The SEI Initiative on Climate Services

Knowledge and information are crucial for climate action. Vulnerable communities need to know how climate variables such as temperature and rainfall, and timing and severity of storm patterns and climate extremes may change, so they can adapt to protect themselves. This information needs to be timely, high-quality, relevant and accessible.

Meeting these needs is the focus of an emerging field called climate services, which aims to bridge the gap between climate science, policy and practice for adaptation decision-making and disaster resilience.

Climate services draw on a variety of sources: from scientific research and meteorological and climate models, to practical experience and local and indigenous knowledge. They also involve the process of co-producing knowledge and building the necessary skills and capacity of different user groups, both to guide the production and tailoring of climate information (to meet context-specific needs) and to be able to apply that information.

SEI has a strong track record of producing climate knowledge, building capacity and supporting decision-making on development, mitigation, adaptation and disaster risk reduction. This initiative aims to strengthen SEI's contributions to these fields by developing new approaches for the improved design, use and interpretation of climate services, from the local to the national level.

We will work in countries at all levels of development, focusing particularly on adaptation and disaster resilience. A key output will be a new Participatory Framework for Climate Services (PFCS), drawing on existing knowledge from external sources as well as new interdisciplinary research. The initiative will focus on five key activities, all of which will feed into the PFCS:

1. Understanding how climate services can better support decision-making, to ensure the most relevant, scale-appropriate, context-specific information is available;

2. Exploring the long-term institutional arrangements and processes needed to bridge gaps between climate scientists and users, through knowledge co-exploration and co-production.

3. Understanding the factors that make climate communication effective, by using, testing and evaluating innovative formats and channels that can be scaled up (including low-technology solutions and the use of a shared "climate services language");

4. Building capacity for designing, communicating and using climate services; and

5. Co-evaluating climate services with users to develop transferable lessons that can be widely shared.

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Karin André (left), part of the SEI HazardSupport project team, meets with Karlstad municipal officials to identify flood-prone areas on the Klarälven river. The project will develop decision support tools for adaptation to natural hazards in Sweden.

The initiative core team includes multiple disciplines: social geography, anthropology, sociology, environmental science, political science, behavioural science, climate science, computer science and communications. It also encompasses a wide range of skills and experience in building and designing decision support tools and knowledge platforms.

In the sections that follow, we provide some background on climate services, then outline the initiative's four work packages.

A flood – and dearth – of information

One of the greatest challenges in responding to climate change is how to pin down the information needed to understand the risks and plan effective measures to address them. The sheer volume of information available is overwhelming; even the expert reviews and syntheses provided by the Intergovernmental Panel on Climate Change (IPCC) fill hundreds of pages, packed with details. Sorting through it all, and finding the specific information that is relevant to the questions at hand, may be beyond the capacities and resources available to many decision-makers.

There are also major gaps between the questions that decision-makers may be asking, and the answers available. A municipal emergency manager, for example, may want to know what flood risks her city faces over the coming 20 years, and what adaptation measures would best protect people from harm. But when she looks for climate projections, she might find only regional or national-level information. Or she might spend hours looking at flood mitigation measures and find that the conditions they are designed for simply do not match those in her city.

The purpose of climate services is to bridge those gaps: to identify users' needs and connect them to the relevant information. If the materials are written in highly technical language, climate knowledge brokers may "translate" them into more accessible terms; if they are only available in English, but the user is a Thai speaker, they may translate them into Thai.

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A woman in Cameroon works with SEI researchers to assess the impact of climate change on local forest products, markets and livelihoods.

If the geographic scale of the data does not match the scale of decision-making, climate services providers can work with users to downscale it. And if there is knowledge that is simply not available, or it is unclear what knowledge is needed, they may bring scientists together with stakeholders to explore the issues collaboratively and produce new knowledge, drawing on their respective expertise.

The SEI Climate Services Initiative builds on a growing body of work to identify "good practice" and helpful approaches to identifying and meeting user needs, and to build the capacity of both climate scientists and climate service providers to meet these needs. Most notably, SEI is part of the Climate Knowledge Brokers Group, which has brought together leaders in this field to support mutual learning about effective communication, knowledge co-production, and other key aspects of climate services provision.

Research and practical experience have shown that trust, relevance, credibility, legitimacy, sustained dialogue, co-production of knowledge, empowerment and capacity-building are all essential components of effective climate services. We also know that a greater understanding of social and institutional barriers and enabling factors is crucial, as is an actor-oriented approach that recognizes the differing needs, interests, priorities and values of users of climate services. Those insights form the foundation of all the initiative's work.

1. Understanding users' needs

To be effective, climate services need to be developed to meet the needs of the target users – whether they are national-level decision-makers in government, or smallholder farmers. This requires understanding each group of users: their needs and expectations, how they make decisions, and the barriers they face in accessing and using climate information.

This work package will use case studies to develop methods to help climate information providers, researchers and intermediaries to identify the most relevant, scale-appropriate and useful information for users given their needs and context. We will appraise what climate services are available and how they are used, comparing what is available with the needs of core users, identifying barriers to effective use as well as ways to overcome them, such as through capacity-building.

2. Exploring collaborative processes for developing climate services

Climate services are only effective if the information provided is truly useful to those who need it. A key way to achieve this is to foster ongoing dialogue and relationship-building between providers and users. This work package looks at participatory processes and institutional structures that support "co-generation" of climate services by providers and users, as well as the role of intermediary organizations or knowledge brokers in facilitating this dialogue.

Case studies in developing countries will draw on participatory processes in Lusaka, Windhoek and Maputo within the context of the Future Resilience for African CiTies And Lands (FRACTAL) project. We are organizing "city learning labs" in which we work with stakeholders to integrate scientific knowledge about climate change and variability in southern Africa into decision-making processes relating to water, food, and energy systems and services.

Further lessons on knowledge exchange and collaboration will draw on participatory processes for the co-generation of climate services taking place in other places including South Africa (Cape Town and Durban), Malawi, Tanzania, Botswana, and Zimbabwe.

Case studies in industrialized countries will draw on lessons from the project HazardSupport as well as the recently completed Mistra-SWECIA programme in Sweden. The latter involved participatory adaptation research in the Swedish forestry sector. HazardSupport, which is ongoing, aims to

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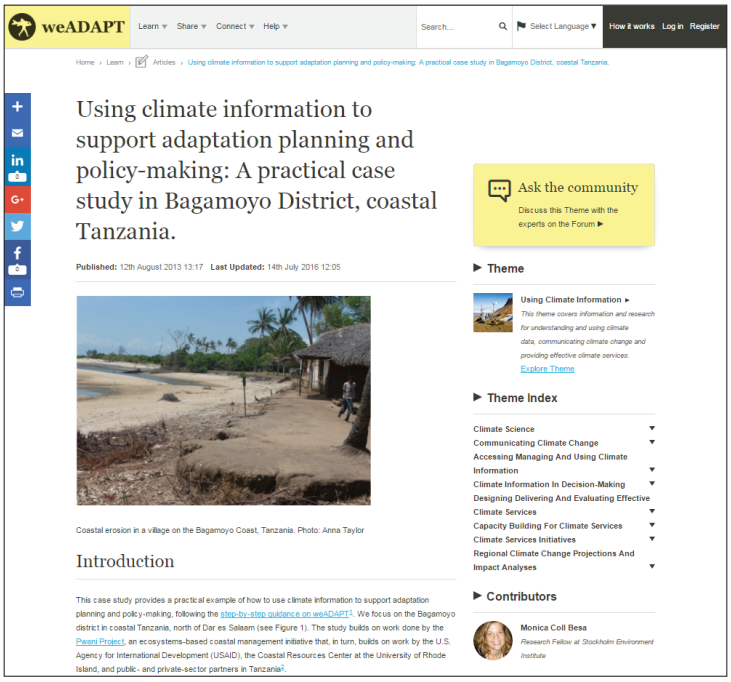
Members of a fishing community in Cambodia discuss their livelihoods and the impacts of climate change with SEI researchers working to help them identify adaptation needs and options.

develop risk-based decision support tools for adaptation to natural hazards in Sweden.

HazardSupport will establish a science-stakeholder arena for collaboration and mutual learning on climate change adaptation and natural hazards. In collaboration with the initiative, it will produce guidelines for adaptation studies focusing on how stakeholders can obtain the tailored scientific data needed for decision-making. It will also develop best scientific practice guidelines for experts who carry out climate impact studies for stakeholders.

Another project of relevance is PLACARD (PLAtform for Climate Adaptation and Risk reDuction), which aims to strengthen institutions to support climate change adaptation and disaster risk reduction at the national level in Europe.

In addition, the initiative will synthesize insights from Mistra-SWECIA and other climate services-related projects, to help us assess the effectiveness of participatory processes and multi-stakeholder platforms for the co-generation of tailored and sustainable climate services.



A key aim of the new Climate Services Initiative space on weADAPT is to foster mutual learning and sharing of insights from projects around the world.

3. Improving communication of climate services

Climate change communication engages individuals and decision-makers with climate services and helps scientist learn more about the needs of their target audiences. To have real impact, communication campaigns will need to go well beyond informing the public, to actually mobilize people and organizations and drive large-scale behaviour and political change.

The objective of this work package is to transform the communication of climate services by developing science-based methodologies and innovative approaches. This will include the development of a harmonized language for communicating climate issues, adaptation and disaster risk reduction, as well as the use of infographics to communicate climate information from "big data".

Part of this work package will build on work done through the Mistra-SWECIA project. Between 2011 and 2014, the Swedish Forest Agency conducted a large communication project called Forestry in a Changing Climate. It aimed to educate private forest owners and forestry professionals about the risks of climate change and appropriate adaptation measures. In total, the project engaged about 17,200 forest owners.

In order to assess the project's effectiveness, SEI conducted a survey with 3,000 participants as well as a random sample of 3,000 forest owners in government records. Results from the study will allow us to draw conclusion of how effective climate change communication can be in changing minds and behaviours related to climate risks and adaptation.

In addition to the Swedish case study, we will conduct a review of climate communication efforts in policy processes, their methods, and whether and how their outcomes have been evaluated and monitored. Key questions include how these efforts addressed the values and beliefs of targeted populations; how they tailored information and knowledge to the practical needs of people; and how communicators dealt with issues of trust and scientific uncertainty.

The results of the analysis will help scientists, policy-makers and practitioners to better understand and address the different and often opposing values, practical needs, interests and frames of reference that mark different audiences. The study will also shed a light on the challenges of using communication and stakeholder participation to evaluate and improve adaptation policies.

4. Developing a community space for climate services learning and development

Climate services is an emerging – and still evolving – field. As we learn more about what works and what does not, it is important to share new knowledge and experiences, and thus help build the capacity of climate services providers to understand and meet user needs. Through the case studies, we will assess capacity-building needs and identify a set of priorities for action.

This work package focuses on developing an interactive online space that both provides information and guidance relevant to climate services and nurtures an associated community of practice, hosted by weADAPT.org, a platform developed and maintained by SEI's Oxford Centre.

The online space, which is already active (see http://weadapt.org/using-climate-information), aims to bring together practitioners, researchers, policy-makers and other stakeholders to share insights and details of their work, discuss their experiences, and collaborate. The space will be updated regularly with publications relevant to the design and delivery of climate services, ongoing activities around climate services, as well as background information on climate science.

As the results of work packages 1–3 come together, we will also synthesize the insights to produce expert guidance on using and developing climate services – the Participatory Framework for Climate Services (PFCS). The PFCS will support capacity-building activities within the initiative and beyond. The materials will be published on weADAPT and will also, depending on user needs and demand, support a mobile app.

Communication, impact and stakeholder engagement

As noted above, a fundamental insight that underpins this initiative is that climate services need to be developed in close collaboration and consultation with their target users – not just delivered top-down by experts. This means that communication and stakeholder engagement are crucial to our work. We will participate in and contribute to a wide range of meetings and workshops convened by stakeholders, and also organize our own workshops in conjunction with project milestones.

Rather than hold single workshops with multiple groups, we will carefully select groups with whom we will interact several times over the course of our work, to reflect together, gather feedback and develop new insights. This will facilitate shared understanding, promote collaboration and reveal potential new avenues for inquiry, allowing users themselves to articulate the key questions that need to be addressed by climate service providers.

To support our engagement with stakeholders, we will produce several policy and discussion briefs over the course of the project. Some of our more in-depth analyses, as well as our reviews of the literature, will be published as SEI working papers. Insights from this research will form part of the PFCS, and will also be shared on weADAPT.

To broaden the opportunities for engagement and mutual learning, we will also maintain a blog on weADAPT where we will raise questions, share insights from our ongoing work, and invite guests to share their own perspectives. We will also share visualizations, interactive graphics and videos.

In addition, to bring our work to the experts who are producing the science and data that underpin climate services, we will produce several academic articles and seek to place them in high-impact peer-reviewed journals (preferably open-access). We will also participate in key international conferences. We were active at the Adaptation Futures in Rotterdam in May 2016, and will participate in the Marrakech Climate Change Conference (COP22), the European Climate Change Adaptation Conference 2017 and the Association of American Geographers 2017; we will also co-sponsor the International Conference on Climate Services in March 2017 in Cape Town.

Boundary partners and advisory panel

Many different actors are contributing to the climate services arena, including the adaptation research community, meteorological offices, NGOs, knowledge brokers and communication practitioners. In the design of this initiative, we consulted many of these actors, inquiring about the relevance of our planned activities, research gaps, possible collaborations and funding opportunities.

We have identified six key groups of boundary partners relevant to the initiative: (i) climate adaptation policy-makers (national to local government level) and decision-makers (from district planners to local farmers); ii.) national meteorological and hydrological services; (iii) the climate change adaptation research community; (iv) NGOs, knowledge brokers and communication practitioners; (v) international organizations; and (vi) in-country organizations.

We are actively engaging with all these communities. To further strengthen that engagement, we are establishing an Advisory Panel of representatives from boundary partners including the Global Framework for Climate Services and the World Food Programme. The panel will be asked to provide feedback on a regular basis on strategic decisions; offer brief updates to the co-leaders on new developments in their areas of expertise; and suggest opportunities for external funding.

How to get involved

Engagement with both providers and users of climate information around the world is central to the mission if this initiative. If you are working on climate services and have innovative projects, new methodologies, lessons from experience, or other insights to share, please join our online space on weADAPT: http://www.weadapt.org/using-climate-information.

Any work shared in our online community will appear in our biweekly newsletter and social media channels, providing ample opportunities for collaboration with people around the world working in similar fields. You can also post questions to the wider adaptation community and engage in a dialogue around challenging issues.

If you would like to collaborate in a more substantive way with the SEI Climate Services Initiative, please contact the co-leaders; details are in the red box below. To learn more about the initiative and see the latest publications, news and blogs, go to: http://www.sei-international.org/climate-services.

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