

International Conference for Sustainable Development 2019: Good Practice:
Models, Partnerships, and Capacity Building for the SDGs
Theme: SDG Partnerships and Whole-of-Society Engagement

Dannie Dinh, Program Officer, The International Research Institute for Climate and Society,
Columbia University (corresponding author)

dannie@iri.columbia.edu

(832) 704 8669

61 Route 9W, Monell Building

Palisades, New York 10964

John Furlow, Deputy Director for Humanitarian and International Development, The
International Research Institute for Climate and Society, Columbia University

**Developing a framework to identify priorities for climate services at national scale: A
top-down approach for the agricultural sector**

Abstract: As countries begin taking action to meet their commitments to adaptation or climate resilient development, many are finding that the information they need to inform decision-making is not available or not useful. The importance of “Climate Services”— the production of useful climate information, as well as the translation of that information for use by decision makers—will continue to grow. Given limited time and resources, investments in climate services and adaptation have to truly support decision-makers’ needs. In Vietnam, the International Research Institute for Climate and Society (IRI), under the Earth Institute at Columbia University, is implementing the Adapting Agriculture to Climate Today, for Tomorrow (ACToday) project, a Columbia World Project. ACToday is collaborating with the De-RISK project implemented by the International Center for Tropical Agriculture (CIAT) on methodologies to identify climate service needs, and prioritize them to maximize investment results and improve project results. We are working with government officials to identify where climate variability and change pose risks to the successful implementation of these strategies. We are also working with decision makers and the Vietnamese Meteorological Service to develop services that can alleviate climate risks and improve the effectiveness of national strategies. Together, ACToday and De-RISK are working both from the top-down and from the bottom-up to ensure that national policies support local action, and that local actors have the resources they need to succeed, in turn feeding into the success of the national policies.

Introduction

Climate change is recognized by the 2030 Agenda for Sustainable Development as one of the greatest modern challenges, with “adverse impacts undermine the ability of all countries to achieve sustainable development.”¹ From increases in global temperature and extreme weather events to sea level rise and ocean acidification, the areas most vulnerable to climate change impacts also tend to be the least developed, making them even more exposed to risks with fewer resources for preparation or response and recovery. While the call to combat climate change and impacts are specifically addressed in Sustainable Development Goal (SDG) 13 of

¹ United Nations, *Transforming Our World: the 2030 Agenda for Sustainable Development* (Geneva, Switzerland: United Nations, 2015).

the 2030 Agenda for Sustainable Development,² it is difficult to separate the impacts of climate on nearly all of the other 16 SDGs. Additionally, many of the countries are also signatory parties to the Paris Agreement, with their own commitment to develop climate adaptation plan to respond to climate change.³ As countries begin taking action to meet their commitments to adaptation or climate resilient development, many are finding that the information they need to inform decision-making is not available or not useful.⁴ This paper will discuss how the Adapting Agriculture to Climate Today, for Tomorrow (ACToday) project, led by the International Research Institute for Climate and Society (IRI) at Columbia University, is supporting the policy planning and implementation actors in Vietnam at the top national government as well as collaborating with partners like the De-RISK project to reach the extension workers working with farmers at the local level, to develop a framework to support Vietnam's achievement of SDG2 through enhanced climate knowledge and services.

The climate information challenges in climate adaptation and sustainable development

Nearly one in three of all workers worldwide work in the agriculture sector, while 2.5 billion people living in rural areas derive their livelihoods from agriculture.⁵ This relationship increases agricultural communities' vulnerability to climate-related risks, as well as places additional stress on a global food system that is already stretching to meet the rising demands of growing populations.⁶ While there are many options for adaptation to a changing climate, these options come with costs—whether transaction, opportunity, unintended consequences, or residual costs. Large investments have been made toward adaptation and resilience to climate change mainly based on long-term, multidecadal, global climate change projections.⁷ But while helpful in guiding broader mitigation and development strategies, policies, and investments to address larger trends of climate change, these projections do not provide a complete picture.⁸

Climate change impacts are not contained to a singular further-down-the-road future: much of the impacts will be felt through the incremental changes that are already occurring now, such as in the frequency and intensity of extreme events. Nor will all impacts be felt consistently and to

² United Nations, *Transforming Our World*.

³ Angie Dazé et al, *Alignment to Advance Climate Resilient Development Overview Brief 1: Introduction to Alignment* (NAP Global Network, 2018).

⁴ Lisa Goddard et al, "The International Research Institute for Climate & Society: Why, What and How," *Earth Perspectives* 1, no. 1 (June 2014): 10. doi:10.1186/2194-6434-1-10.

⁵ Food & Agriculture Organization (FAO) of the United Nations, *FAO World Food and Agriculture - Statistical Pocketbook 2018* (Rome, Italy: FAO, 2018). <http://www.fao.org/3/CA1796EN/ca1796en.pdf>

⁶ Elisabeth Vogel and Rachelle Meyer, "Climate Change, Climate Extremes, and Global Food Production—Adaptation in the Agricultural Sector," in *Resilience: The Science of Adaptation to Climate Change*, ed. Zinta Zommers and Keith D. Alverson (Amsterdam, Netherlands: Elsevier, 2018), 31-44.

⁷ Lisa Goddard et al, "Why, What, and How."

⁸ Hannah Nissan et al., "On the Use and Misuse of Climate Change Projections in International Development," *Wiley Interdisciplinary Reviews: Climate Change* 10, no. 3 (March 2019), doi:10.1002/wcc.579.

the same degree across all ecological zones and geographical regions.⁹ While longer-term climate models may be able to strongly project increases in extreme events like drought, heatwaves, tropical cyclones, and extreme rainfalls, these events are also tied to interannual climate variability and ever-changing human activities and influences.¹⁰ Focusing resources and attention solely on the long-term trends or global projections may lead to missed opportunities to invest in adaptation and increase resilience to extreme events and other immediate climate challenges for vulnerable communities at the local level.

While there are still uncertainties in how climate change will impact agriculture worldwide in the next few decades, the influences of climate change in terms of year-to-year and season-to-season variability in temperature and rainfall can be predicted with higher certainty and observed in real time. These variabilities in climate patterns can result in dramatic losses of crop yield and yield quality,¹¹ which in turn would have pronounced impacts on incomes and livelihoods of farmers—particularly smallholder and poor farmers—then ripple through the rest of the food system and economy. Decision-makers at all levels, from local risk managers to national policymakers to international humanitarian aid agencies, require climate forecasts at sufficient levels of certainty and precision to trigger immediate actions like investing in drought tolerant seeds and deploying disaster relief funding. Farmers, for example, need information to enable them to act now—on what type of seeds to sow, when to sow, whether to anticipate rain or to irrigate, or when to harvest—not just what climate conditions to expect at the end of the century. But good forecasts require good data that is not always available or accessible, especially in developing countries and vulnerable communities that need it most.

The growing role of climate information and climate services in an uncertain world

Increasing the availability of and access to climate data alone would not solve the gaps in climate production and demand, according to a gap analysis led by the IRI in 2006. Climate information must be produced in response to the specific needs of different communities of users—which can then create trust and raise demands—and exist within an enabling policy environment to incorporate such information into local decision-making as well as national policies and strategies.¹² Furthermore, not all climate information would be fit to support all types of decision-making. Without training and support to adequately understand and differentiate between various climate projections' timescales and limitations, climate information users may

⁹ Elisabeth Vogel and Rachelle Meyer, "Climate Change, Climate Extremes, and Global Food Production—Adaptation in the Agricultural Sector," in *Resilience: The Science of Adaptation to Climate Change*, ed. Zinta Zommers and Keith D. Alverson (Amsterdam, Netherlands: Elsevier, 2018), 31-44.

¹⁰ Adam H. Sobel and Michael K. Tippett, "Extreme Events: Trends and Risk Assessment Methodologies" in *Resilience: The Science of Adaptation to Climate Change*, ed. Zinta Zommers and Keith D. Alverson (Amsterdam, Netherlands: Elsevier, 2018), 3-12.

¹¹ Elisabeth Vogel and Rachelle Meyer, "Climate Change, Climate Extremes, and Global Food Production."

¹² The International Research Institute for Climate and Society, "A Gap Analysis for the Implementation of the Global Climate Observing System Programme in Africa" in *Report No. 06-01, 39pp* (New York, U.S.A: International Research Institute for Climate and Society, 2006).

misunderstand and misapply the climate forecast, or deem the forecast inaccurate and not trustworthy altogether.¹³ Thus, to truly enable users with different backgrounds and levels of climate knowledge to make decisions and avoid misapplication, the climate information produced must respond to the decision-making needs of the intended audience. It also must be tailored, translated, and transferred for use through climate services.

Increasingly, climate services—such as creating an accessible climate tool or providing training to a network of extension workers to support farmers at the local level— are receiving recognition as an essential component of climate adaptation. Climate services already have a demonstrated record of value in supporting decision-making across sectors most vulnerable to climate change, contributing to better management of climate-related shocks and strategic planning of climate adaptation and sustainable development.¹⁴ In many case studies of climate services for agriculture around the world, it is important to bring together climate and agricultural and other sectoral expertise to work towards the co-production of climate information and co-translation of that information into useful climate services.¹⁵ And to be most impactful beyond the local level, these climate services must be embedded in decision-making processes, especially at the top government level where various national adaptation and development strategies are formulated and enacted.¹⁶

Climate services must start with the national meteorological agency,¹⁷ which has access to national records of observational climate data and the mandate to produce and disseminate downscaled climate information tailored to the needs of users of different sectors.¹⁸ However, in developing countries, in addition to facing various gaps in data availability and quality, national meteorological agencies often find themselves stuck in a difficult position: they are expected to deliver good climate information and prove their value, yet lack the funding and resources to raise their capacity and accomplish their tasks. Without good services and products and user demands for their services and products, the meteorological agencies' perceived value and the subsequent funding they receive remains low.¹⁹ Through collaborations and partnerships with other sectoral government agencies and research and development organizations, national meteorological agencies can overcome their data and skill constraints, build up capacity to

¹³ Hannah Nissan et al, "On the Use and Misuse."

¹⁴ James W. Hansen et al, "Shaping Global Agendas on Climate Risk Management and Climate Services: an IRI Perspective," *Earth Perspectives* 1, no. 1 (June 2014): 13. doi:10.1186/2194-6434-1-13

¹⁵ Arame Tall et al, *Scaling Up Climate Services for Farmers*.

¹⁶ Aram Tall et al, *Scaling Up Climate Services for Farmers: Mission Possible*, CCAFS Report no. 13 (Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security, 2014).

¹⁷ Andrew Kruczkiwicz et al, *Review of Climate Services Governance Structures: Case Studies from Mali, Jamaica, and India*, CCAFS Working Paper no. 236 (Wageningen, Netherlands: CGIAR Research Program on Climate Change, Agriculture and Food Security, 2018).

¹⁸ Tufa Dinku et al, *The ENACTS Approach: Transforming Climate Services in Africa One Country at a Time* (New York, U.S.A: World Policy Institute, March 2016).

¹⁹ John Furlow et al, "Supporting Farmers Facing Drought: Lessons from a Climate Service in Jamaica" in *Resilience: The Science of Adaptation to Climate Change*, ed. Zinta Zommers and Keith D. Alverson (Amsterdam, Netherlands: Elsevier, 2018), 227-235.

better respond to users' needs, and support users in understanding and incorporating climate information into their decision-making processes. By improving the service they provide and demonstrating that they can meaningfully contribute to decision-making in economically important sectors, meteorological agencies can improve their standing and support in national governments.

Engaging national stakeholders to prioritize and develop climate services for climate adaptation and sustainable development in Vietnam

Drawing on our experience in applying climate knowledge and research to address the aforementioned challenges, the IRI is leading the ACToday project, which aims to create climate solutions that help end hunger, achieve food security, improve nutrition, and promote sustainable agriculture in six countries: Guatemala, Colombia, Senegal, Ethiopia, Bangladesh, and Vietnam.²⁰ Once a war ravaged developing country, Vietnam is now one of Southeast Asia's fastest-growing economies poised to achieve developed country status by 2020. At the same time, Vietnam is also ranked among the five countries likely to be most affected by climate change. Many parts of the country are already seeing a range of impacts from climate change: sea level rise, salt water intrusion, and an increase in the frequency and severity of extreme events. These events can in turn impact agricultural production, which goes on to threaten food availability and prices, severely impact GDP, reduce incomes and livelihoods, and exacerbate poverty and nutritional deficiencies.

As the Government of Vietnam is undertaking several efforts to achieve SDG2 targets and reform its agriculture sector, the ACToday project in Vietnam seeks to understand how these policies intersect, how climate may undermine implementation efforts, and identify opportunities to improve results through better coordination and incorporation of climate information. By focusing on SDG2 and the actors responsible for implementing them, we look to embed climate information and considerations at the top planning level that can trigger actions to support the most vulnerable populations critical to sustaining key components of the country's economy. ACToday Vietnam is working with the government agencies responsible for developing and implementing national policies related to agriculture, nutrition, climate, and disasters to build their capacities to better serve stakeholders and to better support national development and adaptation plans.

In 2018-2019, we are focusing our activities to engage and build working relationships with in-country stakeholders and develop an understanding of the policy landscape and the actors responsible for food and nutrition in the country, which would enable us to steer our work going forward. In March 2019, the ACToday project co-organized a national policy workshop to understand Vietnam's approaches to improving food security and nutrition in the face of a

²⁰ "Adapting Agriculture to Climate Today, for Tomorrow," the International Research Institute for Climate and Society, accessed July 20, 2019, <https://iri.columbia.edu/actoday/>

International Conference for Sustainable Development 2019: Good Practice:
Models, Partnerships, and Capacity Building for the SDGs
Theme: SDG Partnerships and Whole-of-Society Engagement

changing climate. The workshop's objective was to examine Vietnam's strategies for achieving SDG2 on food and nutrition, the agriculture component of the National Adaptation Plan (NAP) and other important national policies, as well as identify areas where climate and weather risks may undermine the success of those policies. The invited participants represented government offices that are directly responsible or hold high stakes in the planning and implementation of these national plans and strategies, such as the Ministry of Agriculture and Rural Development (MARD), the National Institute of Nutrition (NIN), the National Center for Hydrological and Meteorological Forecasting (NCHMF), the Institute for Meteorology, Hydrology, and Environment (IMHEN), and the People's Farmer Union (VNFU).

Our graduate research interns placed directly at our partners' offices such as NCHMF and the International Center for Tropical Agriculture (CIAT) to work on smaller research objectives also contribute substantially to our understanding of the policy landscape and network of champions and actors. The information gathered at stakeholder meetings, national workshops like one in March 2019, and from our graduate student researchers help inform ACToday to develop strategies to reduce those risks and continue to help Vietnam develop new approaches to climate adaptation in the agricultural sector to target food security, nutrition, and sustainable food systems. These strategies would then be presented to an "advisory committee" comprised of identified champions and actors, who will support the prioritization of activities and efforts and enable us to develop our work plan accordingly. This approach will enable ACToday to work within the systems Vietnam has created, increasing the likelihood that our support will be effective and self-sustaining beyond the duration of the project.

Through our in-country engagement, we recognize the importance of bringing together NCHMF, the lead meteorological agency, and IMHEN, the research institute responsible for climate change research and long-term climate change projections. Our continued engagement with both NCHMF and IMHEN helps us develop trust and better communications with these agencies, resulting in their commitment to work more closely with each other to support and participate in ACToday training and research activities. ACToday is supporting NCHMF and IMHEN in building their technical capacity through knowledge sharing, training, and co-development of forecasting methodologies as well products and tools tailored to users' demands—such as those identified at the March 2019 policy workshop and prioritized by the advisory committee.

Our work in Vietnam is guided by the value chain of climate services, with all activities to be done in close collaboration with Vietnamese partners and will serve to build national capacity to continue these climate services efforts in the future. In parallel with building the capacity of meteorological service to produce and deliver climate information, we will also work to build the capacity of MARD to apply that data in support of specific communities and crops, and that of NIN to better understand the role of climate and seasonality in nutritional achievement. We will continue working with all the partners to evaluate our performance and refine service

development. We will also work on institutionalizing the uptake of the successful services, document our performances, and look for opportunities for scaling successful approaches.

Learning from experience

The ACToday Vietnam project presents a fitting opportunity for us to apply what we had learned from previous successful experiences. One such case is that of Jamaica. In 2013, at the request of Jamaica's then Prime Minister Portia Simpson-Miller to consolidate several unfinished climate adaptation policies into one that would cover the entire economy, the U.S. Agency for International Development (USAID)—along with the Climate Change Division (then in the Ministry of Water, Land, Environment and Climate Change; now under the Ministry of Economic Growth and Job Creation) and the Planning Institute of Jamaica (under the Ministry of Finance and Planning)—designed a national stakeholders-driven policy workshop that follows USAID's Climate Resilient Development Framework.²¹ Rather than starting with potential impacts and changes in climate, this approach emphasizes starting with identifying the desired development outcomes, then the necessary inputs and conditions for achieving those outcomes as well as climate and non-climate stresses and constraints that undermine the efforts, then finally the possible solutions to alleviate those stresses and constraints and the actors necessary to plan and implement the solutions.

After the participants discussed the most pressing needs faced by Jamaican decision-makers and the climate stresses that undermine priority economic sectors identified in Jamaica's national development strategy, it became clear that the lack of weather and climate information was a common constraint across many sectors. In a capacity assessment of the Jamaican Meteorological Service (JMS) that followed, USAID and IRI found that JMS were reluctant to produce tailored climate information not due to lack of skills, commitment to serve, or lack of demand, but due to receiving so many requests without the necessary resources to keep up with, which led to JMS restricting their output to a general monthly bulletin to avoid prioritizing certain requests over others. The users and clients, in turn, became frustrated and unsatisfied, and stopped trusting JMS or channeled available resources to attempt to produce the information they need from JMS on their own. With "seed" funding from USAID and technical support from IRI, JMS co-convened a workshop with their sectoral clients to discuss how they can better offer services to support decision-making.²²

This stakeholders-driven process led to the identification of drought as a constraint for Jamaican farmers. This resulted in the co-development of a seasonal drought forecasting service to let farmers anticipate and prepare for drought that launched in January 2014, coincidentally just

²¹ U.S. Agency for International Development (USAID) Global Climate Change Office, *Climate-Resilient Development: a Framework for Understanding and Addressing Climate Change* (Washington D.C.: USAID, 2014). https://pdf.usaid.gov/pdf_docs/PBAAA245.pdf

²² John Furlow et al, "Supporting Farmers Facing Drought"

before Jamaica experienced one of the worst droughts since the 1970s with devastating effects on agriculture and the economy in 2014-2016. The service included a seasonal drought forecasting tool, delivery of forecast updates via text messages, as well as training for agricultural extensions and farmers (facilitated by the Rural and Agricultural Development Agency) to understand and use the tool. The drought tool combines a historical rainfall record and a 3-month retrospective rainfall index with a seasonal rainfall forecast, which puts the forecast into the context of the current conditions (e.g. whether rain in the next 3 months adds to already moist or dry soil) as well in a historical context (e.g. whether the forecasted rainfall is above or below the historical norm). The Jamaican government estimated economic losses of 30% in the agriculture sector in 2014 compared to 2013. According to a survey by the University of Arizona, among farmers with “climate risks,” the average loss in agricultural production in 2014 was 72%, while farmers who attended the “farmer forum” training saw an average loss of 46%, and farmers who attended “farmer forum” and received forecast update texts saw an average loss of 39%. When the drought continued in 2015, farmers who had used the drought service were better able to prepare and manage for the dry conditions, such as by storing water or switching crops. Both personal anecdotes and impact evaluation suggest that the losses in agricultural production in Jamaica would have been greater if not for the new seasonal drought information service.²³

Integration with De-RISK’s bottom-up approach

While we have much less experience working in Vietnam than in the other ACToday countries, we benefit from an extensive network of our past and ongoing collaborators and partners on the ground, such as CIAT, the CGIAR’s Research Program on Climate Change, Agriculture and Food Security (CCAFS) and Agriculture for Nutrition and Health (A4NH) programs. We draw from these relationships and continually seek to engage and align efforts with other international organizations, initiatives, and private sector entities currently working towards similar goals in Vietnam.

ACToday Vietnam is partnering closely with the CIAT-Asia team responsible for the implementation of the Applying Seasonal Climate Forecasting and Innovative Insurance Solutions to Climate Risk Management in the Agriculture Sector in South East Asia 2018-2022 (De-RISK) project in Vietnam. The De-RISK project seeks to develop climate services and seasonal forecasts, design agricultural insurance products, and support risk management policies. As the two projects share similar objectives, the ACToday Vietnam project coordinates efforts with De-Risk to identify cross-sector priorities supporting policy and institutional need, build institutional capacity, conduct national-level scoping assessments, and provide technical training. While ACToday focuses on working through strategies and policies at the national level in a top-down approach, the De-RISK project plans to accomplish its objectives from the bottom up, through sub-national (climatic region) level scoping for targeting climate services in rural

²³ John Furlow et al, “Supporting Farmers Facing Drought”

livelihoods and agri-businesses. Moreover, ACToday's work with NCHMF and IMHEN—the producers of climate information—are complemented by De-RISK's capacity building and technical training for institutions to effectively and efficiently deliver climate services and design insurance products for the agricultural sector.²⁴

Conclusion

Just as climate change and impacts have become a critical consideration reaching across all SDGs, climate information is an indispensable component of climate-resilient sustainable development. The ACToday project is focusing on supporting the achievement of SDG2 by supporting national actors to identify how climate variability and change may pose risks to undermine their efforts, and work with them to design and develop climate services to address and reduce those risks. To that end, ACToday in Vietnam is working with and facilitating dialogue amongst stakeholders and decision-makers at the top national level, and supporting the Vietnamese meteorological agencies to develop services that can alleviate climate risks and improve the effectiveness of national strategies. By supporting the production and delivery of climate information and demonstrating the value of climate services, we help encourage investment in the further development and maintenance of climate services to strengthen capacity and resilience.

Concurrently, we are aligning efforts with other in-country development partners and the private sector. ACToday is collaborating closely with the De-RISK project on methodologies to identify climate service needs at the climatic region level, and develop an inclusive process to prioritize among the potential opportunities to maximize investment results and improve project results. Together, ACToday and De-RISK are working both from the top-down and from the bottom-up to ensure that government actors are empowered with information to make decisions, that national policies support local actions, and that local actors have the resources they need to succeed—which in turn would feed into the success of the national policies and strategies to adapt to climate change and achieve SDG2.

²⁴ De-RISK South East Asia, "2019 Work Plan in Vietnam," accessed January, 2019.