

## WMO Capacity Development Strategy

### Template for reporting good practices on capacity development

**Purpose of collecting Case Studies:** Collect a set of national and multi-national good practice cases demonstrating the application of the WMO Capacity Development Strategy (WCDS) strategic approach and principles in various local/regional environments. The initial set of cases will be included in the revised WCDS, presenting one example from each WMO region.

*Note: As part of the implementation actions based on the WCDS, WMO will establish an online platform for promoting good CD practices which will be integral part of the WCDS Implementation Guidelines.*

**Case Title:** “Sistema de información sobre sequías para el sur de Sudamérica (SISSA)” - Drought information system for southern South America [<https://sissa.crc-sas.org/>]

**Country(ies) involved** (both beneficiaries and providers of CD support): Argentina, Brazil, Bolivia, Chile, Paraguay, and Uruguay

**CD Dimension addressed** (select more than one as necessary):

Institutional ; Technological ; Information and Services ; Human resources

**Purpose of the CD action/initiative:** (briefly describe what CD assessment has been used to identify gaps and main capacity gaps being addressed)

SISSA (<https://sissa.crc-sas.org/>) is an initiative of the Regional Climate Center Network for Southern South America (in Spanish CRC-SAS) that contributes to reducing the considerable economic, social, and environmental impacts of drought on socioeconomic sectors such as agricultural production, hydroelectric generation, and river navigation in southern South America, through available information on droughts, together with improvements in: (i) regional institutional capacities, (ii) planning and preparation, and (iii) governance of risk management. The area on which SISSA focuses includes the territories of the six countries involved in the CRC-SAS: Argentina, Bolivia, Brazil (south of 10°S), Chile, Paraguay, and Uruguay. SISSA includes three cross-cutting components: research and development, education and outreach, and institutional coordination and engagement.

The CRC-SAS is a virtual organization formed by the NMHSs and other associated institutions of Argentina, Bolivia, Brazil, Chile, Paraguay, and Uruguay. Among its main objectives are: 1) to produce and disseminate relevant, timely and actionable climate information to support decision-making in sectors of society sensitive to climate variability and change; 2) to contribute to improve the current capacities for monitoring, analysis, forecasting and generation of products of the National Meteorological and Hydrological Services (SMHNS) of the Member countries; 3) to provide end users with information and products that uniformly cover the entire Southern Region of South America in the

areas of climate monitoring and prediction and with application products intended to support decision-making in sectors such as agriculture, hydrology, energy, and public health.

**Case description – actions taken, target groups, partnerships:** (up to 700 words; try to structure based on the WCDS CD Cycle: Assess-Engage-Design-Implement-Evaluate).

SISSA started from the agreement between the NMHSs of the CRC-SAS to integrate their efforts to manage the risk of droughts. This also required the participation and involvement of other relevant government, public and private sector stakeholders. This initial commitment was reflected in the preparation and submission of a project to the IDB that was approved to be implemented between 2019 and 2022, with the following objectives: i) Product development and improvement of regional information on risks and impacts of droughts; ii) Identification of actions and policies to reduce the impact of droughts in the agricultural sector; iii) Establishment of the SISSA platform, in addition to the initiation of communication actions and knowledge production on droughts. The second stage of SISSA - started in November 2021 and currently underway until middle 2024- is funded by the EUROCLIMA+ project, and considers among its objectives: i) Implementation of a drought monitoring and prediction system, including the development and maintenance of the database and associated quality controls; and monitoring and forecast products; ii) Characterization of impacts and actions to improve future planning, preparedness and response; iii) Strengthening the governance of risk management through the collaborative development of national drought preparedness and response policies; iv) Improvement in institutional capacities to produce and communicate relevant and actionable information; v) Implementation of communication and awareness actions regarding proactive preparation prior to the occurrence of droughts. This stage includes the implementation of three demonstration projects focused on prioritized sectors. These represent challenges when co-designing and implementing climate services that include the generation and/or improvement of monitoring and forecasting products, as well as their adjustment and orientation to solve the specific needs of sectors sensitive to droughts, such as the prioritized sectors.

SISSA is a multi-institutional and inter/transdisciplinary initiative that is implemented under the strategic direction of the NMHSs of the 6 countries grouped in the CRC-SAS. Likewise, government agencies, academic institutions, non-governmental organizations and the private sector are directly involved. SISSA has a Coordination Unit, housed in the National Meteorological Service (SMN) in Argentina to: coordinate SISSA activities; follow up on research and development activities; promote the link between the different actors through workshops and periodic interactions to communicate progress, plan new actions and evaluate results; lead communication and training efforts on droughts and their impacts; manage the funds and the relationship with the financing and managing agencies of the Project.

SISSA has three interdisciplinary working groups on i) Monitoring and Forecasting, ii) Risk, Vulnerabilities and Impacts of Drought, that are operating and meet periodically and iii) Planning, preparedness and mitigation of drought. Working teams are also implemented for specific activities such as climate service demonstration projects aimed at prioritized sectors. Additionally, SISSA is committed to developing governance actions by collaborating with the governments of the countries in the development of national plans for the prevention and combat of droughts, as well as contributing to the decision-making of the actors that make up the socio-economic sectors. The SISSA also carries out its activities in direct

coordination with the WMO Regional Office for the Americas, especially those about training and education.

Regarding the evaluation of the initiative, it will assess all the necessary components for the effective use of information and tools to manage drought risks: (i) the production of information, (ii) the dissemination of information, (iii) the understanding of that information by users, and (iv) its use to inform decisions. To evaluate the production, the progress in harmonizing procedures and formats that allow the sharing of products and content (tutorials, software) between countries will be studied – respecting the concept of “public good.” To assess dissemination, (i) access to SISSA or CRC-SAS sites (geographical and institutional origin, consulted products), and (ii) downloads of documents and products will be analyzed. The impact of "posts" on social networks will be evaluated (i) by quantifying followers and resubmissions, and (ii) by analyzing the content of comments. To assess comprehension, “A/B tests” will be used in which a portal user is randomly given one of several alternative formats with the same information, and their opinion is requested. For evaluation of dissemination and understanding, surveys focused on different users (e.g., members of associations of agricultural producers in the region) will also be used. Finally, evaluating the actual use of information on droughts is complex, and will be based on interviews with key informants (e.g., agronomists, hydroelectric operators).

**Application of WCD principles and CD cycle:** (provide a brief assessment how the six principles have been followed in your good practice case: P1: Holistic approach; P2: Sustainability; P3: Prioritization; P4: Efficiency and Innovation; P5: Cooperation, partnerships, equity and inclusion; P6: Result-based CD)

P1: Holistic Approach

- Various principles guide SISSA activities for capacity development and general awareness on droughts:

1. Knowledge about droughts is of fundamental importance for society. The impacts of droughts can be substantially reduced if society is well informed and motivated towards a culture of disaster risk prevention and management.
2. Effective information management and exchange require strengthening dialogue and networks between researchers, professionals, government actors and civil society, to foster the co-production of knowledge and the communication aimed at prevention, preparation and increase of resilience to droughts.
3. Public awareness programs must be designed and implemented based on a clear understanding of the possible sectoral impacts and their underlying causes, as well as the perspectives and social needs regarding droughts. These programs should be combined with communication actions that promote a culture of resilience in the face of disasters and active community participation.

- Specific Training Objectives of SISSA include:

\*To train the personnel of the institutions that participate in the SISSA, who will need to (a) be trained and updated in the knowledge and use of multiple data sources, models, and analysis tools, (b) be able to work in multidisciplinary and inter-institutional teams and (c) exchange information with different social actors.

\* To train local government agents, professionals specialized in resource management and other key actors, with a view to the transition towards a culture of preparedness in which, based on monitoring, planning, follow-up, and response to a drought event, join efforts to mitigate their impacts, reduce vulnerability and increase resilience to droughts.

\*To train populations and sectors affected by drought on possible actions to reduce vulnerability to this phenomenon and improve their preparedness and impact reduction capacities.

\*To identify and periodically review the specific training and training needs: priority topics and contents and the prioritization of activities.

\*Build networks of experts (local, national and international) in the characteristics and impacts of droughts, both within each institution participating in the SISSA and in external or collaborating institutions. The complex nature of drought makes inter/transdisciplinary collaboration essential, so this way of working will be encouraged and facilitated.

### P2: Sustainability

Two complementary lines are proposed to ensure the institutional and financial sustainability of SISSA. The basic institutional sustainability is ensured by the NMHSs (which lead the initiative) as they are operational government institutions with the mission of generating meteorological and climate information for different sectors. These institutions, together with the WMO, have implemented the CRC-SAS, a center of excellence with regional responsibilities, associated with the WMO. The objectives of the CRC-SAS – which will continue to function for the foreseeable future – include (a) production and dissemination of useful climate information to support decision-making in climate-sensitive activities, and (b) promotion of regional and international collaboration to strengthen capacities of national institutions. Users of the CRC information – spanning various sectors affected by drought – collaborate in the definition and co-production of products.

To ensure the future financial sustainability of SISSA, several actions are being carried out: (a) outreach and public awareness of the impacts of drought and the benefits of a proactive approach to preparedness (SISSA is developing specific communication and training plans to this end - see WCDS Principle 4); (b) sustained dialogue with relevant stakeholders including private managers (cooperatives of agricultural producers, grain traders, hydroelectric operators) for the joint definition of problems and needs; this interaction will build trust and credibility, contributing to a possible future co-financing of SISSA; (c) frequent communication with government officials to promote the importance of national policies to increase resilience to drought; and (d) dissemination of SISSA through active participation in the regional and international climate agenda. The Coordination Unit will also prepare funding proposals to national, regional and international donors.

### P3: Prioritization

The importance of drought for South America and the participation of social actors in the management of their risks were critical aspects explicitly identified by the "Workshop on political National Drought Reports in South America", Santa Cruz, Bolivia, 10-14 November 2014, financed by AECID as part of the Conference of Directors of Meteorological Services and Ibero-American Hydrological Institutes (CIMHET). In 2012, the Inter-American Development Bank (IDB) and the CRC-SAS initiated a dialogue in which the 6 CRC-SAS countries identified drought as a transversal problem relevant to the region. This

phenomenon was chosen as the focus around which to organize initial collaborative activities among the region.

With the support of the WMO and the NOAA of the United States, a workshop was held in Buenos Aires, 8-10 August 2017. The workshop brought together 80 experts from all over South America, other countries, international agencies, multi-sectoral actors, and the private sector. The main result was a consensus on the need for, and the importance of, a regional system of information to proactively manage the risks of drought. Another result was a Strategic Plan – agreed by the participants – who (a) identified critical gaps in staffing, equipment, and training in the region, and (b) proposed a scheme of governance for a regional information system on droughts.

#### P4: Efficiency and Innovation

The most common response to droughts in the region is emergency assistance, which is generally disorganized and expensive. Alternatively, a proactive approach involves planning and preparation - prior to a drought - to reduce future vulnerabilities. This preparation, however, requires information and modern analysis tools on (i) the current state of the drought, (ii) forecasts of its future evolution, and (iii) characterizations of the type/magnitude of expected impacts by region/sector. SISSA contributes to the collaborative development of this information with the active participation, and from the beginning, of government institutions, academics, and NGOs. SISSA products (disseminated freely through the web portal and by CRC-SAS) are valuable inputs for national disaster management agencies, agricultural users, and hydropower managers. Likewise, SISSA will inform national initiatives for the necessary transition towards a proactive management of drought risks, thus laying the foundations of national preparedness and mitigation policies.

Through its Communication Strategic Plan, SISSA intends to i) innovate in the way of communicating data, information and knowledge about drought to sensitize actors from public institutions and civil society about the importance of proactive risk management and impacts of this phenomenon; ii) build on the strengths and complement the weaknesses in all the countries and institutions that are members of SISSA, and iii) make decision makers in sectors vulnerable to drought aware of the need for planning, preparation and formulation of policies to reduce the impacts and increase resilience to this phenomenon. Likewise, the following are proposed as specific objectives of external communication:

1. Make the organization and objectives of the CRC-SAS publicly known and increase its visibility as a relevant actor in the production of climate information in the region.
2. Widely disseminate the SISSA project, its objectives, its activities, and products, both to internal and external audiences, users, and potential beneficiaries of SISSA products.
3. Achieve a sustained dialogue with the agriculture, energy, and fluvial transport sectors to make them aware of the drought problem.
4. Interact sustainably with the users of the SISSA products to promote the joint design and continuous evaluation of these products, to ensure that they are relevant to their needs, that they are consistent with their own protocols and decision contexts, and that they are usable for the users. decision makers from sectors vulnerable to drought.

#### P5: Cooperation, partnerships, equity, and inclusion

National drought risk management requires environmental observations, climate models, and modern analysis and visualization tools. However, there are still wide asymmetries in the capacities of national institutions to produce and disseminate the necessary information. Consequently, SISSA requires an institutional design, inter-institutional agreements, procedures and policies, and structures to guide, coordinate, and evaluate the initiative. Although six NMHSs participate, SISSA actively promotes the participation of multiple sectors and communities sensitive to drought that reflect the regional heterogeneity of needs and contexts. SISSA does not replace national institutions for the management of natural disasters, agricultural risks, civil defense, etc., but provide data, information and modern tools as inputs that help these institutions to (i) develop preparedness and risk management protocols, (ii) issue early warnings and declare emergencies, and (iii) agree on national drought policies.

#### P6: Result-based CD)

SISSA's final goal is to contribute to reducing vulnerability and increasing resilience to drought in sectors and actors affected by this damaging threat in southern South America, including the most vulnerable activities and groups. Consequently, the project aims to provide usable information on droughts to multiple types of final beneficiaries. First, SISSA provides data, information, and knowledge to national, provincial/departmental and local public institutions, of the six countries in the project. A second category of SISSA final beneficiaries includes private firms, civil associations, and individuals, including productive sectors and highly vulnerable groups. The 2017 workshop in Buenos Aires (see text related to WCDS Principle 3) identified the main productive sectors sensitive to drought in southern South America: (i) agricultural production (agriculture, livestock and dairy), (ii) the production and transportation of hydroelectric power (the region includes three binational power plants and multiple national plants), (iii) the fluvial transport of goods and products, and (iv) the provision of water to rural and urban areas. The current stage of SISSA focuses on the first three sectors. Representatives of the three sectors are involved from the beginning in SISSA activities and have a key role in ensuring that the information produced is relevant and actionable for decision-making and that contemplates the specific contexts and existing protocols in each sector/activity. Other beneficiaries of this activity are the multilateral institutions or development agencies that evaluate investments in the region. SISSA provides information and knowledge that will make it possible to ensure that the impacts of droughts do not delay the economic growth or progress in development. Institutions evaluating investments or credits for the region may insist that the risks associated with drought be considered from the outset in planning and decisions for “climate-smart” development that generate economic opportunities without exacerbating the impacts of droughts.

#### **Lessons learned and recommendations for wider application:**

Building on networks of experts (local, national and international) in the characteristics and impacts of droughts, both within each institution participating in SISSA and with external or collaborating institutions has been crucial for the ongoing success of the initiative. The complex nature of drought makes inter- and trans-disciplinary collaboration essential, so this way of working has been encouraged, facilitated and reinforced. In this sense, the coordination, active collaboration and implementation of strategic partnerships between multiple levels of government, communities, the private sector and other relevant stakeholders are key components for a national drought policy. Additionally, the exchange of experiences and capacities is a valuable component to enrich and strengthen the actions

carried out both at national and regional level. Likewise, a sustained dialogue with relevant stakeholders for the co-definition of problems and needs, and co-designs of the solutions, builds trust and credibility, contributing to possible future co-financing projects.

A regional approach like the one that SISSA proposes and implements allows countries to combine, complement, and reinforce their capacities and experiences, allowing the exchange of information on common or cross-border problems, and the integrated management of water resources. Particularly, sharing knowledge and encouraging capacity development training activities on the available family of quality control methods implemented in the CRC-SAS database that are useful to be implemented within some of the participating institutions is another good practice to be taken into account for a wider application. Moreover, SISSA makes the quality control codes as well as any other code available through its CRC-SAS/SISSA GitHub repository.