

The importance of systematic observations for the UNFCCC and Paris Agreement

Joint **GCOS/Copernicus/WIGOS/ GFCS Workshop**: Improving the value chain from observations to climate services to support climate policy, adaptation and mitigation in East Africa

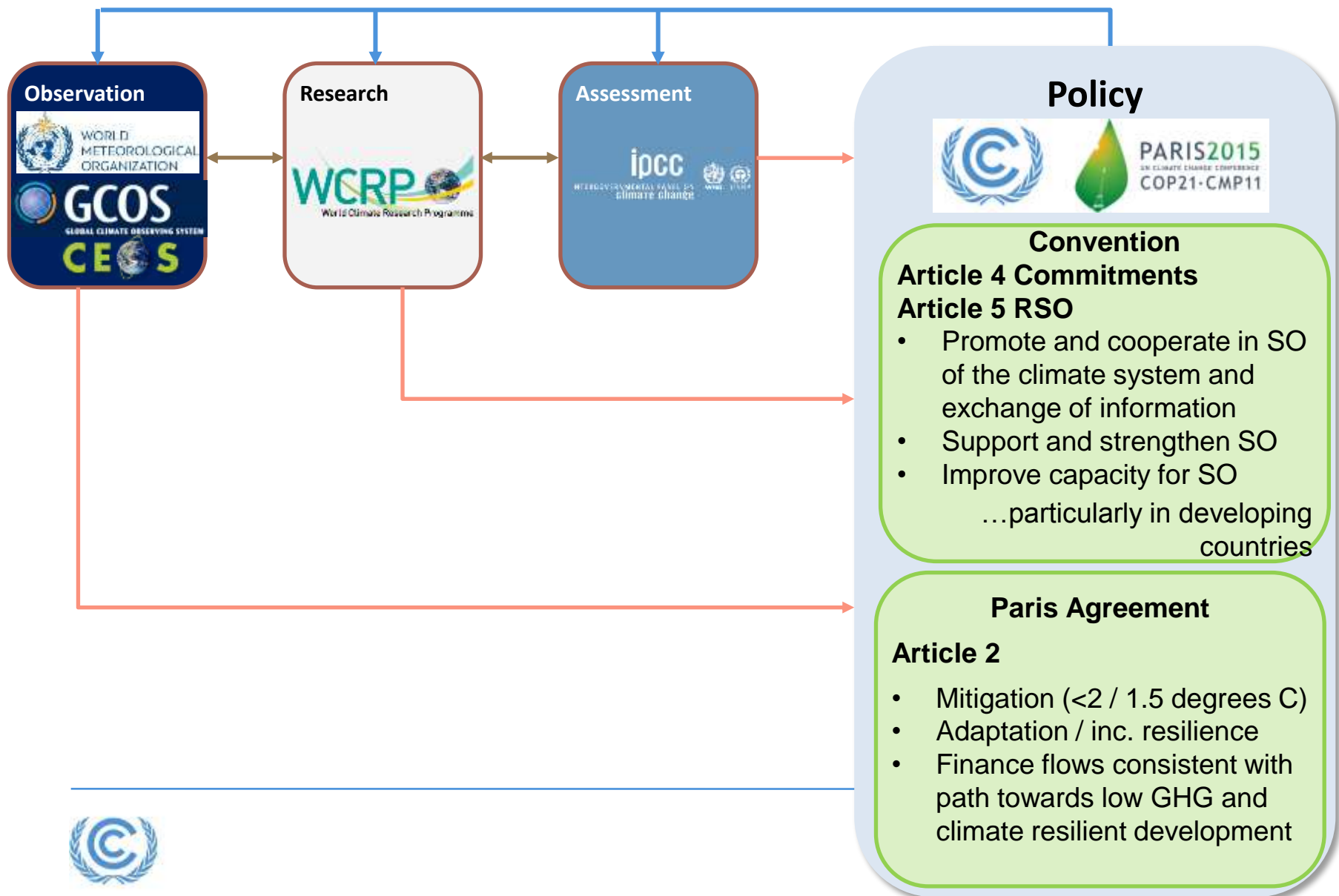
31 October – 2 November 2018

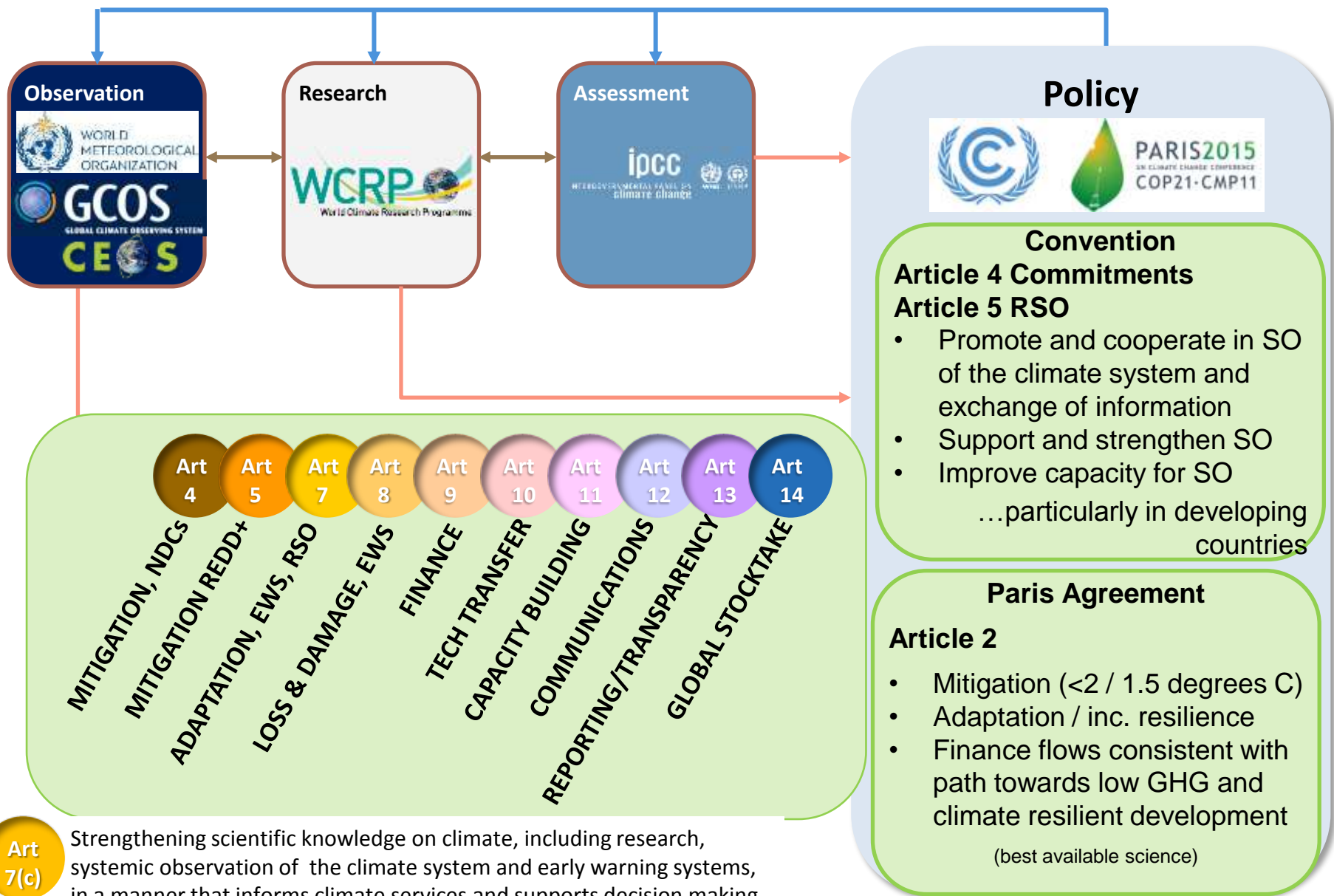
Dr. Joanna Post
Programme Officer, UNFCCC Secretariat



- UNFCCC and Paris Agreement
- EO support and inputs into the UNFCCC process
- Mitigation
- Adaptation
- The Paris agreement ambition cycle
- Opportunities
- SBSTA 49 (December 2018)









Source - The Paris Agreement: Analysis, Assessment and Outlook

Art 2. Purpose
Mitigation – Adaptation – Finance flows

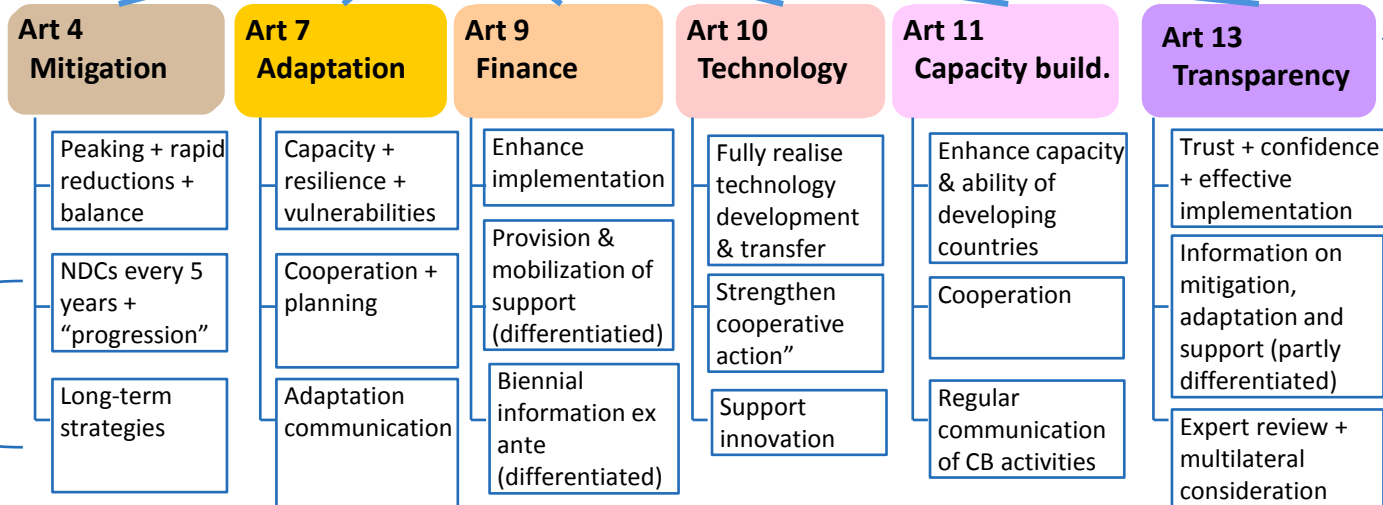
Art 3. Progression over time
All Parties to take and communicate efforts towards purpose

Art 8
Loss & Damage

Art 5
Sinks

Art 6
Mechanisms

Informs actions and support



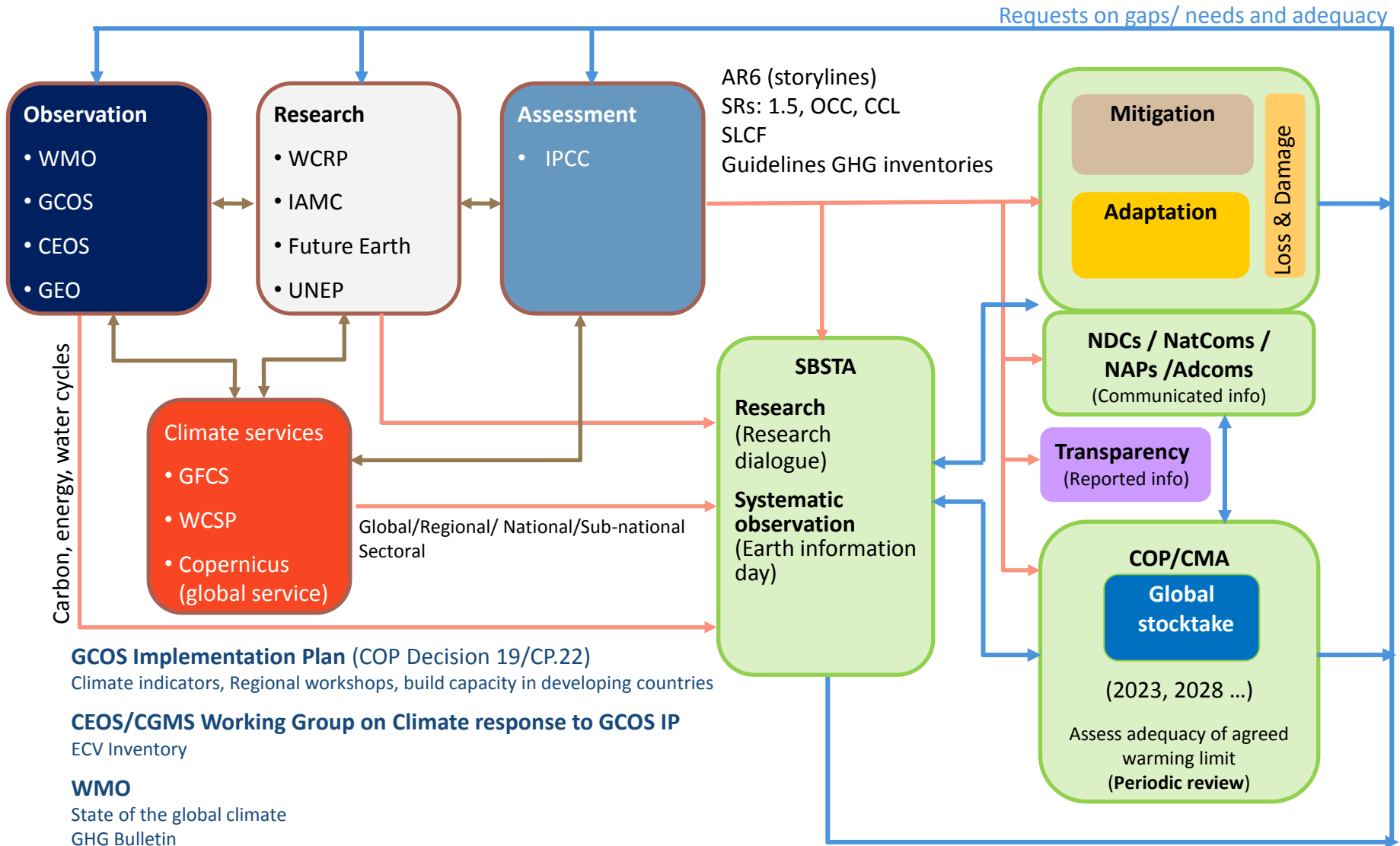
Informs actions and support

Feed into global stocktake

Art 14
Global Stocktake every 5 years of collective progress towards purpose and long-term goals



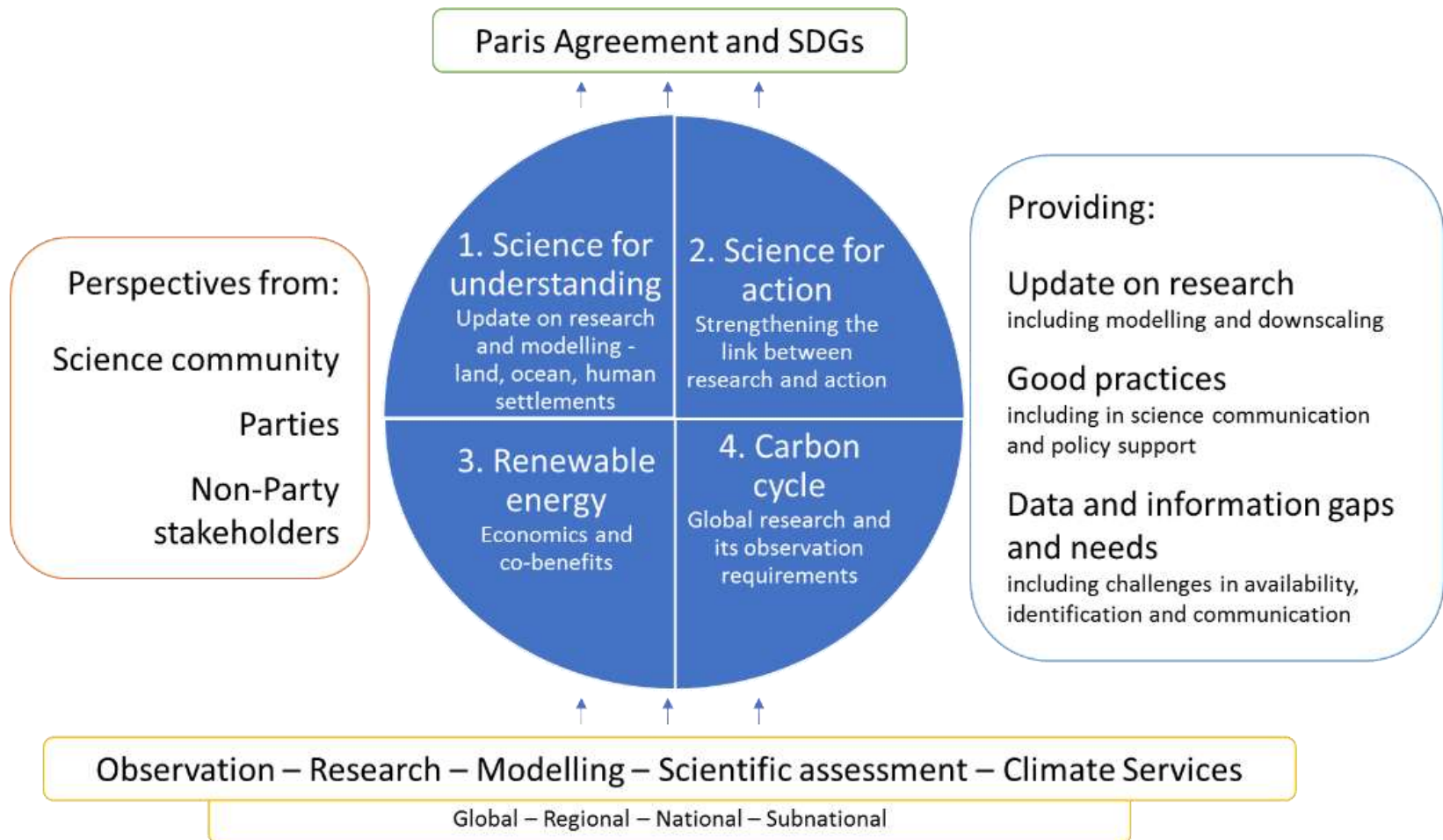
The new Paris paradigm: From “policy driving policy” to “science driving policy” and “policy driving science”



GCOS Implementation Plan (COP Decision 19/CP.22)
Climate indicators, Regional workshops, build capacity in developing countries

CEOS/CGMS Working Group on Climate response to GCOS IP
ECV Inventory

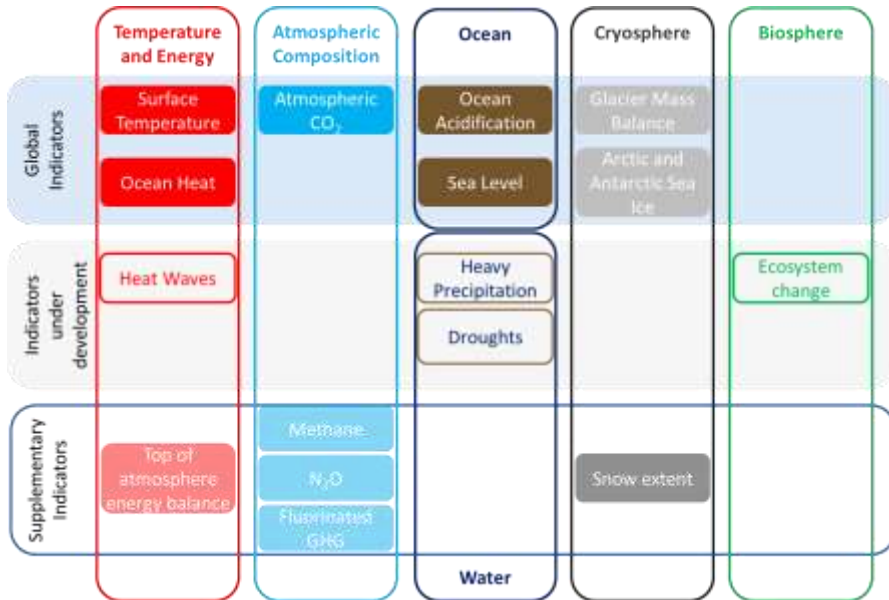
WMO
State of the global climate
GHG Bulletin
IG3IS
Collaboration between WMO/UNFCCC regional centres
GFCS





	Atmosphere	Terrestrial	Ocean
Energy & Temperature	Surface Radiation Budget, Earth Radiation Budget, Surface Temperature, Upper Air Temperature, Surface and Upper Air Wind Speed	Albedo, Latent and Sensible Heat Fluxes, Land Surface Temperature	Ocean Surface Heat Flux, Sea Surface Temperature, Subsurface Temperature
Other Physical Properties	Surface Wind, Upper Air Wind, Pressure, Lightning, Aerosol Properties		Surface Currents, Subsurface Currents, Ocean Surface Stress, Sea State, Transient Traces
Carbon Cycle and other GHGs	Carbon Dioxide, Methane, Other long-lived GHG, Ozone, Precursors for Aerosol and Ozone	Soil Carbon, Above-ground Biomass	Inorganic Carbon, Nitrous Oxide
Hydrosphere	Precipitation, Cloud Properties, Water Vapour (Surface), Water Vapour (Upper Air), Surface Temperature,	Soil Moisture, River Discharge, Lakes, Groundwater,	Sea Surface Salinity, Subsurface Salinity, Sea Level, Sea Surface Temperature
Snow & Ice		Glaciers, Ice Sheets and Ice shelves, Permafrost, Snow	Sea Ice
Biosphere		Land Cover, Leaf Area Index (LAI), Fraction of Absorbed Photosynthetically Active Radiation (FAPAR), Fire	Plankton, Oxygen, Nutrients, Ocean Colour, Marine Habitat Properties
Human Use of Natural Resources		Water Use, Greenhouse Gases (GHG) Fluxes	Marine Habitat Properties

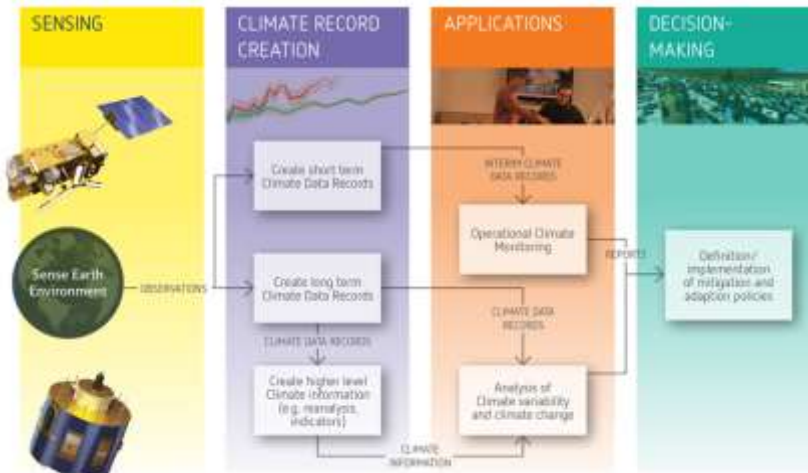
- Decision 19/CP.22 and SBSTA 45
- GCOS/WIGOS workshop for Pacific small island developing States, Fiji, and development of a Pacific region observing network plan.
- Parties and relevant organizations to take advantage of UNFCCC Financial Mechanism and other relevant sources to support GCOS regional workshops and projects identified in the resulting implementation plans
- Development of climate indicators for global stocktake AND for services



COP 22 / SBSTA 45 (2016)

The secretariat of GCOS to report on progress made in the implementation of the GCOS implementation plan (includes progress on regional workshops)

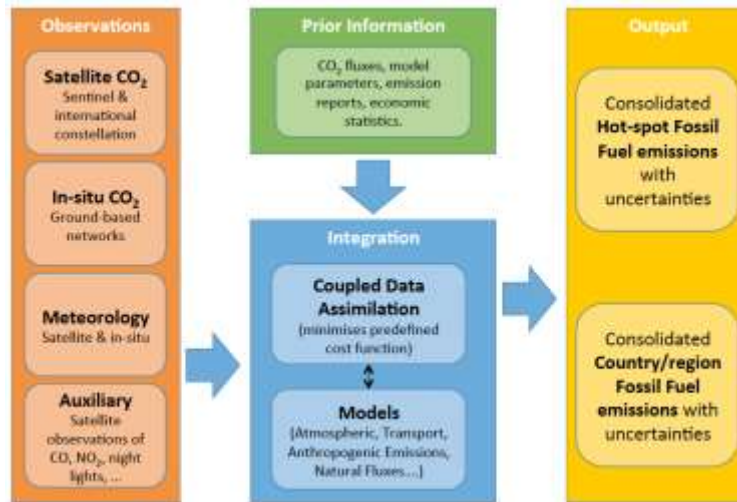




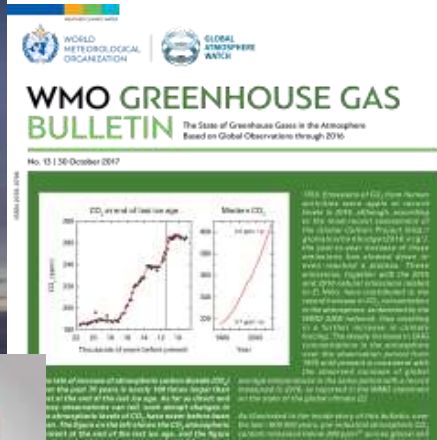
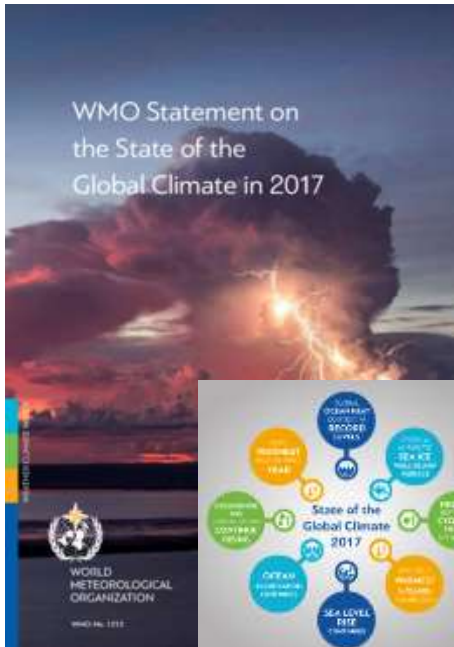
- Welcomed response to the GCOS implementation plan
- Noted ECV Inventory – and its usefulness for climate services

SBSTA 47 (2017)

GCOS IP T71 – prepare for a carbon monitoring system



The Committee on Earth Observation Satellites and the Coordination Group for Meteorological Satellites to report on progress



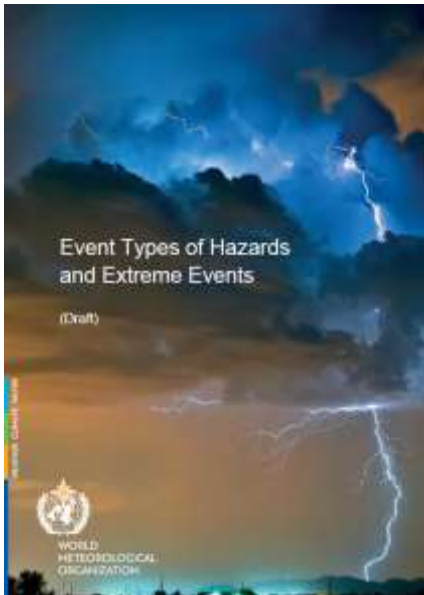
- WMO statement on the state of the climate
- Global framework for climate services
- Characterisation of extreme events
- Regional collaboration
- Opportunities presented by independent GHG monitoring (IG3IS)

SBSTA 45 (2016)

WMO to provide submissions on the state of the global climate (SBSTA 45)

SBSTA 47 (2017)

WMO to report on progress in implementing the Global Framework for Climate Services (GFCS)



Global Warming of 1.5 °C - an IPCC special report on the impacts of global warming of 1.5 °C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty



At COP 21 (Paris Agreement) **The COP invited the IPCC to provide SR1.5 by 2018** to inform discussions on the Talanoa dialogue 2018 – assessing collective mitigation action needed for limiting global warming at 1.5 °C



1. **Understanding 1.5°C: a rigorous scientific interpretation of several terms used in the Paris Agreement;** current amount of climate change and present trajectory of change; and framing and context for pathways, impacts and SD
2. **Mitigation pathways: pathways consistent with 1.5°C;** disentangling the whole system transformation; and challenges and opportunities of transformative pathways
3. **Impacts and risks: human, economic and ecological impacts of 1.5°C;** opportunities and limits of adaptation; and avoided impacts and comparing impacts at 1.5°C and 2°C
4. **Implementation of transformation:** questions and answers for mitigation pathways; role of technological choices, institutional capacity and urbanization; and enabling conditions and feasibility
5. **Response options and SDGs:** link mitigation pathways, associated impacts and transformation (CRDP) and ethics and equity; and maximize the benefits of 1.5°C and SDGs

Every extra bit of warming matters

Global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate (temp over land will increase more than average)

Risks and Impacts at 2 degrees are worse than 1.5 degrees including extreme changes in regional water availability.

Capping global warming at 1.5C above pre-industrial levels will require "rapid, far-reaching and unprecedented changes in all aspects of society".

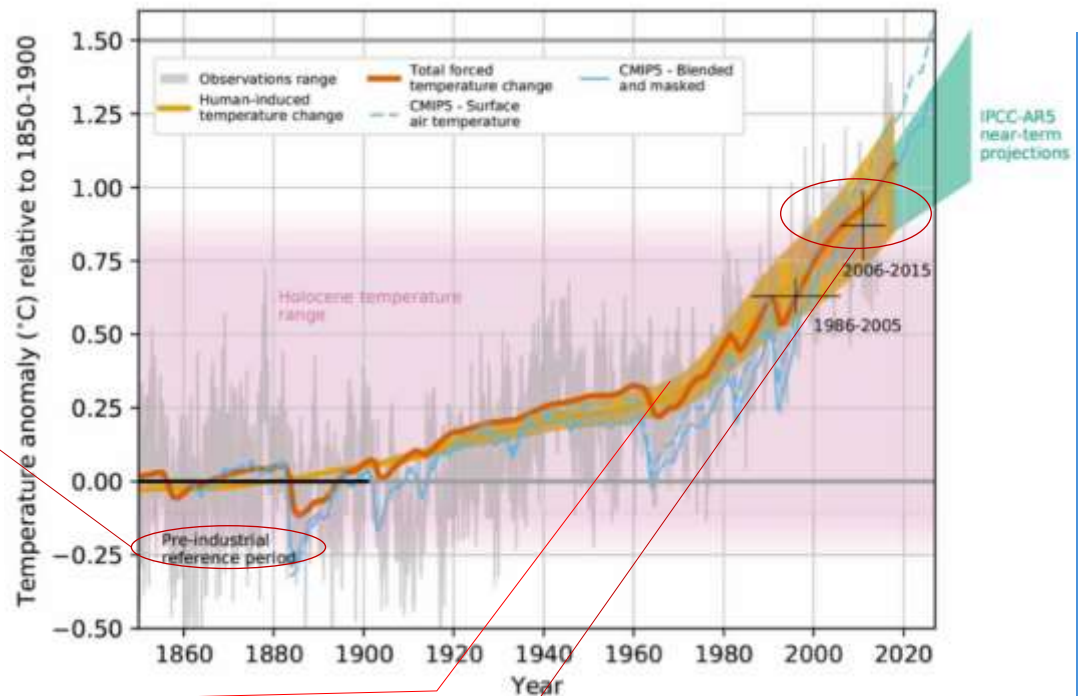
It's a need for all responses together.

Global average temperature = global mean surface temperature: estimated global average of near-surface air temperatures over land and sea-ice, and sea surface temperatures over ice-free ocean regions, with changes normally expressed as departures from a value over a specified reference period

Reference period: as in AR5 (1850-1900)

Anthropogenic warming – global temperature will fluctuate equally on either sides of 1.5°C over a sufficiently long time period and in absence of large volcanic eruptions

Mitigation studies focus on human induced warming. While studies on climate change impacts typically refer to total warming



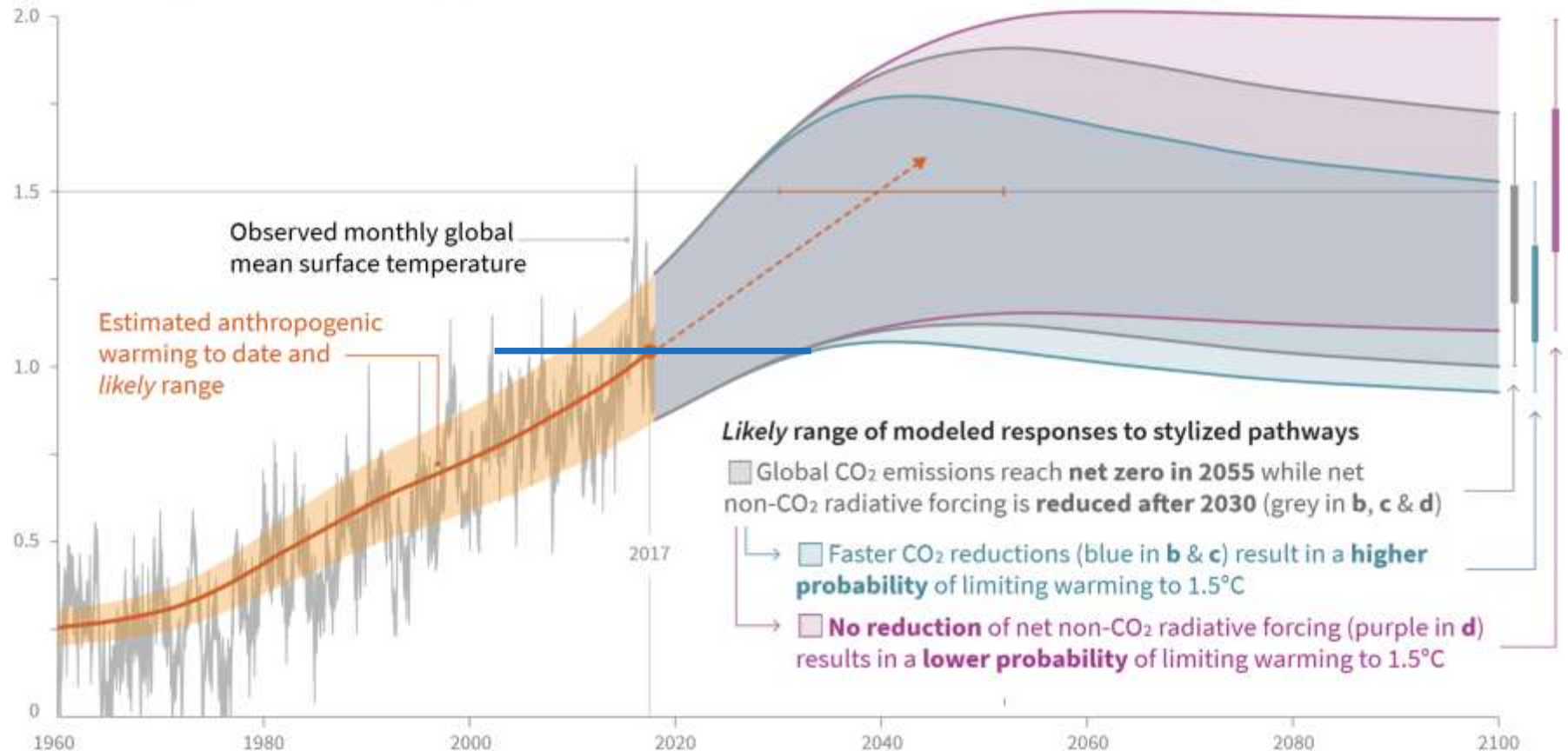
The decade **2006–2015** was **0.87°C** warmer than **1850–1900** (1.5°C relative to preindustrial corresponds to 0.63°C relative to 2006–2015)

Warming is not spatially distributed nor distributed uniformly across all the months of the year!



At the present rate of human-induced warming global temperatures would reach 1,5°C around 2040 (2030-2052)

Global warming relative to 1850-1900 (°C)



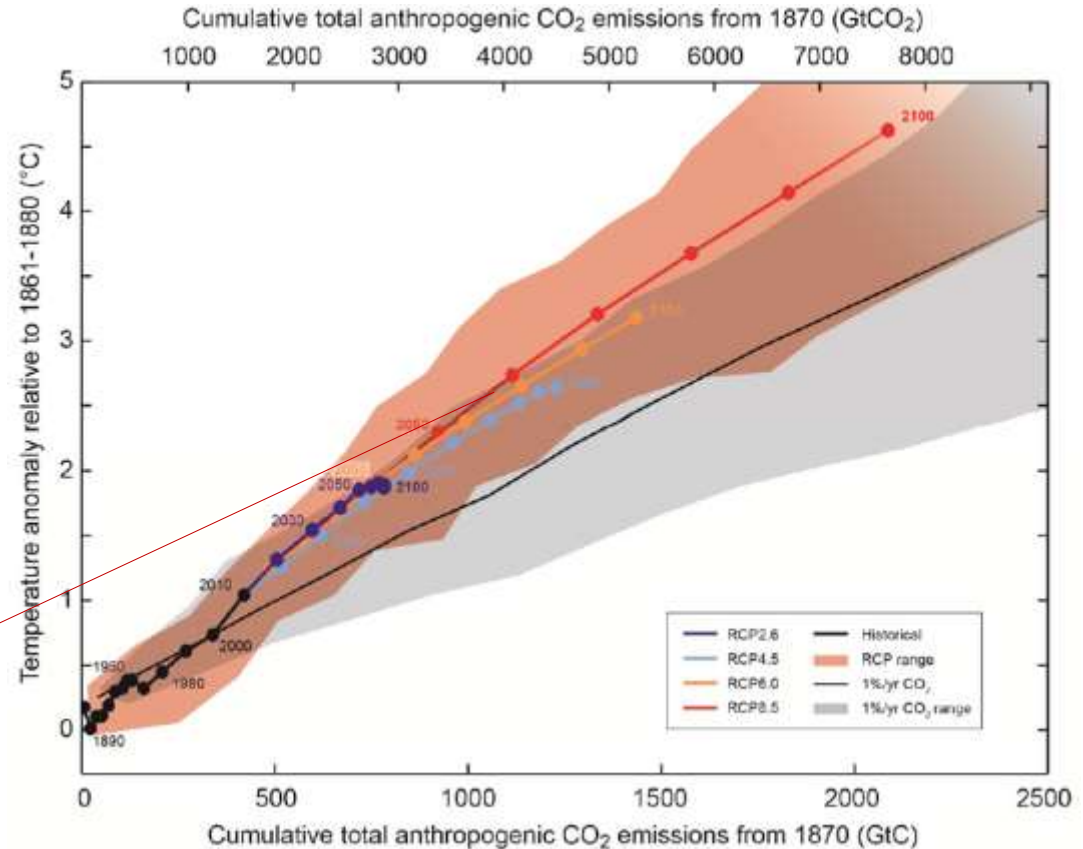
Global warming: The estimated increase in GMST averaged over a 30-year period, or the 30-year period centered on a particular year or decade, expressed relative to pre-industrial levels unless otherwise specified. For 30-year periods that span past and future years, the current multi-decadal warming trend is assumed to continue



Cumulative total emissions of CO₂ and global mean surface temperature response are approximately **linearly** related (TCRE)

Limiting the warming caused by CO₂ emissions alone with 66% probability to less than 2°C will require cumulative **anthropogenic CO₂ emissions** to stay between 0 and about **1,000 GtC** since that period. These upper amounts are reduced to about **800 GtC** respectively, **when accounting for non-CO₂ forcings**

→ “Balance” in Article 4.1 of PA



Warming over a given time period = cumulative CO₂ emissions * TCRE + **any warming caused by non-CO₂ climate forcing**. Under ambitious mitigation scenarios involving limited future cumulative CO₂ emissions, **non-CO₂ climate forcing becomes more important**



BREATHELIFE

ACT NOW NAV

THE AIR POLLUTION IN
NAIROBI, KENYA

17

WHO GUIDELINE

70%
OVER THE SAFE LEVEL
PM_{2.5} annual exposure*

90
120
180+

*PM_{2.5} concentrations measured in micrograms of particles per cubic meter of air (µg/m³)
Data: WHO Global Platform on Air Quality & Health

Search another location...

[More about the data](#)

Air Quality & Health Burden in Kenya

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BREATHELIFE

ACT NOW NAV

THE AIR POLLUTION IN
**KAMPALA,
UGANDA**

WHO GUIDELINE

10.4x
THE SAFE LEVEL
PM_{2.5} annual exposure*

80-104
100
150+

*PM_{2.5} concentrations measured in micrograms of particles per cubic meter of air (µg/m³)
Data: WHO Global Platform on Air Quality & Health

[More about the data](#)

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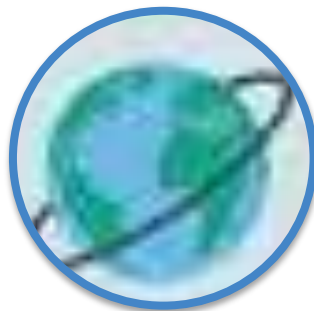
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English

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31/10/2018



The adaptation landscape under the UNFCCC

Science, research,
systematic observation



Research dialogue,
IPCC collaboration,
review...

Knowledge and
assessment



Nairobi work
programme

Planning and
Implementation



National
adaptation plans
(NAPs)

Least Developed
Countries Expert

Addressing
residual risks



Warsaw
Mechanism on Loss
and Damage

Institutional
support



Adaptation
Committee

LEG

Stakeholder engagement and regional cooperation

Finance, Technology and Capacity Building



Adaptation in the Paris Agreement: key provisions



Strengthening scientific knowledge on climate, including research, systemic observation of the climate system and early warning systems, in a manner that informs climate services and supports decision making

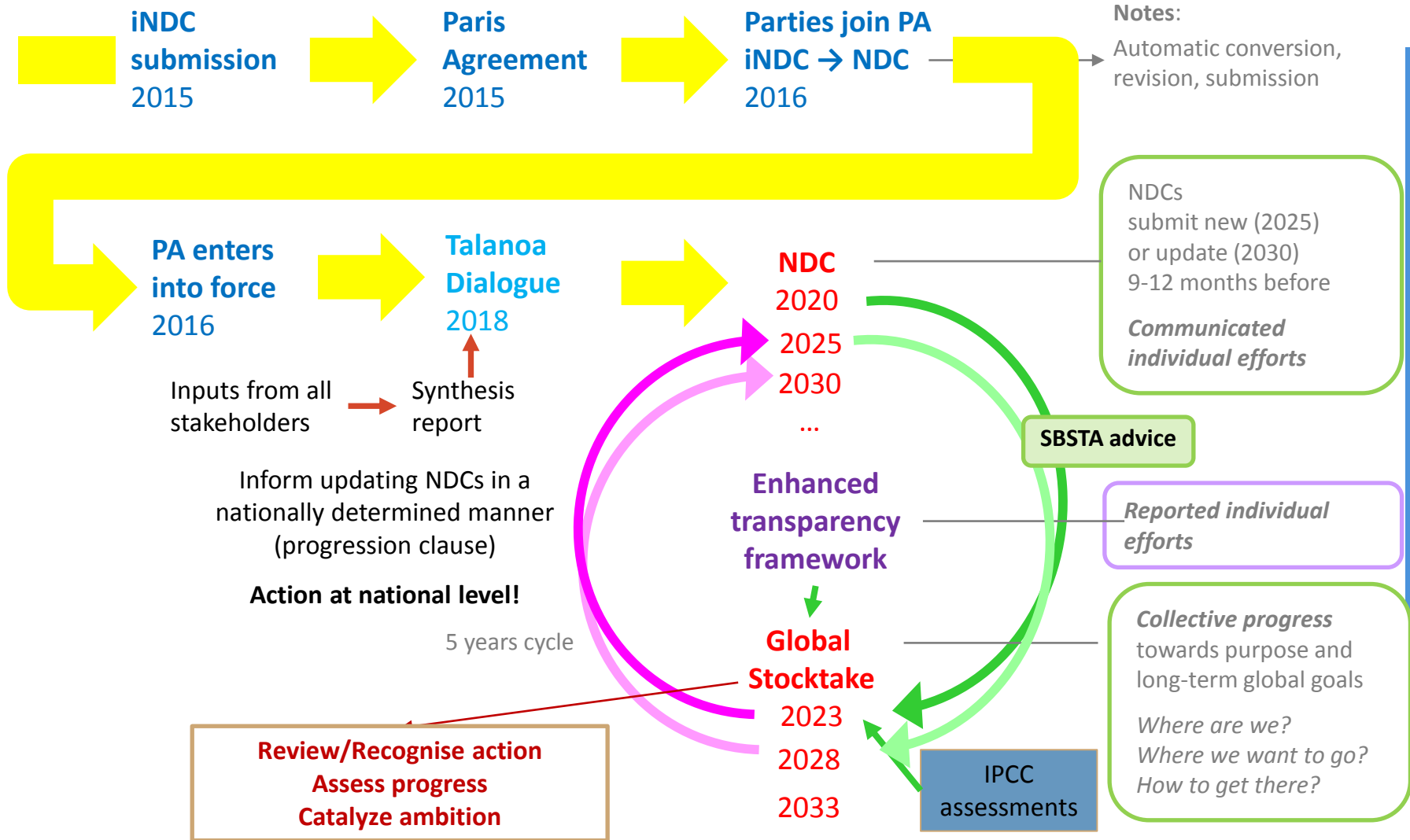
- **Global goal on adaptation:** enhance adaptive capacity, strengthen resilience, reduce vulnerability; **link to +2°C/1.5°C limit** in Art 2 (Art 7.1)
- All strengthen **cooperation** in context of Cancun Adaptation Framework (Art 7.7) and **plan and implement adaptation, including NAPs** (Art 7.9)
- All submit/update **an adaptation communication as part of or together with other communications such as NAP, NDC or NatCom** (Art 7.10-7.11)
=> recorded in **public registry** (Art 7.12)
- **Transparency framework** clarifies/tracks progress on adaptation actions and informs global stocktake (Art 13.5)
- **Global stocktake** recognizes efforts, enhances implementation, assesses adequacy/effectiveness of actions/support and progress towards global goal on adaptation (Art 7.14)
- Adaptation **technical examination process** in 2016-2020 (1/CP.21, 125-133)



Opportunities

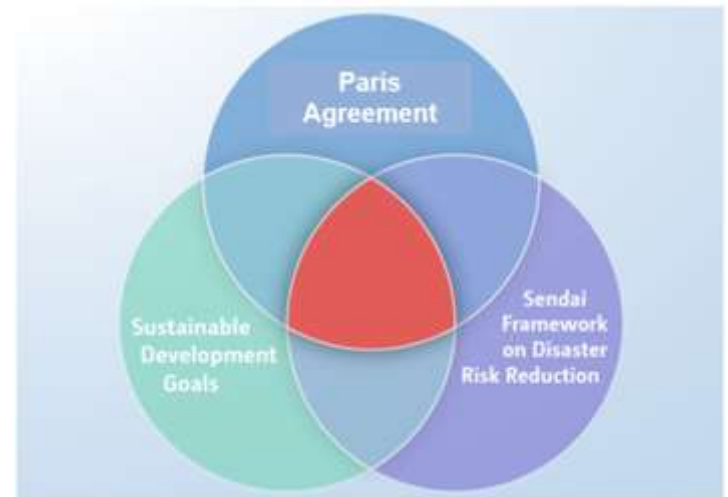
- Systematic observation leads to
 - **understanding** changes
 - **projecting** future changes, which are fundamental for informing climate policymaking
- For example, due to systematic observation:
 - Scientists can **better track changes** in land cover, ice sheets, water resources, sea level, extreme events and human activities such as urban growth, land change, agriculture, deforestation and dam and other infrastructure construction that impact the environment
 - Meteorologist can **better forecast changes** to support agricultural outlooks, regional information, extreme events
 - Modellers can **better project changes**, including for the near-term and the regional level, due to improved continuity, space and time sampling and accuracy of Earth observations. Such results enhanced the policy relevance of the IPCC's Fifth Assessment Report.
 - People can **see the changes** that are happening due to climate change on images from space, which are a powerful way to illustrate these changes
 - Decision-makers can **better manage disasters**, including from those attributable to climate change, because they are better supported with accurate and timely information for decision making (from disaster risk reduction to disaster response and recovery)





- **High-quality observations are the foundation for solid decision-making on CC**
- **Some opportunities for systematic observation:**
 - **Climate services** and indicators that could support adaptation decision making and be incorporated into adaptation reporting cycle by all Parties
 - **Reduce uncertainties** of national inventories of GHGs that are reported as part of the enhanced transparency framework (e.g., WMO IG3IS, land use)
 - Identify ways to **improve consistency** in national reporting of RSO to the UNFCCC
 - **Liaise with SBSTA** and other implementation bodies - provide relevant information to relevant workstreams under the Convention and the Paris Agreement (e.g., NAPs-LEG, Adaptation Committee, Nairobi work programme and the L&D Ex Com)
 - And during sessions: Research Dialogue, Earth Information Day
 - Support / **liaise with WMO, GCOS, CEOS** who report directly to SBSTA
 - Contribute to **improving the transparency framework and support the global stocktake** – indicators, state of the climate
 - Support the technical examination process (pre-2020 ambition)
 - Science / policy **communication** - Case studies – support developing countries
 - **Integrated approach** with SDGs and Sendai Framework and Rio Conventions

- At the **global level**, negotiations on the modalities and guideless for implementing the Paris Agreement will be completed in 2018 and will allow for the refinement of SDG indicators under Goal 13 in 2020, as planned by the IAEG-SDGs, and serve as a basis to assess progress on climate change and sustainable development
- At the **regional level**, regional initiatives are expected to play a role in promoting coherence across the three policy frameworks
- At the **national level**, some countries are already taking integrated approaches to implement all three agendas, including through national adaptation plans (NAPs.)
In some cases, mechanisms that facilitate joint problem solving and planning for disaster risk reduction, climate change and sustainable development have been put in place; in other cases, separate platforms or commissions mechanisms have been established



- Recognition of:
 - **Earth Information Day (EID)** annually at future COPs
 - **Importance of strengthening climate services** to support adaptation and mitigation, particularly in developing countries
 - **Gaps in systematic observation** to support climate indicators, climate services and research– (IPCC SR1.5, Oceans, GCOS headline climate indicators, Global Carbon Project)
 - **GCOS workshop in East Africa** and the importance of strengthening systematic observation and data reporting in East Africa and support climate services
 - **ECV Inventory Gap Analysis** and defining an **optimum GHG monitoring constellation**
 - **The potential of top-down approaches** to support Parties' national GHG emission reporting
 - Role of **ocean observations**
- Encouragement to Parties and relevant organizations **to**
 - **Support observation, data services and climate services**
 - **Fill gaps**
 - **Take advantage of funding opportunities available**
 - **Communicate at science/policy interface**
- **GFCS – update technical guidelines for NAPs – share examples...**



Thank you

jpost@unfccc.int

**[https://unfccc.int/topics/science/workstreams
/systematic-observation](https://unfccc.int/topics/science/workstreams/systematic-observation)**



1st week (2-8 December)

Sun	Mon	Tue	Wed	Thu	Fri	Sat
Open the COP and CMP and resume the CMA	Official opening ceremony and the high-level segment	Negotiations	Negotiations	Wrap-up Talanoa Dialogue preparatory phase	Negotiations	Closing SBSTA, SBI and APA
Open the SBSTA, SBI and APA	High-level nat. statements Joint session for statements	SBSTA-IPCC special event on SR15	Negotiations	Negotiations	Negotiations	Closing SBSTA, SBI and APA

2nd week (10-14 December)

Mon	Tue	Wed	Thu	Fri
...		High-level statements	...	Closing plenaries of the COP and CMA (PAWP)
....	High-level statements (resumed)	High-level statements Closing TD	Closing plenaries of COP and CMP (nonP AWP agenda items)	Closing plenaries of the COP and CMA (PAWP)

