Prepared for South-South Cooperation on science and technology to address climate change

Needs and barriers analysis

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Topics

- Impacts and vulnerability
- Finance and capacity needs
- Knowledge for adaptation
- Technology for mitigation
- The way forward

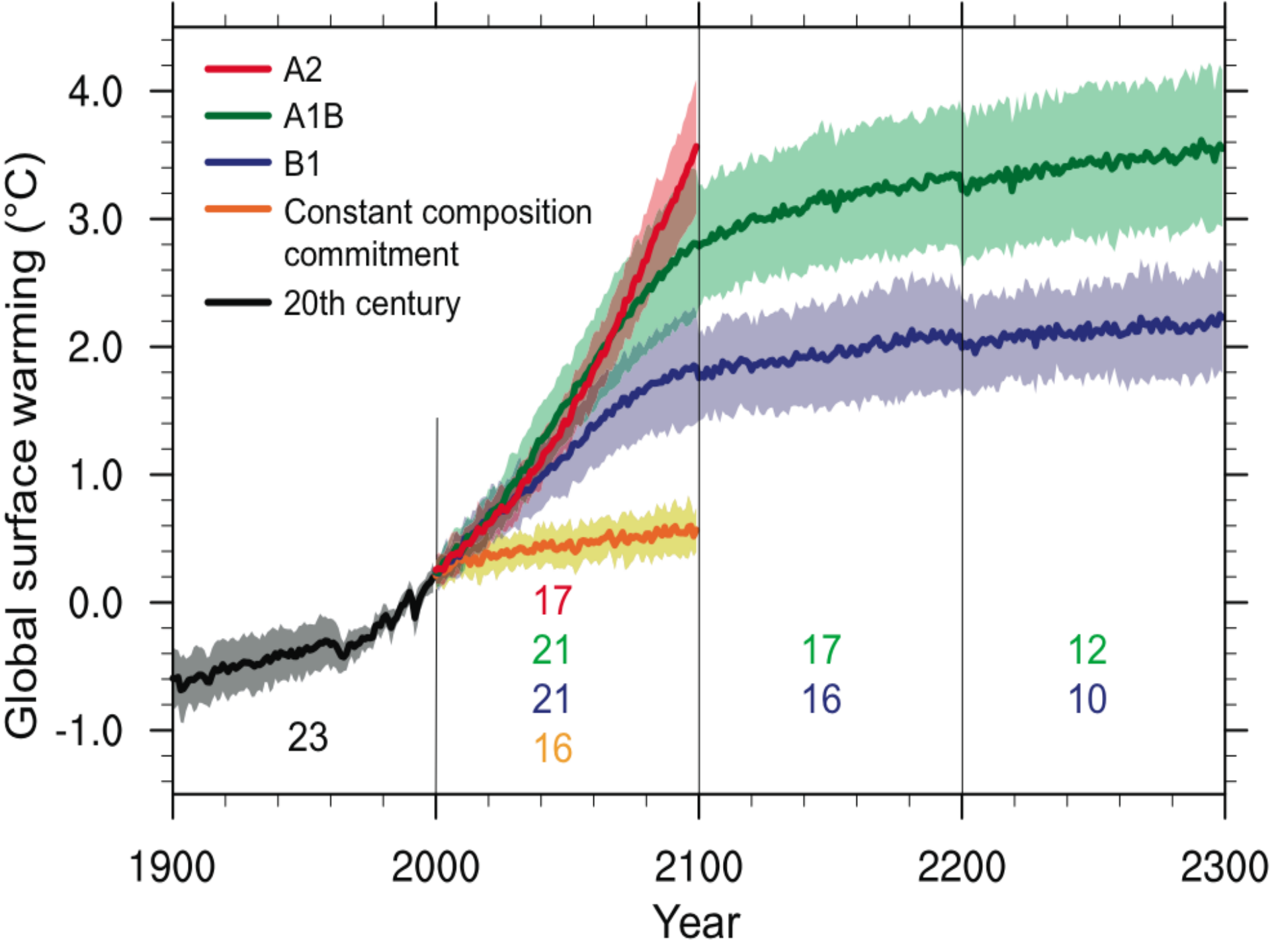
Impacts and vulnerability: IPCC Key findings

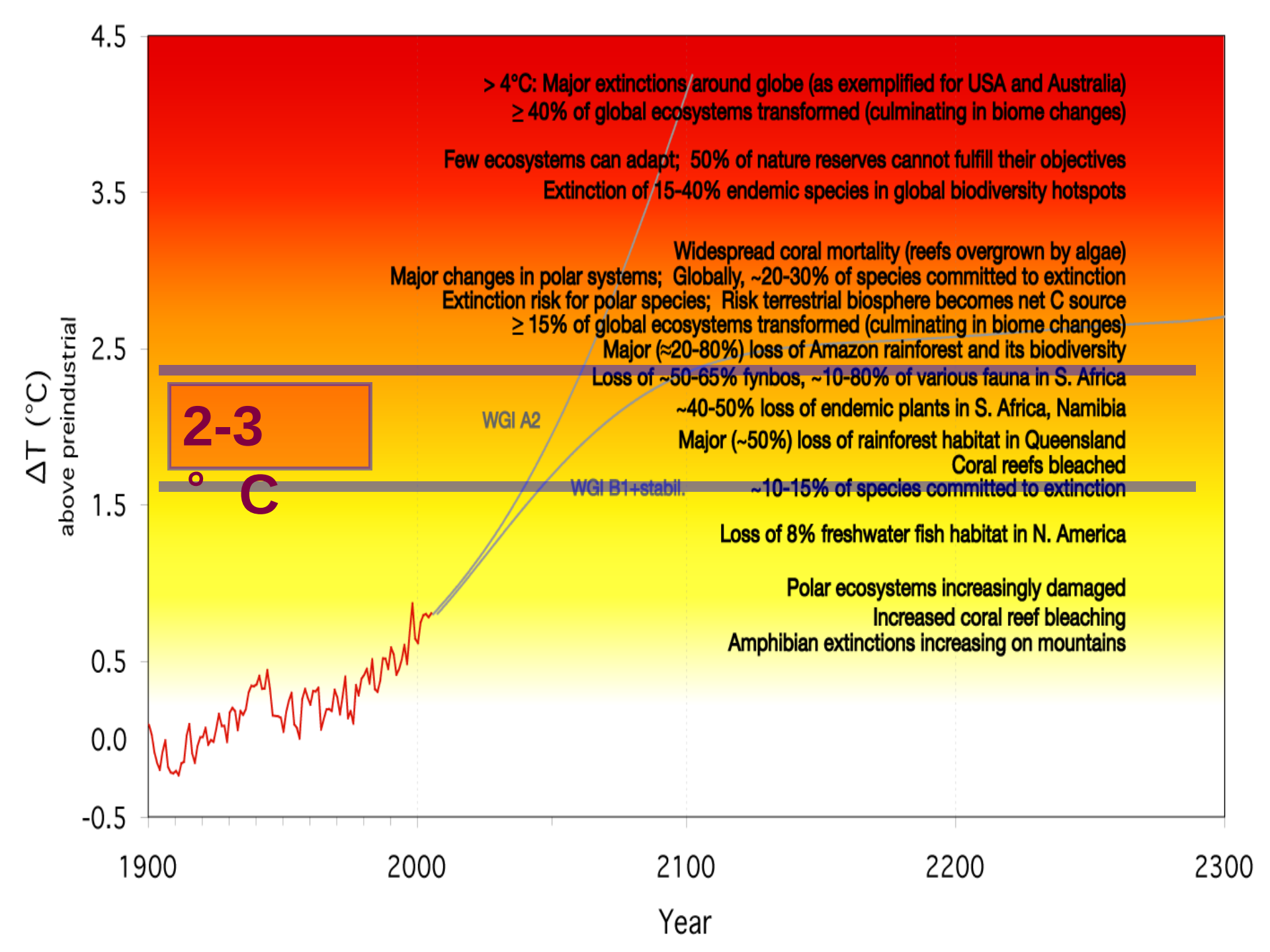
1. Warming of the climate system is **unequivocal**
2. Most of the observed increase in global average temperatures is **very likely** (>90%) due to the increase of GHGs
3. **Anthropogenic warming and sea level rise would continue for centuries even if GHGs were to be stabilised**
4. **Many natural systems are being affected by climate change, (droughts and floods, biodiversity loss, coasts--SIDS/Megadeltas, Arctic, Africa)**

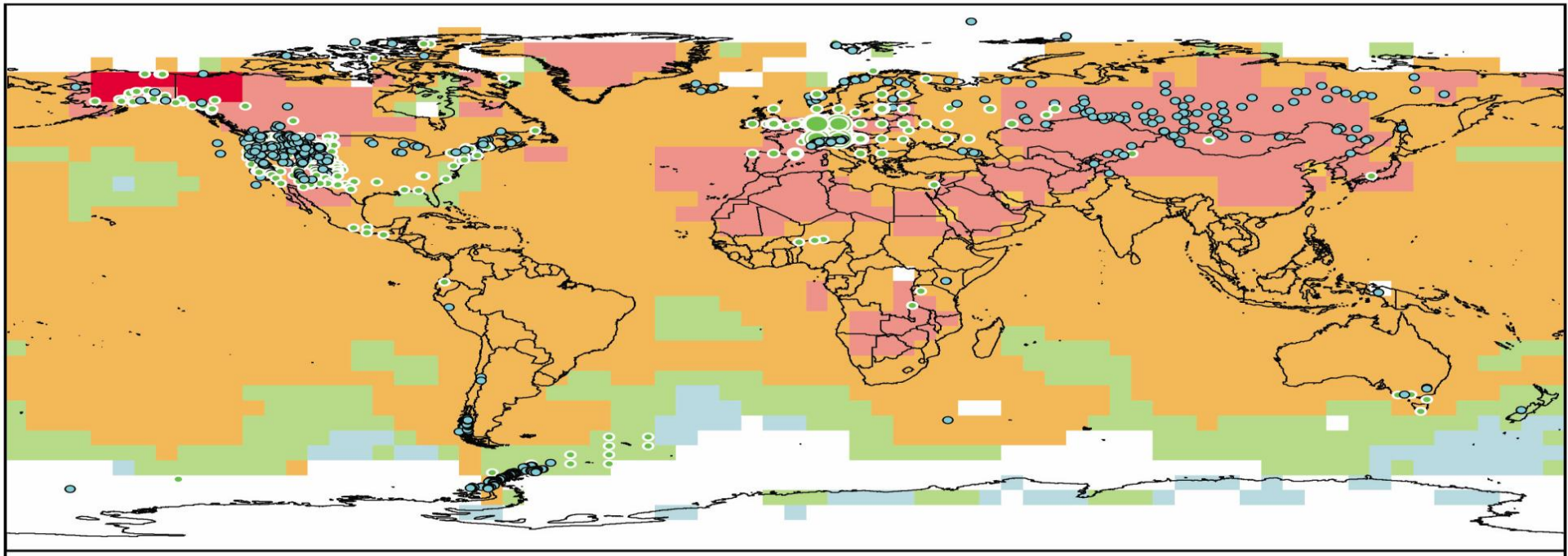
5 **Adaptation is already taking place on a limited basis; and with substantial limits and barriers to adaptation including uneven distribution of adaptive capacity across the world**

6 Global GHG emissions have grown since pre-industrial times, with an increase of 70% between 1970 and 2004.

7 Substantial economic potential for the mitigation of global GHG emissions over the coming decades, that could offset the projected growth of global emissions or reduce emissions below current levels


A2
A1B
B1
Constant composition commitment
20th century
Global surface warming (°C)
4.0
3.0
2.0
1.0
0.0
-1.0
1900
2000
2100
2200
2300
Year
23
17
21
21
16
17
16
12
10


4.5
3.5
2.5
1.5
0.5
0.0
-0.5
ΔT (°C)
above preindustrial
1900
2000
2100
2200
2300
Year
> 4°C: Major extinctions around globe (as exemplified for USA and Australia)
≥ 40% of global ecosystems transformed (culminating in biome changes)
Few ecosystems can adapt; 50% of nature reserves cannot fulfill their objectives
Extinction of 15-40% endemic species in global biodiversity hotspots
Widespread coral mortality (reefs overgrown by algae)
Major changes in polar systems; Globally, ~20-30% of species committed to extinction
Extinction risk for polar species; Risk terrestrial biosphere becomes net C source
≥ 15% of global ecosystems transformed (culminating in biome changes)
Major (≈20-80%) loss of Amazon rainforest and its biodiversity
Loss of ~50-65% fynbos, ~10-80% of various fauna in S. Africa
~40-50% loss of endemic plants in S. Africa, Namibia
Major (~50%) loss of rainforest habitat in Queensland
Coral reefs bleached
~10-15% of species committed to extinction
Loss of 8% freshwater fish habitat in N. America
Polar ecosystems increasingly damaged
Increased coral reef bleaching
Amphibian extinctions increasing on mountains
2-3 °C
WGI A2
WGI B1+stabil.



NAM		LA		EUR		AFR		AS		ANZ		PR*	
355	455	53	5	119		5	2	106	8	6	0	120	24
94%	92%	98%	100%	94%	89%	100%	100%	96%	100%	100%	–	91%	100%

28,115

TER		MFW**		GLO	
764		1	85	765	
94%	90%	100%	99%	94%	90%

28,586

28,671

Observations

- Physical systems (snow, ice and frozen ground; hydrology; coastal processes)
- Biological systems (terrestrial, marine, and freshwater)

Europe ***	
○	1-30
○	31-100
○	101-800
○	801-1200
○	1201 -7500

Temperature change °C
1970-2004

-1.0 -0.2 0.2 1.0 2.0 3.5

Physical	Biological
Number of significant observed changes	Number of significant observed changes
Percentage of significant changes consistent with warming	Percentage of significant changes consistent with warming

* Polar regions include also observed changes in marine and freshwater biological systems.

** Marine and freshwater includes observed changes at sites and large areas in oceans, small islands and continents.

*** Circles in Europe represent 1 to 7,500 data series.

AR4-WG2
Vulnerable sectors and systems

- Some ecosystems:
  - Coral reefs; sea-ice regions
  - Tundra, boreal forests, mountain and Mediterranean regions
- Low-lying coasts, mangroves & salt marshes
- Water resources in mid-latitudes & dry Tropics
- Low-latitude agriculture
- Human health where adaptive capacity is low

AR4-WG2
Vulnerable regions

- The Arctic
- Sub-Saharan Africa
- Small islands
- Asian megadeltas

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Adaptation costs and capacity needs

- *The total global adaptation investment, including that pledged from 2006 to 2010, was approximately USD 2 billion (0.4 billion/year), of which just around 2.5% has actually been spent or is being implemented.*
- *The recent GEF-McKinsey study shows an estimate global adaptation cost of $100 billion/year by 2030.*
- *The UNEP project on the Economics of Adaptation in Africa, proposes a range of estimates for the cost of adaptation in Africa, with the lower benchmark of $25 billion per year for immediate needs (by 2012). The study shows that "…the capacity to utilize additional funding on climate adaptation over the next few years is about the same order of magnitude as the funding available."*
- *These figures, though indicative, will require an immediate significant scaling up of the capacity for implementation--perhaps a 100-fold increase in capacity building in developing countries.*

Adaptation vs. mitigation

- **Adaptation** is a knowledge-intensive undertaking, yet there is a huge gap between knowledge producers and policy-makers

- **Mitigation** is a technology-intensive undertaking, yet there is huge divide between North and South

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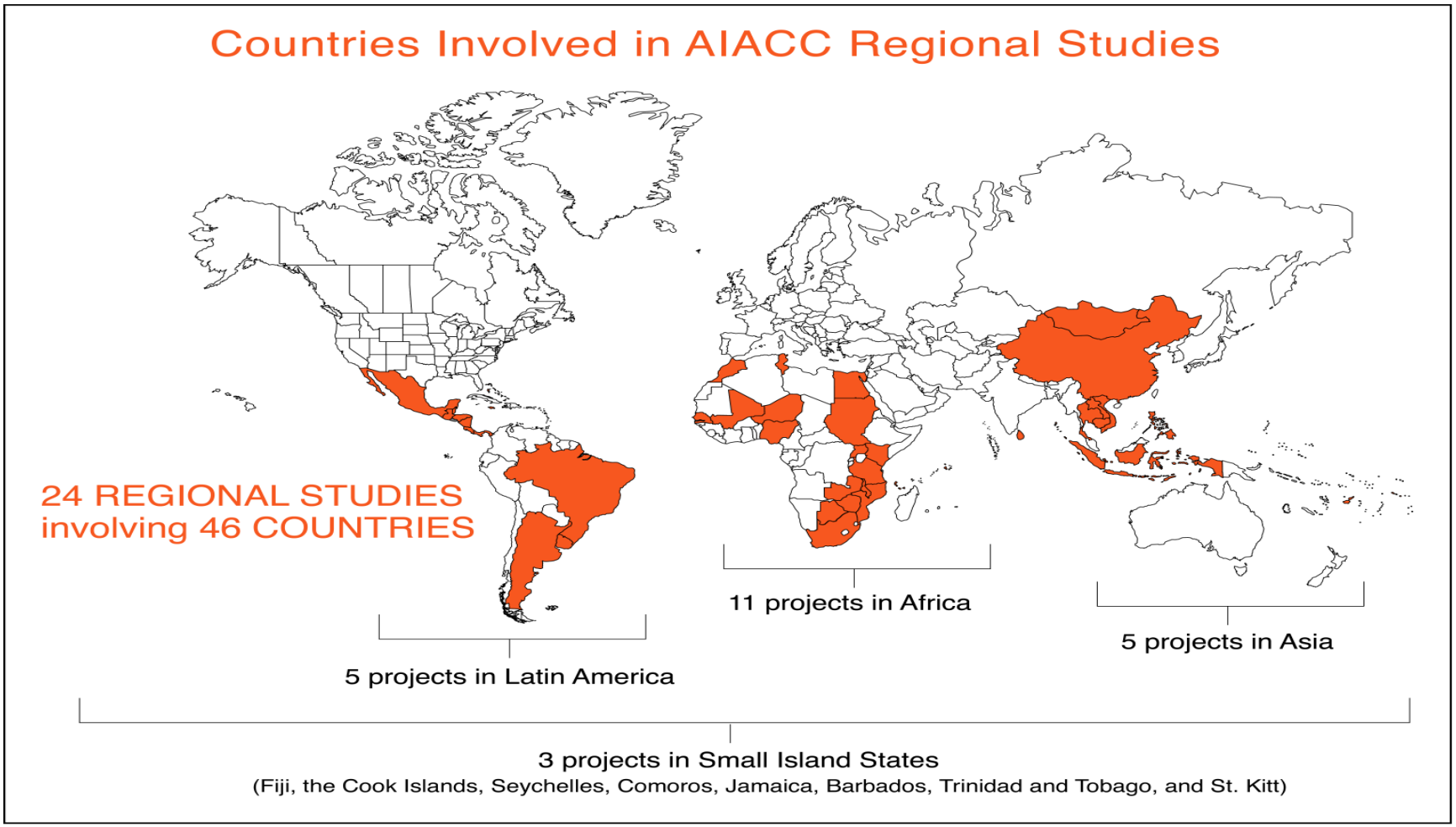
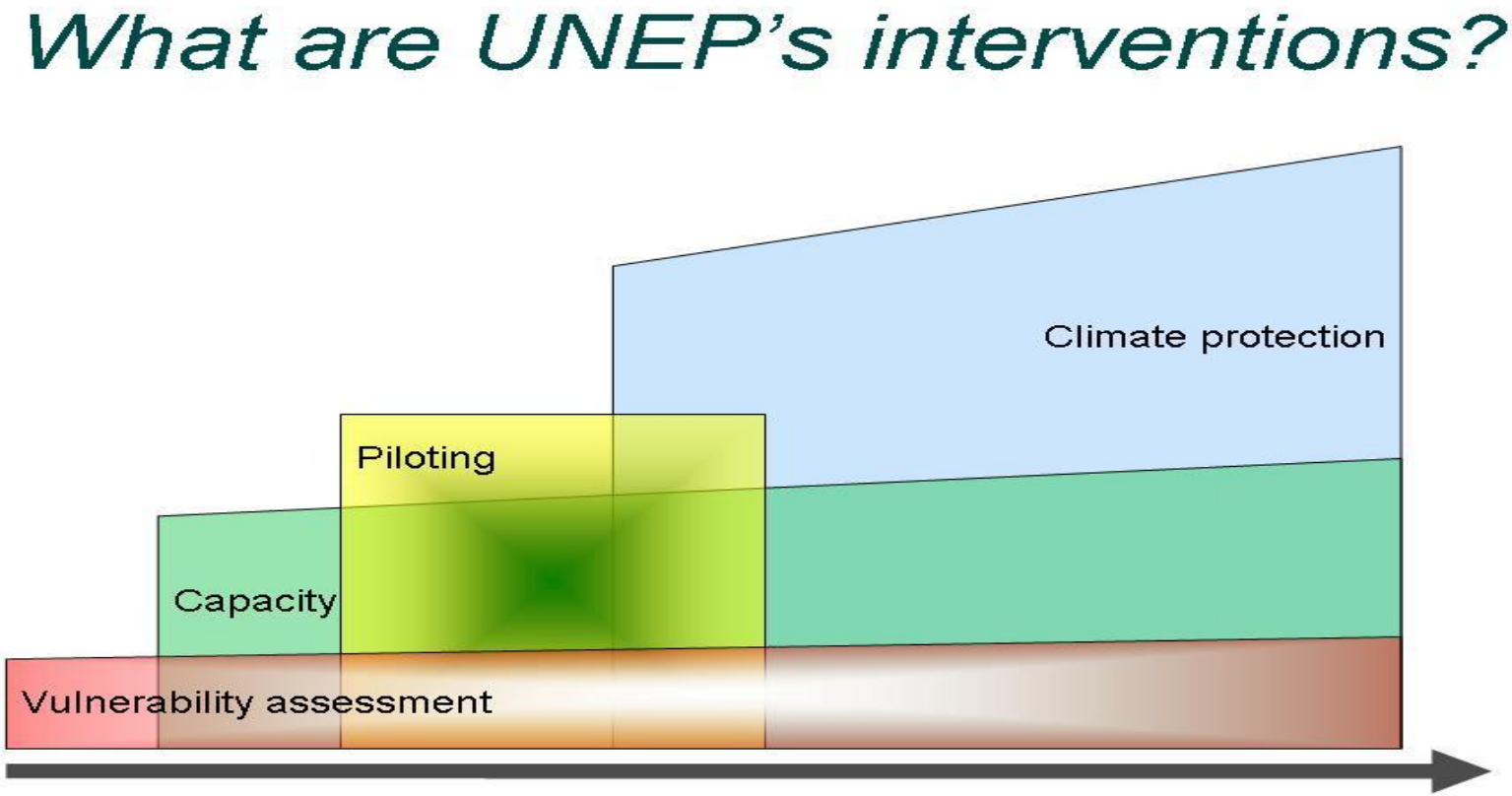
Adaptation--
a knowledge-intensive process

- **Projection** of climate change and its social-economic scenarios,
- **assessment** of impacts and vulnerability
- **Piloting** and demonstrate options
- **Policy setting**: economic, social and environmental implications
- **Planning:** economics of adaptation, investment
- **Implementation:** cost-effectiveness and sustainability

UNEP Assessment of Impact and Adaptation to Climate Change (AIACC)



S & T & C, Interventions CCA

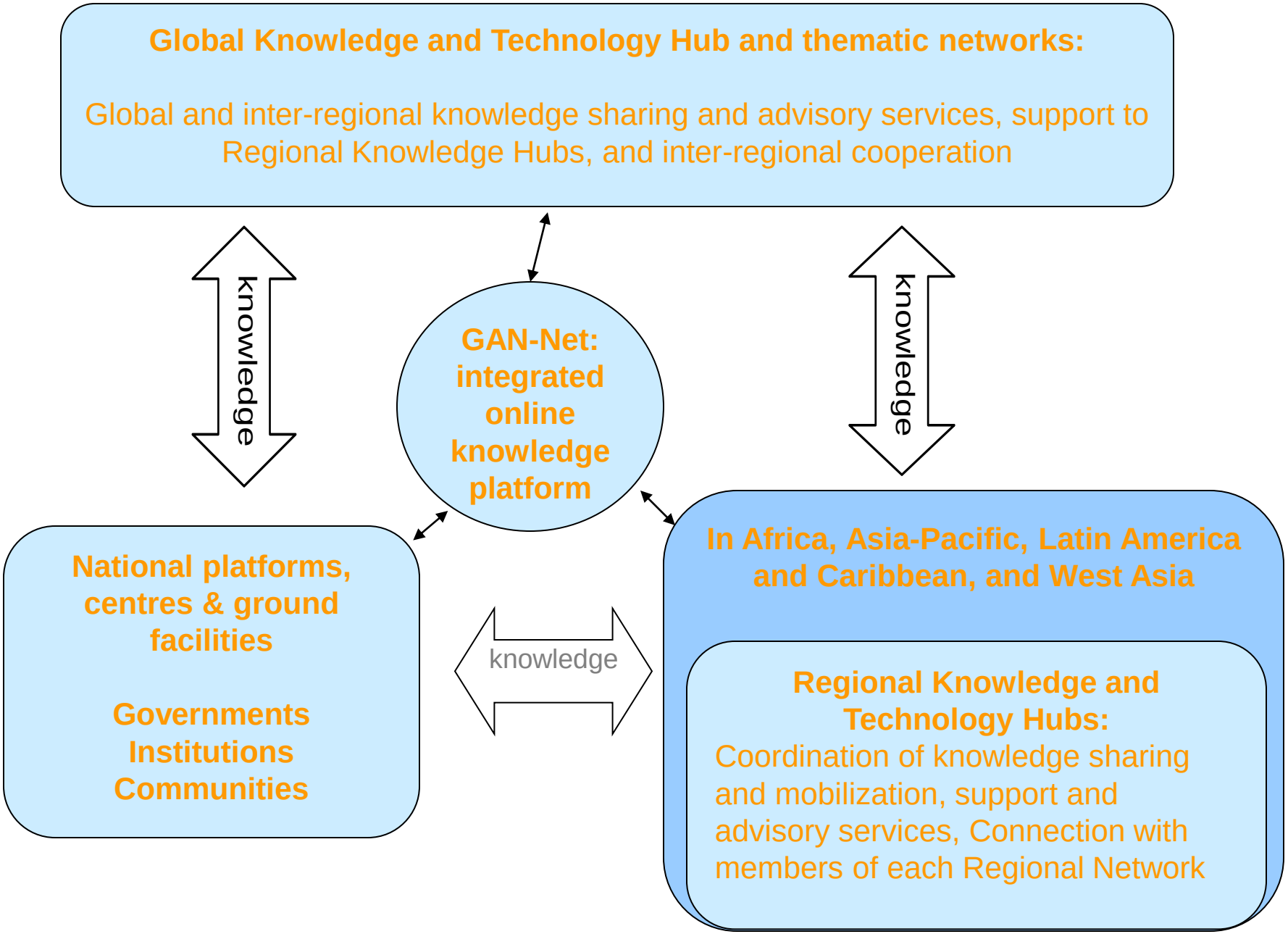


Consultations on Global Adaptation Network (GAN)

- International consultation (Oct 2008)
  - Regional consultations (2009):
  - Africa
  - Asia-Pacific
  - West Asia
  - Latin America and Caribbean
  - Consultation over the UNFCCC process, COP14, SBSTA, COP15…

Agreed Core services

- **Knowledge sharing**, improved availability and accessibility of knowledge for adaptation, and broadened dissemination of good adaptation practices
- **Knowledge services**, strengthened targeted knowledge products and advisory services to governments, planners and practitioners
- **Technology support**, enhanced development, diffusion and transfer of technologies
- **Capacity development**, increased capacity for adaptation of national and regional institutions in the developing world, and improved quality and sustainability of their services


Global Knowledge and Technology Hub and thematic networks:
Global and inter-regional knowledge sharing and advisory services, support to Regional Knowledge Hubs, and inter-regional cooperation
knowledge
knowledge
GAN-Net: integrated online knowledge platform
National platforms, centres & ground facilities
Governments
Institutions
Communities
knowledge
In Africa, Asia-Pacific, Latin America and Caribbean, and West Asia
Regional Knowledge and Technology Hubs:
Coordination of knowledge sharing and mobilization, support and advisory services, Connection with members of each Regional Network

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Technology Needs Assessments (TNA)

- GEF funds
- UNEP implementation
- 36 developing countries
- The TNA is designed to:
  - support countries identify the most relevant mitigation and adaptation technologies,
  - analyse the barriers to the deployment and diffusion of the prioritised technologies, and
  - come up with technology action plans (TAPs) to address the barriers.

TNA progress

- Draft technology prioritization reports (TNA reports): Senegal, Mali, Côte d'Ivoire, Morocco, Cambodia, Indonesia, Costa Rica and Peru.
- Work on technology action plans (TAPs): six TAPs are expected to be completed by the end of the year.
- Capacity building workshops held in Africa, Latin America and Caribbean, and Asia-Pacific.
- Technology prioritization work has started
- National inception workshops have already been held in nine countries.
- Three more technology guidebooks have been prepared and are also available to download.
- Technology fact sheets produced from the guidebooks are available on the Climate Techwiki
- For more information, please visit the TNA website

Guidebooks from TNA project

- Technologies for Climate Change Adaptation – Coastal Erosion and Flooding
- Technologies for Climate Change Mitigation – Transport Sector
- Technologies for Climate Change Adaptation – Water Sector
- Technologies for Climate Change Adaptation – Agriculture Sector
- Technologies for Climate Change Mitigation – Agriculture Sector
- Handbook for Conducting Technology Needs Assessment for Climate Change

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Capacity, capacity, capacity!

- **Capacity is the prerequisite** to deliver knowledge and tech support for CC policy, planning and implementation

Qs?

- Many thanks!