SDC Network
Disaster Risk Reduction

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Climate Change & Environment

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April

**Newsletter -
SDC Network Climate,
DDR and Environment**

Digitalisation in Climate, DRR and Environment

Editorial

Digitalisation is the theme of the first newsletter of the newly merged Climate & Environment and DRR networks. By merging these communities, SDC is addressing the issue of *risk* more holistically and takes a systemic look at how today's development decisions will affect our future. The present reading will offer insights into digitalisation experiences and tools that enhance the understanding of risk and provide efficient solutions to tackle them.

Let me take this opportunity to welcome André Wehrli, who has joined Jacqueline Schmid as Focal Points for the Climate, DRR and Environment Network. André is an experienced Climate, Water and DRR specialist and we are happy to have him in our team.

I also wish to express my very warm *Thanks* to Patrick Sieber. After 10 years at SDC, Patrick decided to embark on a new trajectory and joined our sister organisation SECO. Merci Patrick for the wonderful cooperation and for your great commitment to the CC&E Network, which you led with joy and dedication. We wish you much success and joy in your future career - and all the best for you and your family!

Enjoy the reading!

Janine Kuriger
Head, Climate, DRR and Environment Section
SDC Thematic Division

CONTENTS

Who is who

André Wehrli took over from Patrick Sieber, joining Jacqueline Schmid as Sector Policy Advisor and Focal Points of the Climate, DRR and Environment Network at the beginning of 2023.

Andre holds a PhD in Natural Sciences from ETH Zürich and has been working at SDC since 2013, in different functions on the topics of climate change and water.

André Wehrli

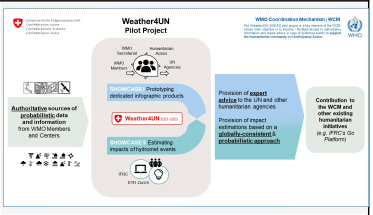
Read more about André here

André Wehrli

Decision-making supported by digital technologies

Weather4UN: Supporting Humanitarian Anticipatory Action

Discover how the Weather4UN pilot project supports decision-making in the humanitarian sector for better preparing for imminent extreme weather events: The Weather4UN pilot project.



Weather4UN – an overview: MeteoSwiss implements this project in close collaboration with the Swiss Agency for Development and Cooperation (SDC), WMO and its Members, as well as key stakeholders in the humanitarian community (IFRC, UNOCHA, UNHCR). ...click on figure to enlarge

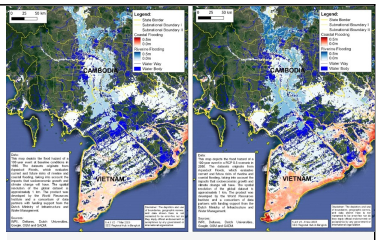
The Weather4UN project aims to support humanitarian decision-making processes by providing reliable and timely hydrometeorological information. Experts from MeteoSwiss develop graphical representations of forecast data and information on critical weather situations with expert advice. In a collaborative effort, Weather4UN integrates impact estimates (i.e. affected people). The developed products are distributed by WMO and the IFRC Go Platform to support humanitarian operations.

Alicia Pache, Weather4UN project coordinator, Federal Office of Meteorology an d Climatology MeteoSwiss Geneva

Use of geospatial data and geographic information system (GIS) to risk-informed and climate-smart development and humanitarian assistance

To what extent and how can public data and open-source software strengthen disaster risk reduction (DRR) and climate change adaptation (CCA) in development and humanitarian programming? SDC's Regional Hub in Bangkok is exploring experiences on evidence-based decisions and service delivery assisted by geospatial information, and how this strengthens project design, implementation and monitoring.

Read more about the experiences of SDC's Regional Hub in Bangkok here.

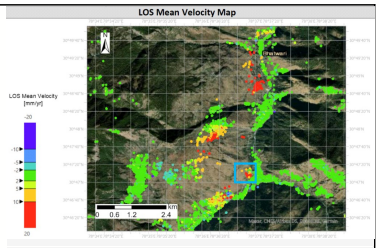


The maps show downscaled CMIP5 data of 100-year riverine and coastal flooding events at baseline conditions in 1980 (on the left) compared with the consequences of a similar probability event under RCP8.5 conditions in 2080 (on the right). Data originates from WRI's Aqueduct Floods and is shown at a resolution of 1 km projected onto Google Satellite imagery.
...click on figure to enlarge

Erik Kjaergaard, Senior Programme Manager/Disaster Risk Management Advisor
Kritsana Kityuttachai, Specialist on Climate Change Adaptation and GIS, SDC Regional Climate and Disaster Management Hub for Southeast Asia and the Pacific

Landslide analysis with radar data in the Indian Himalayas (SCA-Himalayas project)

Can satellite data support the reduction of landslide hazards? Landslides are a major threat to many livelihoods globally – and in the Himalayas. Free radar data from the Sentinel-1 Satellite is used to assess the potential of this technology for the identification of critical zones in an area of great cultural, touristic and religious importance.



Extract of a deformation-velocity map of Bhagirathi valley.
...click on figure to enlarge

Read more about the SCA-Himalaya project here.

Eveline Studer, Senior Regional Advisor on Disaster Risk Reduction (DRR) and Rapid Response (RR) in South Asia

Digitising natural hazard monitoring and warnings in Switzerland

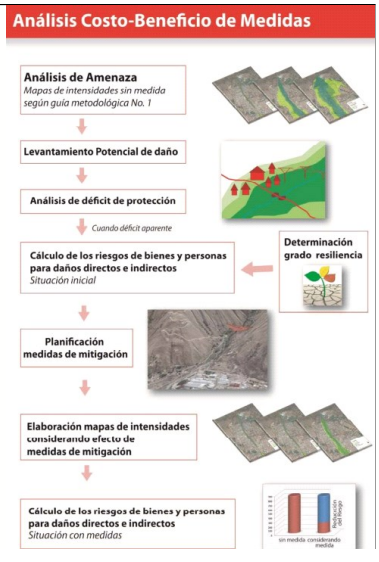
Alerting and warning for the protection of the civilian population is crucial to reduce fatalities and damages in the case of natural hazards. Switzerland built the **Joint Information Platform for Natural Hazards (GIN)**, combining all available data on natural hazards, and the **public Natural Hazard Portal (NHP)**, providing warnings and recommended behavior for the public, in response to the the game-changing, countrywide floods that affected Switzerland in 2005 and 2007.

Screenshot of GIN: Sum of precipitation over 12 hours on 23 December 2022 at 12:00. Shown are radar data and data from ground measurement gauges.
...click on figure to enlarge

Read more about the experiences with the development of GIN and NHP in this interview with Christophe Lienert from FOEN.

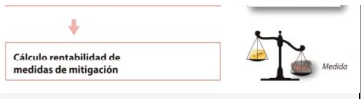
MiResiliencia Bolivia: Learnings in digitalisation from an institutionalisation project

Authorities need a thorough cost-benefit assessment of disaster risk mitigation measures. The project MiResiliencia in Bolivia is an effort to institutionalise a Web-GIS tool, designed to support decision-making at various government levels. Despite the very robust potential of the digital tool, the project encounters potentials, and barriers in its institutionalisation.



Read more about the MiResiliencia experiences here.

Helen Gambon, Programme Officer DRR & Rapid Response



Workflow for risk analysis and calculation of cost-benefit ratio of disaster mitigation measures.
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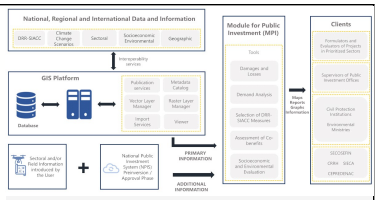
GIS platform specifically designed for public investment projects in Central America and Dominican Republic



RIDASICC GIS Platforms and Modules for Public Investment: Sources, Structure and Clients.
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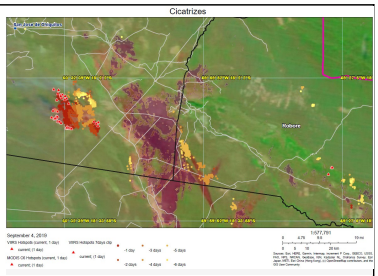
Public investment project formulators and evaluators frequently encounter difficulties in obtaining relevant information about disaster risk reduction (DRR) and sustainable and inclusive adaptation to climate change (SIACC) during the project planning phase. The RIDASICC project seeks to improve these capabilities by providing a GIS platform (including e.g. meteorological and hydrological data) and public investment modules (featuring methodological guides and practical tools) for conducting risk and cost-benefit analysis of public investment projects.

Read more about the development of the GIS platform and public investment modules here.

Julie Gail Lennox, ECLAC Coordinator of the RIDASICC Project and Chief of the Agricultural, Development and Climate Change Unit, ECLAC Subregional Headquarters in Mexico.

Making digital services effective during rapid response missions



Snap shot of the SDC wild fire tracking tool in Bolivia 2019 integrating local GIS information on roads and location names, coordinates for the pilots, as well as distinguishing between active fires and burned areas.
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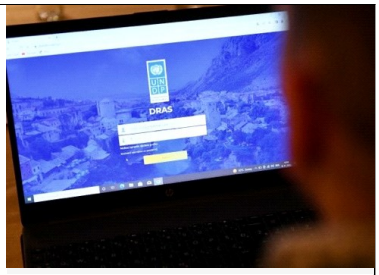
Wildfires are today spotted from space (e.g. as provided by NASA FIRMS). However, it is difficult to use these global digital services on the ground without putting the information into context. SDC's rapid response mission in 2019 demonstrated that such information is particularly useful when combined with remote support to integrate local GIS information and field staff to translate the information to decision-makers.
To learn more about SDC's rapid response mission in 2019 and how Geodata is used for wildfire response:

Read this article in Schweizer Illustrierte (in German only)
Watch this panel discussion of the Understanding Risk conference 2020
Check out this short video of the Swiss Humanitarian Aid Unit

Omar Bellprat, Member of SHA Expert Group DRR & Environment, Bellprat Climate Consulting - climate.expert
Mary Brown, GIS Team Lead, HA Operations, SHA

Online platform on natural hazards is enhancing the resilience of Bosnia and Herzegovina

The Disaster Risk Analysis System (DRAS) is an online platform that offers scientific information on natural hazards, including floods, earthquakes, landslides, and mine-suspected areas. Its primary objective is to enable decision-makers and residents to conveniently access hazard information, with the aim of enhancing awareness of disaster risks in particular locations.



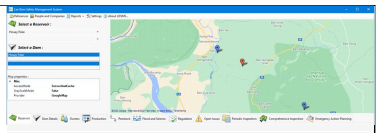
The Disaster Risk Analysis System (DRAS) online platform

Read more about DRAS here.

Bosko Kenjic, Senior Program Officer for governance and infrastructure, Embassy of Switzerland in Bosnia and Herzegovina

A new information system to help manage dam safety risks in Laos

Considering the very rapid growth of hydropower in Lao PDR, reducing the risk of dam failure and the effect of a dam failure is a major concern. Staff from the Ministry of Energy and Mines were recently trained in using the Lao Dam Safety Management System. By supporting centralisation and consistency of dam safety related data, the tool will contribute to the Ministry's efforts to effectively enforce dam safety regulations.



Selection of a reservoir and dam, with dropdown lists; GIS component on the right (Google map Provider).
...click on figure to enlarge

Read more about the dam safety tool here.

Dr Patrice Droz, Team Leader Technical Dam Safety
Dr Jérome Dubois, Hydraulics Engineer - LDSMS Developer
Vichit Sayavongkhamdy, National Programme Officer, Swiss Cooperation Office and Consular Agency in Laos

Climate services for agriculture

Agricultural decision-making tool for farmers in Tajikistan

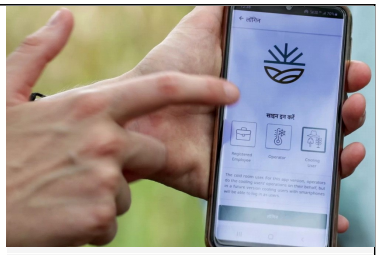
How can smallholder farmers in Tajikistan adopt to the changing climatic conditions? With the "Weather, Water and Climate Services" (WWCS) developed by Caritas and its partners in Tajikistan. Low-cost open-source weather stations transmit weather data via the mobile network to the Tajik weather service. By combining this data with observations from farmers and municipalities, the WWCS provide reliable weather forecasts as well as recommendations for agricultural decisions. This information allows farmers to make sound decisions regarding sowing, harvesting, and irrigation, resulting in increased yield and greater resilience in the face of climate change.

Installation of low-cost weather station in Tajikistan.

Read more about the WWCS and the lessons learnt here.

Wolfgang Schneider, Caritas

Digital Innovation for climate-resilient agriculture - Your Virtual Cold Chain Assistant



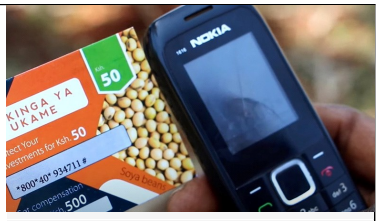
Your Virtual Cold Chain Assistant - App.

As the frequency of unprecedented heat waves increases in the Indian subcontinent, food security is at risk due to a lack of cold storage facilities. But what if smallholder farmers could access decentralised, solar-powered cold rooms on a pay-per-use basis and monitor the shelf life of their stored crops remotely? Introducing Your Virtual Cold Chain Assistant, an innovative solution that harnesses digitalisation and servitisation to transform food storage management. Through a data-science-based mobile application, called Coldtivate, smallholder farmers and cooling companies can now both enjoy transparency, trust, and increased incomes, paving the way for a more sustainable and resilient future for India's agriculture.

Read more about Your VCCA here.

Simran Singh, Capacity Building Lead of the YourVCCA project

Agricultural Climate Risk Insurance



Scratch card to activate the blockchain-based BIMA PIMA crop insurance product with the mobile phone.

With the support of the Climate Ledger Initiative, Etherisc developed a blockchain-based insurance platform for ACRE Africa's BIMA PIMA crop insurance product. Crop insurance policies are plugged into smart contracts on blockchain and indexed to local weather. In the event of severe weather, the policies are automatically triggered by satellite data, enabling fair, transparent and quick payouts. Payments to farmers are processed using the cash and mobile payment system M-Pesa. This solution helps ACRE Africa overcome several challenges associated with traditional crop insurances such as delayed payments, high premium costs, and lack of transparency.

Read more about this CLI use case here or watch this presentation with talks from four different CLI use case partners.
To learn more about the insurance platform of Etherisc visit this .

Anna Ehrler, Consultant environment, climate and energy, INFRAS

Smart water investments and digitalisation for increased climate resilience

Solar powered irrigation pump.

The Cambodia Horticulture Advancing Income & Nutrition (CHAIN) project supports framers to invest in smart water solutions (SWSs) such as water storage ponds, boreholes powered by solar pumps with the aim to increase their climate resilience. The project also conducted research among farmers to understand their preferred use of digital channels on mobile phones. Digital sharing of information through social media and self-made videos has proved effective in raising awareness of smart water interventions that can enhance farmers' resilience.

Read more about the CHAIN project here.

Rik Overmars, Agri-Food Sector Lead, SNV Cambodia

AgriPath: Empowering Farmers through Sustainable Digital Pathways

The AgriPath project assesses barriers for digital services (low literacy and smartphone coverage, household dynamics and gender) and evaluates different delivery models (self-service, agent-based, hybrid) in five project countries (Burkina Faso, Tanzania, Uganda, India and Nepal) with the aim to bring sustainable agriculture to scale and help smallholders to adapt to climate change.

Indian woman being interviewed by a member of the AgriPath research team. Picture: Grameen Foundation India.

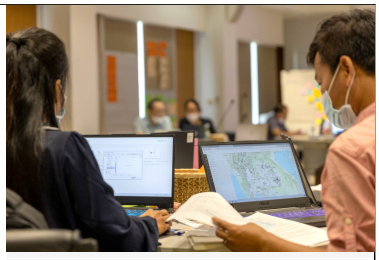
Read more about AgriPath here.

Dr. Maurice Tschopp, Senior research scientist and project manager
Nicole Harari, Senior research scientist and project manager

Digital monitoring and enhanced transparency in forestry

Improving data systems to boost monitoring of community forestry programs

A training course conducted by RECOFTC enabled participants to bu ild a new or improve their existing information management system for community forestry. Across Southeast Asia, people have been empowered to manage local forests. However, they are often operating in the dark as they lack information on the progress, effectiveness and sustainability of community forestry programmes. RECOFTC aims to address this issue by supporting ASEAN countries in improving the collection and accessibility of quality data on community forestry programmes.



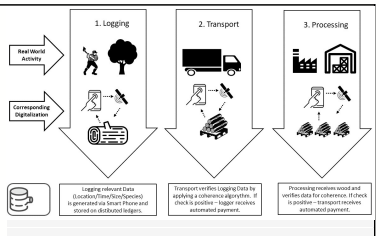
Hands on exercises to create and design Community Forestry geospatial data in the training.

Read more about the RECOFT training here.

Kannapat Kanpakdee, Program Support Officer RECOFTC

Wood Tracking Protocol

The Wood Tracking Protocol (WTP), supported by the Climate Ledger Initiative, is an IT-based approach usi ng the features and technical possibilities of today's smartphones to fight illegal logging in the Amazon region. WTP provides a smart phone application for Android devices which is connected to the WTP platform – a centralised database with a gateway to a private blockchain. The different steps of the wood (logging, transport, processing etc.) are recorded with the



Wood Tracking Protocol.
...click on figure to enlarge

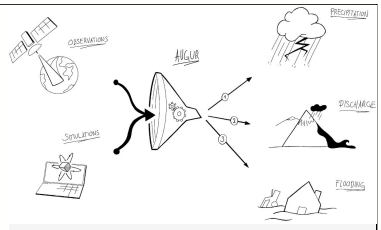
smartphone and the information stored in the database. WTP addresses illegal logging by bringing transparency and traceability into the wood industry in Peru.

Read more about this CLI use cases here or watch this presentation with talks from four different use case partners.
To learn more about WTP visit their website or watch this presentation about the WTP that Roció García held at AmazonTec 2022 (in Spanish only).

Anna Ehrler, Consultant environment, climate and energy, INFRAS

Digitalisation in flood resilience

From global to local “do-it-yourself” flood assessment



AUGUR combines digital information from satellites and climate models to allow the assessment of extreme precipitation, river discharge, and ultimately support for flood assessment in the field.
...click on figure to enlarge

Global digital initiatives for floods (GloFAS) have successfully supported humanitarian aid but fall short in accounting for local knowhow for flood assessment in remote and small catchments. To address this issue the AUGUR initiative develops a digital toolkit for local flood hazard assessment which is quality proven, open-source and tailored to humanitarian organisations such as local NGOs. In the spirit of leave-no-one-behind the AUGUR initiative successfully underwent the “Innovation meets Practice” accelerator of SDC (read more about it in the Humanitarian p. 19 in French). A first work-progress teaser of the initiative can b e accessed on https://augur.world/home/

Omar Bellprat, Georg Heim, Pascal Horton, Sybille Wilhelm und Ali Neumann

Framework for measuring community flood resilience

Practical Action interviews community brigade member in Peru using FRMC mobile App.

There is a lack of evidence about which pre-event resilience-building initiatives actually make a difference when a flood comes. The Zurich Flood Resilience Alliance developed a framework for measuring community flood resilience, including a methodology for testing and empirically validating the framework, and a technology-based data-gathering and evaluation tool for measurement and assessment of flood resilience. Measuring the change made by resilience-building efforts is key for demonstrating the impact in the communities.

Read more about the Flood Resilience Measurement for Communities (FRMC) here.

Read two stories about how the pandemic accelerated the use of digital tools in the FRMC:

- *Pros and cons of conducting **online surveys** for different data collection methods within the FRMC.*
- *How the **Flood Resilience teams interacted with the communities** when face-to-face interaction became impossible.*

Michael Szöny, Flood Resilience Program Lead, Zurich Insurance Company

Upcoming projects/events

Wanted: Your Project for the Digitalisation Check

The SDC supported Climate Ledger Initiative (CLI) has worked over the past five years on different digital tools in the area of climate action (see CLI use cases) in developing contexts. Capitalising on its experiences, the CLI is currently distilling a set of generic steps in a simple **checklist** to guide the assessment of a given development project in terms of its digitalisation potentials.

The CLI is looking for partners and a few SDC projects that wish to learn more about the potential for digital innovations and are interested to apply the checklist in their specific project context. The projects are ideally at an earlier stage of planning, but an application can also be useful at a later stage.

If you are interested in analysing the digitalisation potential of your project, please contact Anna Ehrler from the CLI (anna.ehrler@infras.ch; +41 44 205 95 57) or Matthias Bachmann from SDC (matthias.bachmann@eda.admin.ch) by **14th of April**. More information on the digitisation check is presented **here**.

Summer school: Cultural Heritage in Context. Digital Technologies for the Humanities

POLITECNICO di TORINO and UNESCO Disaster Risk Reduction Unit organise the summer school “Heritage-driven Community Resilience in large-scale cultural natural areas” at Castello del Valentino, UNESCO World Heritage Site in **Turin, Italy from 25th June to 2nd July 2023**.
The upcoming intensive 5th edition of the International Summer School Program **'Cultural Heritage in Context. Digital Technologies for the Humanities'** aims to develop a heritage-driven risk-aware community resilience approach by exploring, customising, and prototyping digital tools and bottom-up processes and methodologies. The field will be explored in a multidisciplinary acknowledged international framework also extended to other organisations and experts by working on real cases and engaging representative of local communities to co-investigate heritage-driven community resilience.

Read more about the summer school and how to apply for participation here.

Asian Disaster Preparedness Centre training calendar 2023

The Asian Disaster Preparedness Centre (ADPC) Academy provides training and capacity building courses in disaster risk reduction and climate change adaptation for governments, intergovernmental and nongovernmental organisations. Check out the ADPC Academy learning and training calendar 2023 here.

Publications related to the topic

World Risk Report 2022

The World Risk Report 2022 assesses the disaster risk for 193 countries. This covers all UN-recognised countries and over 99 percent of the world's population. This year's focus of the WorldRiskReport is on digitalisation.

Digitalisation has become an integral part of disaster relief: Satellites provide data on extreme weather events, warnings of disasters are integrated into apps, and information on disaster management is provided via mass SMS and social media. Based on practical experience, the report gives an overview of a variety of digital technologies already used in disaster relief and, by the example of trends in data collection, interaction with affected people, and cooperation with other actors, shows how disaster relief has changed as a result of these digital technologies and the challenges which their use entails.

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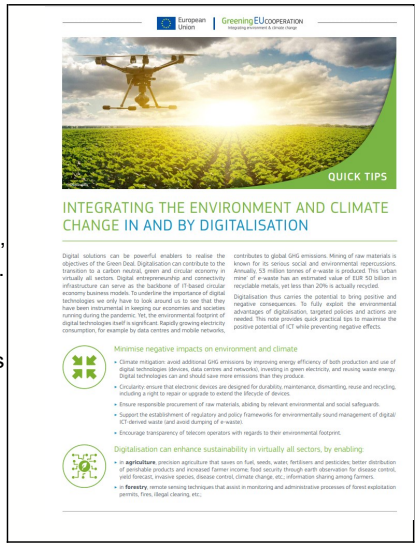
Quick tips: Integrating the environment and climate change in and by digitalisation



Digitalisation can contribute to the transition to a carbon neutral, green and circular economy in virtually all sectors. Yet, the environmental footprint of digital technologies itself is significant. Rapidly growing electricity consumption, for example by data centres and mobile networks, contributes to global GHG emissions. To fully exploit the environmental advantages of digitalisation, targeted policies and actions are needed. This note provides quick practical tips to maximise the positive potential of information and communication technologies (ICT) while preventing negative effects.

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Further news

The SDC funded **groundwater project** in North China will be closed soon. All activities have been completed, with solid results produced and strong policy impacts. Last November SDC organised a webinar on sustainable groundwater management together with the Geneva Water Hub and Dakar Water Hub, with a bout 150 participants.

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The **Sino-Swiss clean air in China** (CAC) project focuses on the most advanced air pollution source apportionment techniques. The identification of pollution sources is crucial to develop effective air pollution control policies. On Feb. 3rd, a **Science-to-Policy** workshop was held in Beijing where the Sino-Swiss team presented their scientific findings. Read more about CAC and the Science-to-Policy workshop here.

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CONTACT

Climate, DRR and Environment Network
Swiss Agency for Development and Cooperation SDC

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