

Systematic observations of the climate system under the UNFCCC: An overview

Florin Vladu

Adaptation Programme, UNFCCC

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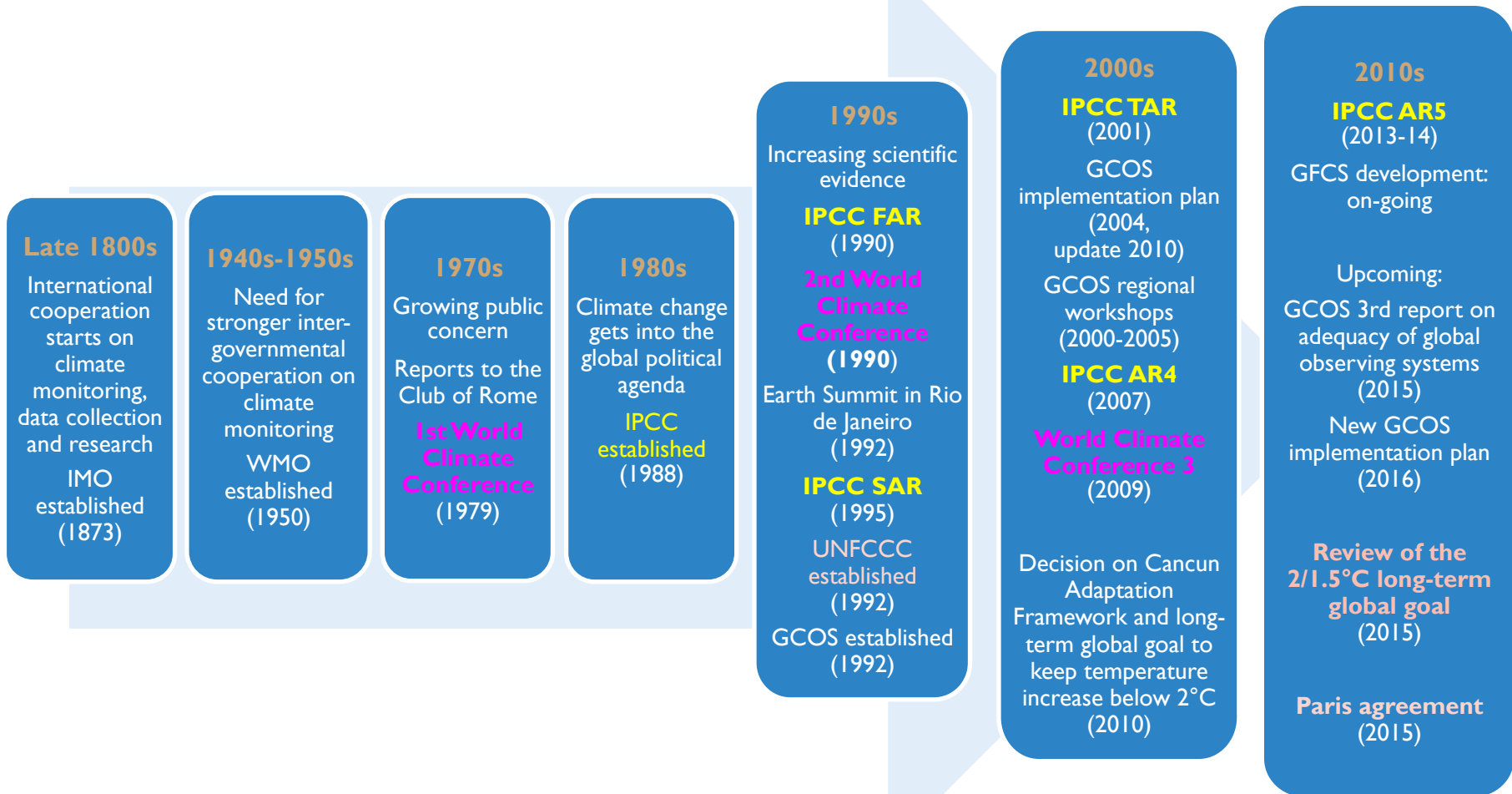
- **Objective:** present on-going work on systematic observation under the UNFCCC and the benefits of using Earth observations, including for monitoring of GHG emissions, adaptation and loss and damage
- **Contents:**
 - History - A brief look at developments up until now
 - Implementing - who is undertaking systematic observation and how?
 - Work done
 - Reporting - identifying progress and activities to support implementation
 - Gaps and needs identified by Parties and organisations
 - Funding – what is available for action on systematic observation
 - Cooperation with GCOS
 - Future opportunities

Systematic observations

- Systematic observation of the Earth climate system plays an essential role in **observing** and **understanding** the changes in the climate system, as well as in **projecting** future changes, which are fundamental for informing climate policy making
- Space observations contributed to significant progress in these areas
 - Scientist can now track better, for example, changes in land cover, ice sheets, water resources, sea level, extreme events, and human activities such as urban growth, land change, agriculture and deforestation, and dam and other infrastructure construction that impact the environment
 - Images from space are a powerful way to illustrate the changes that are happening due to climate change
 - Space observation play a major role in supporting disaster management, some of them attributable to climate change, by providing accurate and timely information for decision making (from disaster risk reduction to disaster response and recovery)
 - Improved continuity, space and time sampling and accuracy of Earth observations contributed to improved projections of climate models, including for near term and regional level. Such results enhanced the policy relevance of the latest assessment report of IPCC (AR5)



History | A brief look at developments in climate research and systematic observation



- **New observational needs emerging, e.g. for assessing the risks of climate change, adaptation, mitigation, loss and damage and sustainable development**
- **Despite advances in observational capacity, gaps still exist, in particular in developing countries, there are still challenges in ensuring long-term observations**



Parties

- NMHS
- Research organisations
- Space Agencies



WMO Global Observing System

GCOS

- Reports on adequacy of global observing systems (Status and Progress reports)
- Regional workshops (2006-2010); adaptation (2013,2015) and mitigation (2014) workshops
- Implementation Plans (2004, 2010, 2016)

Full implementation of the GCOS Implementation Plan and its Satellite Supplement by Parties to the UNFCCC will provide those global observations of the ECVs and their associated products that assist Parties in meeting their responsibilities under Articles 4 and 5 of the UNFCCC. In addition, it will provide many of the essential observations required by the WCRP and IPCC

WMO

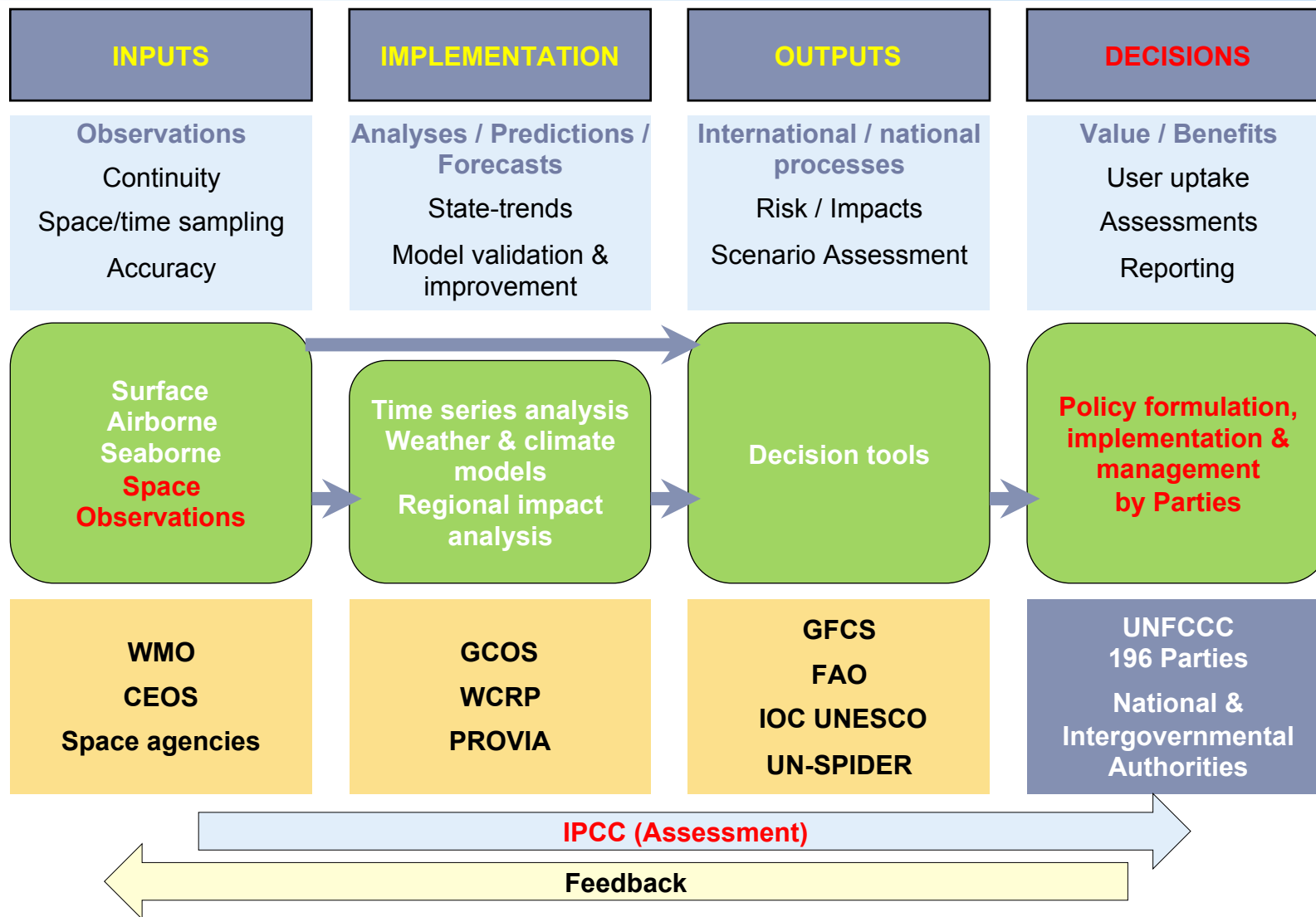
- **Global Framework for Climate Services**
including Climate User Interface Programme & Climate Services Information System

UN-SPIDER

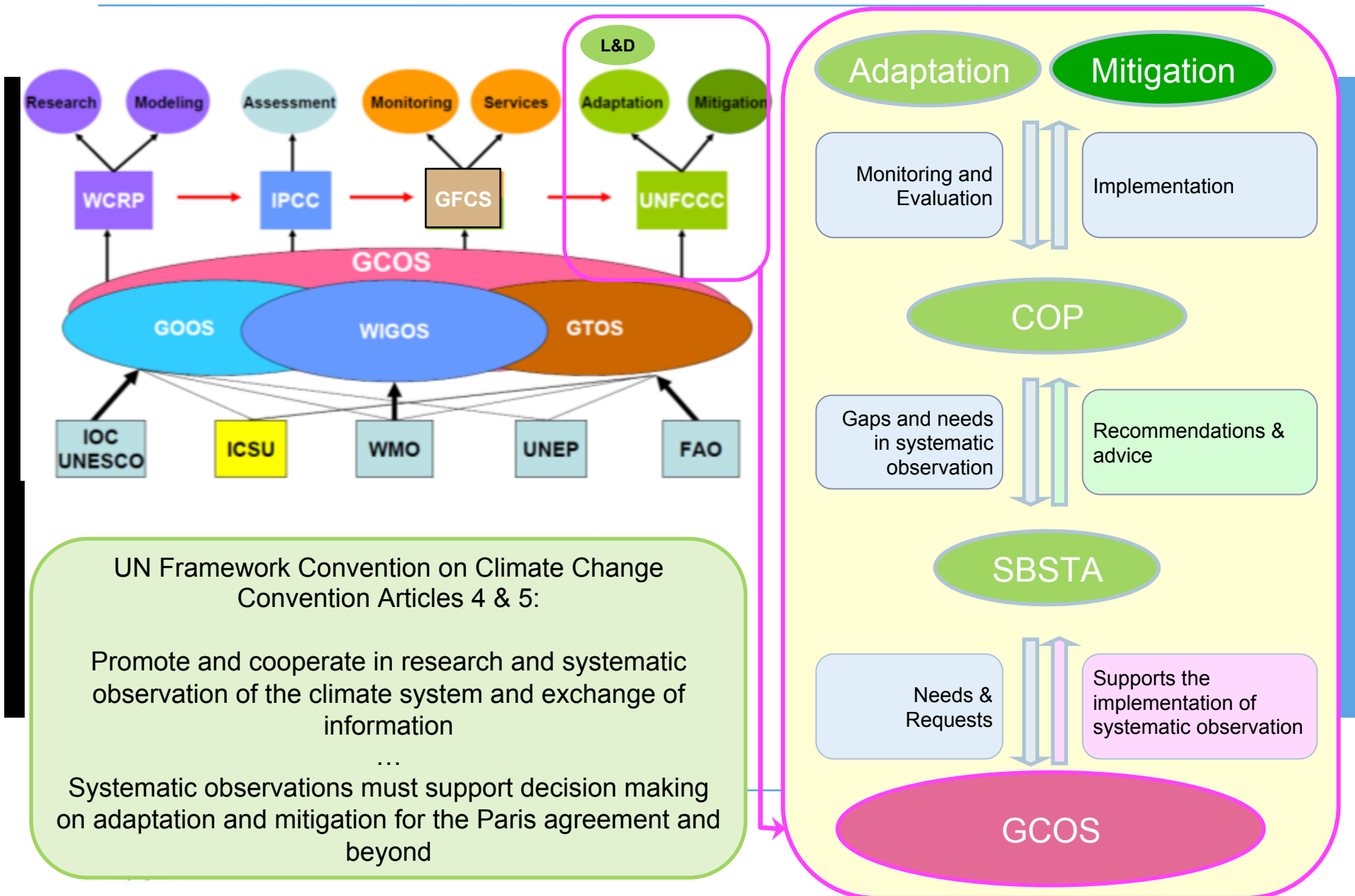
- A gateway to space information for disaster management support; a bridge to connect the disaster management and space communities; and a facilitator of capacity-building and institutional strengthening

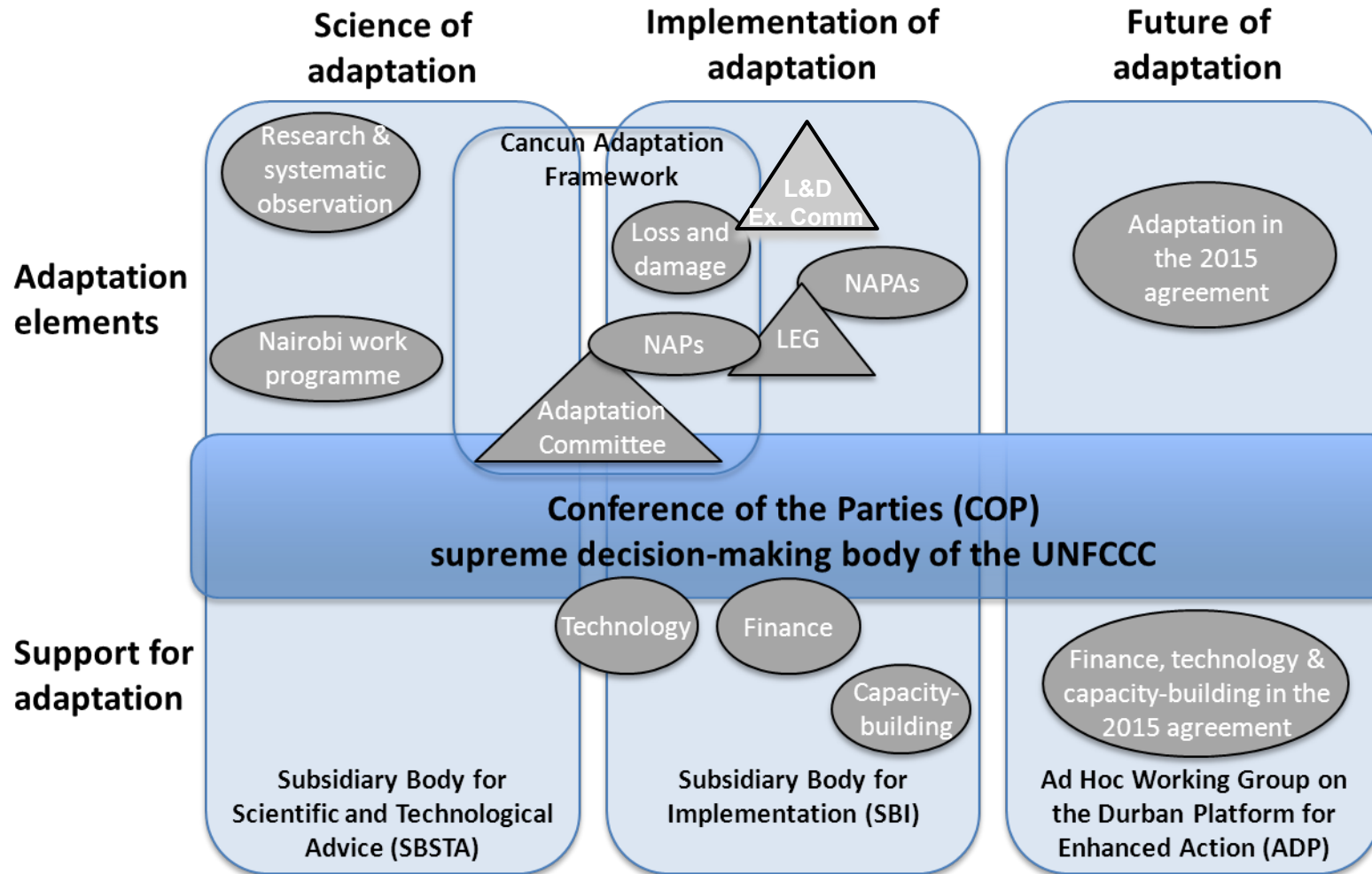


Implementing | The process of climate observation - from inputs to decisions



Implementing | Relationship between UNFCCC, SBSTA and research bodies on climate observation





- On **adaptation**, systematic observations support the work under the Cancun Adaptation Framework, on National Adaption Plans (NAPs), Nairobi Work Programme and Loss and Damage. The Adaptation Committee plays a key role in this work.
 - On **Loss and damage**, the Warsaw International Mechanism on Loss and Damage was established and the reaming nominations for the Loss and Damage Executive Committee are expected from Parties
- On **mitigation**, systematic observation supports the work of the SBSTA on REDD+ and agriculture. The space missions of the Greenhouse gases Observing SATellite "IBUKI" (JXTA) and of the Orbiting Carbon Observatory-2 (NASA), opens new possibilities for direct monitoring the concentration and emissions of CO₂ and other greenhouse gases from space.
 - This could the beginning of a future system that could allow for the verification and attribution of the greenhouse gas sources and sinks

- **In line with UNFCCC guidelines and GCOS Implementation Plan**
- **All Parties report on observed and projected changes to their local climate in the NC chapters on National Circumstances and on Impacts, vulnerability and adaptation**
- **Annex I**
 - Completed 6th NCs
 - Improving observing systems
 - Cooperation with networks on SO and data exchange
 - Supporting capacity building in developing countries
- **Non-Annex I**
 - Participation in and contribution to activities and programmes of national, regional and global research networks and observing systems and programmes relevant to adaptation and mitigation of climate change
 - Identification of gaps and needs



- **Gaps and needs identified by Parties**
 - Not all climate information needs under the Convention are being met
 - Large areas for which in situ observations and measurements are not available, e.g. large areas in Africa
 - Support for digitalising historical data
 - Ensuring sustained long-term operation of essential *in situ* networks
- **Needs for least developed countries**
 - NAPA projects
 - NAP development and implementation
- **Research Dialogue**
 - Provides a forum to enhance communication between science and policy communities
- **Nairobi work programme on impacts, vulnerability and adaptation**
 - Synthesizing knowledge
 - Sharing and disseminating knowledge
 - 297 partners involved in science, assessment, monitoring and early warning systems – 198 action pledges

- **Parties are supporting building capacities by strengthening existing national and regional systematic observation and monitoring networks and establishing new observing stations and networks**
- CB is provided through multiple channels, including development assistance, regional and bilateral cooperation, and the funding of projects and partnerships established with respective counterparts in developing countries by the national institutes working on climate-related observations and research
 - Regional and international cooperation on climate monitoring include the GCOS Regional Action Plans, e.g. ClimDevAfrica
 - GFCS
 - Cancun Agreements:
 - [Technology Mechanism – TEC and CTCN](#)
 - [Adaptation Forum](#)
 - Durban Forum on Capacity Building



- **Current GEF funding**
 - SCCF
 - LDCF
- **Adaptation Fund (AF)**
under the Kyoto protocol, managed by the AF Board
- **Green Climate Fund (GCF)**
Was established at COP 16 in Cancun, will become the main fund for global climate change finance, in the context of mobilizing 100 billion USD by 2020
- **Parties**
The COP urges Parties to carry on current funding for systematic observation through bilateral, regional and multilateral channels



- GCOS conducted regional workshops (2006-2010); adaptation (2013, 2015) and mitigation (2014) workshops. The adaptation workshop held in February this year, was organized in collaboration with IPCC and UNFCCC
- The **workshop on mitigation**, focused on: measuring atmospheric composition of CO₂, methane, NO₂, other long-lived GHGs, ozone, aerosols, including estimation of net sources and sinks, and fluxes; and on adjusting the land ECVs to the reporting needs of Parties on land-use (land-cover, fires).
- The **workshops on adaption** stressed the need:
 - for higher spatial and temporal resolution;
 - to focus on regions where climate change will have significant sector effects and where there are vulnerable populations;
 - to develop infrastructure and governance to support sustained data rescue;
 - to enhance climate observation system with a special emphasis on land and ocean as well as the interaction between the two;
 - To respond to the needs for climate observation identified in other work streams under the Convention through the Systematic Observation agenda item and the Sustainable Development Goals.



Future (1)

- Systematic observations play an increasingly important role for decision making on mitigation and adaptation for the 2015 agreement and beyond
- Despite wealth of data and information available, systematic observation must not be taken for granted
- New sets of observation requirements to support adaptation , mitigation loss and damage and sustainable development are still emerging
- Resources and efforts need to be maintained and improved, particularly on behalf of developing countries, to support their adaptation planning and mitigation action
- There are still challenges in ensuring long-term observations and any improvements, such as by placing an instrument for measuring CO₂ on the International Space Station, would benefit the work on adaptation and mitigation under the Convention



- Must look into ways to better liaise with:
 - The implementation bodies, including identifying the negotiating items under which systematic observation is required and provide relevant information to stakeholders and regional hubs, including via the Adaptation Committee, Nairobi work programme, LEG and the L&D Ex Comm
 - The systematic observation community
- High quality observations are the foundation for solid decision-making on future action on climate change!

Thank you!

