUS

For all three partner countries of the first project phase, Tanzania, Peru, and India, extensive assessment reports on linkages between climate change and migration have been published (and translated, at least in summary, into local languages). They combine the expertise of the project's social and natural scientists and contribute to a better evidence base on this complex matter. Input from all three reports fed into a background paper of the Global Report on Internal Displacement 2021, published by the Internal Displacement Monitoring Centre (IDMC). An overview of all risk reports on climate change and migration can be found on the *project website*.

CLIMATE:
MONSOON FORECASTS THAT REACH THE INDIVIDUAL FARMER IN INDIA

New monsoon forecasts in India

The monsoon is critical for the livelihoods of millions in India. It is, thus, important to understand the phenomenon and how it changes under climate change. EPICC research has contributed to a better understanding of the processes underlying the Indian Summer Monsoon in Central India. The new approach leads to reliable long-term forecasts of the onset and withdrawal date of the monsoon (s. the *PIK monsoon page*). This already helps farmers to plan their growing season, as shown in a movie by German broadcaster Deutsche Welle.


CAPACITY BUILDING AND KNOWLEDGE TRANSFER:
THE WEB PORTAL CLIMATEIMPACTSONLINE

ClimateImpactsOnline is a web portal that "illustrates the possible impacts of climate change on various countries in different regions of the world on sectors like agriculture, forestry, tourism and health care." Visualization is a key technique to ensure broad accessibility to climate data and information for different types of users.

Further project related publications and conferences:
www.pik-potsdam.de/en/institute/departments/activities/epicc/publications

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**BRAZIL EAST AFRICA PERU INDIA
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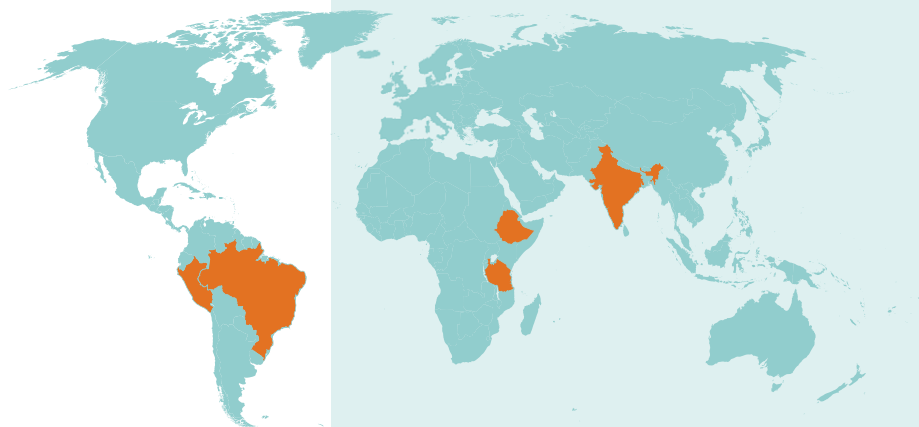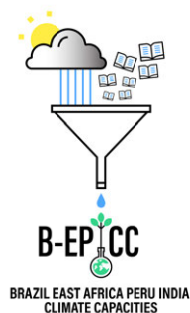
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