

NAP Expo 2016

ICTs as a key technology to help countries adapt to climate change

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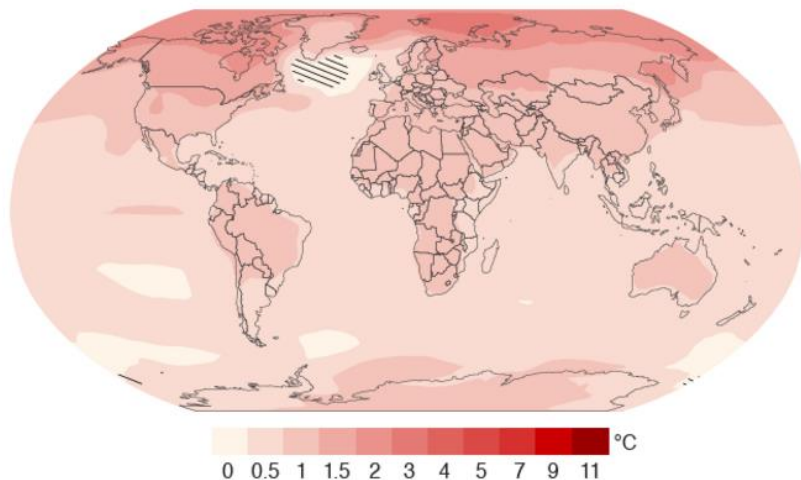
Bonn, Germany, 14 July 2016



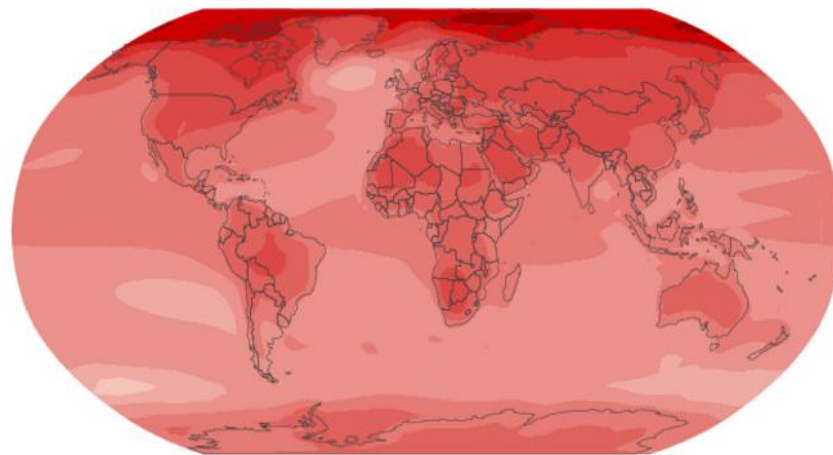
What does the future hold?

Projected temperature change (1986–2005 to 2081–2100)

If greenhouse gas emissions peak between 2010–2020 and then decline substantially (RCP2.6)



If greenhouse gas emissions continue to rise throughout the 21st century (RCP8.5)



Source: International Panel on Climate Change - Fifth Assessment Report (AR5)

What can be done?

Information and Communication Technologies (ICTs), such as satellites, mobile phones or the Internet, are capable of playing a key role in **addressing environmental global challenges and sustainable development**.

By raising awareness of ICT's role in tackling environmental challenges including climate change, ITU-T is promoting innovative ICT solutions to environmental questions and is developing green ICT standards to support a sustainable future, in areas such as:



Assessment
of
environmental
impact of
ICTs



Climate
change
adaptation
and
mitigation



Energy
efficiency



E-waste



Smart
Sustainable
Cities



Smart Water
Management

Who are we and what we do?



ITU is the United Nations
**specialized agency for
information and communication
technologies (ICTs)**



Promoting global
collaboration for
a **connected
world**

193

MEMBER
STATES



700+

PRIVATE-SECTOR
ORGANIZATIONS



100+

ACADEMIA
MEMBERS



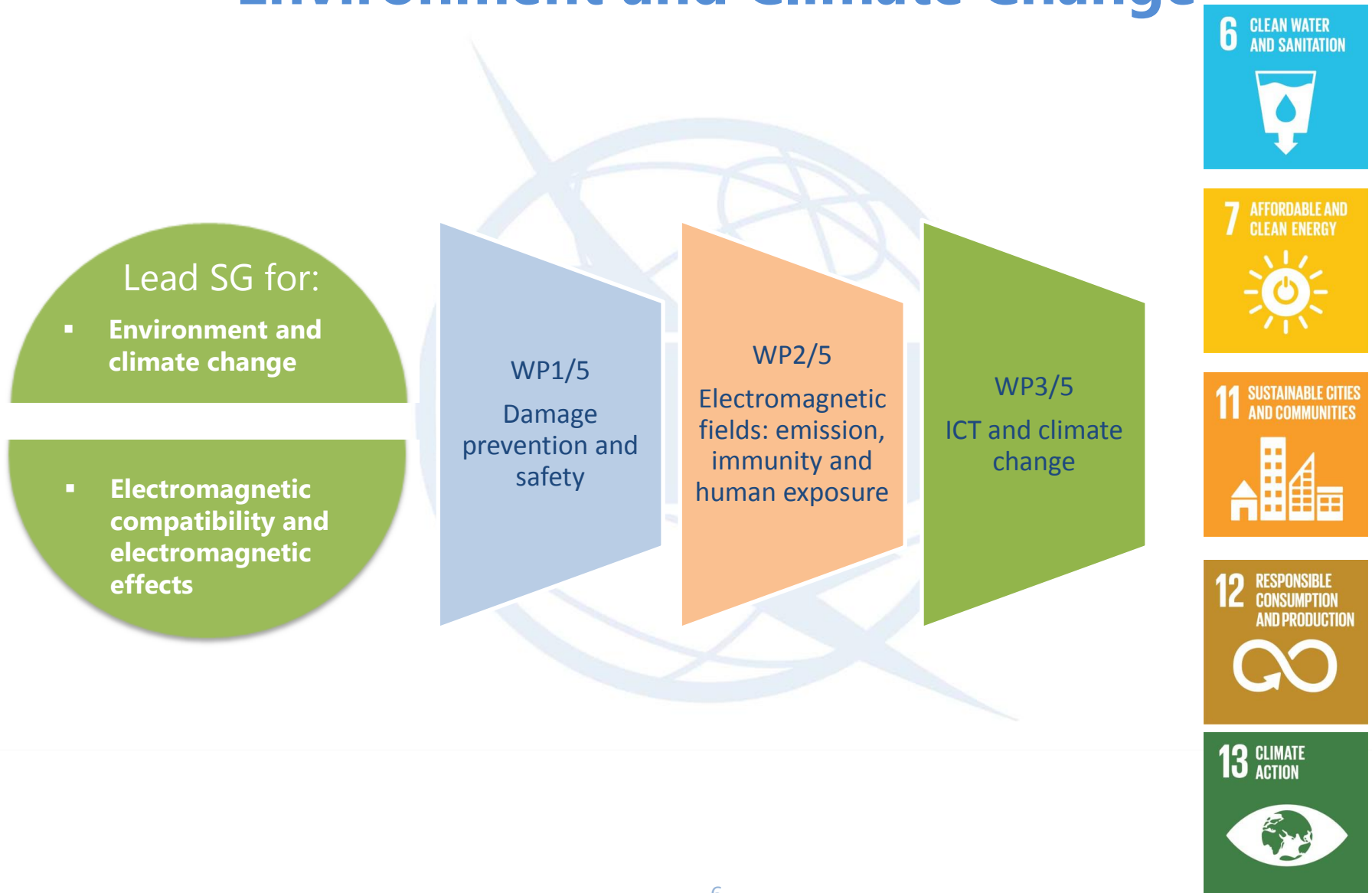
ITU-T's environmental programme



- **Develop international standards** to protect the environment
- **Assist countries** to develop policies and implement standards on climate change adaptation and mitigation
- **Help companies** becoming more sustainable and socially responsible
- **Research and development** on areas which include e-waste, energy efficiency and smart sustainable cities.
- Raise **awareness** on role of ICT in tackling environmental challenges

ITU-T Study Group 5

“Environment and Climate Change”





Q15/5 ICTs and adaptation to the effects of climate change

Information Communication Technologies (ICT) can be effective in enabling countries to better adapt to climate change . Adaptation involves taking action to tolerate the effects of climate change on a local, country, regional and international level.

Q15/5 main study areas are:

- How ICTs can be effective in enabling countries to better adapt to climate change;
- How the telecommunications infrastructure and associated ICT can be resilient to the effects of climate change;
- How ICTs can be used in verticals to adapt to climate change effects;

International Standards & Supplements on ICT for climate change adaptation

ITU-T L.1500 - Framework for information and communication technologies (ICTs) and adaptation to the effects of climate

This Recommendation describes the framework for using ICTs in adaptation to the effects of climate change.

ITU-T L.1501 - Best practices on how countries can utilize ICTs to adapt to the effects of climate change

This Recommendation provides guidance on how information and communication technologies (ICTs) can help countries to adapt to the effect of climate change. It also provides a framework and a checklist for countries to integrate ICTs in their national climate change adaptation strategies.

ITU-T L.1502 - Adapting information and communication technology infrastructure to the effects of climate change

This Recommendation identifies direct and indirect threats of climate change on ICT services and provides options for adaptation and mitigation. These threats include extreme rainfall, flooding, landslides, extreme wind, lightning, extreme humidity, drought, ice storms and heavy snowfall.

..... approved by ITU-T Study Group 5

ITU-T L.1503 - Use of information and communication technology for climate change adaptation in cities

This Recommendation identifies the impacts of climate change in cities and explains why cities need to adapt to its harmful effects.

Draft Recommendation on the use of ICTs in the adaptation of the agricultural sector (in process)

This Recommendation will provide brief descriptions on how ICT can sustain the agriculture sector in the event of disasters triggered by climate change.

Supplement 24 - ITU-T L.1500 - Overview of climate change effects and possible impacts

This Supplement aims at offering a better understanding of climate change effects that could assist in the development of national reports and recommendations related to adaptation, as well as be used as a reference to relevant decision makers and other recommendations.

Supplement 25 - ITU-T L.1502 - Best practices for infrastructure adaptation to climate change

This Supplement provides general principles and illustrates best practices on how ICT infrastructure can be adapted to cope with the effects of climate change.

Technical Report on “Information & Communications Technology for Climate Change Adaptation in Cities”

- Contribution to the work on ICTs & climate change adaptation of Question 15/5 of ITU-T Study Group 5.
- Drafting of the report was led by Telefonica and United Nations Convention on Climate Change (UNFCCC) secretariat with contributions from smart city stakeholders
- First document of its kind : Cover Cities & includes practical examples of ICTs for climate change adaptation

Introduction to the Technical Report

Key Definitions

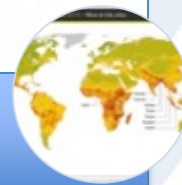
- It refers to changes in processes, practices, and structures to moderate potential damages or to benefit from opportunities associated with climate change

Adaptation



- Is the degree to which geophysical, biological and socio-economic systems are susceptible to, and unable to cope with, adverse impacts of climate change

Vulnerability



- The ability of a system to adjust to climate change, to moderate potential damages, to take advantage of opportunities, or to cope with the consequences

Adaptive
Capacity

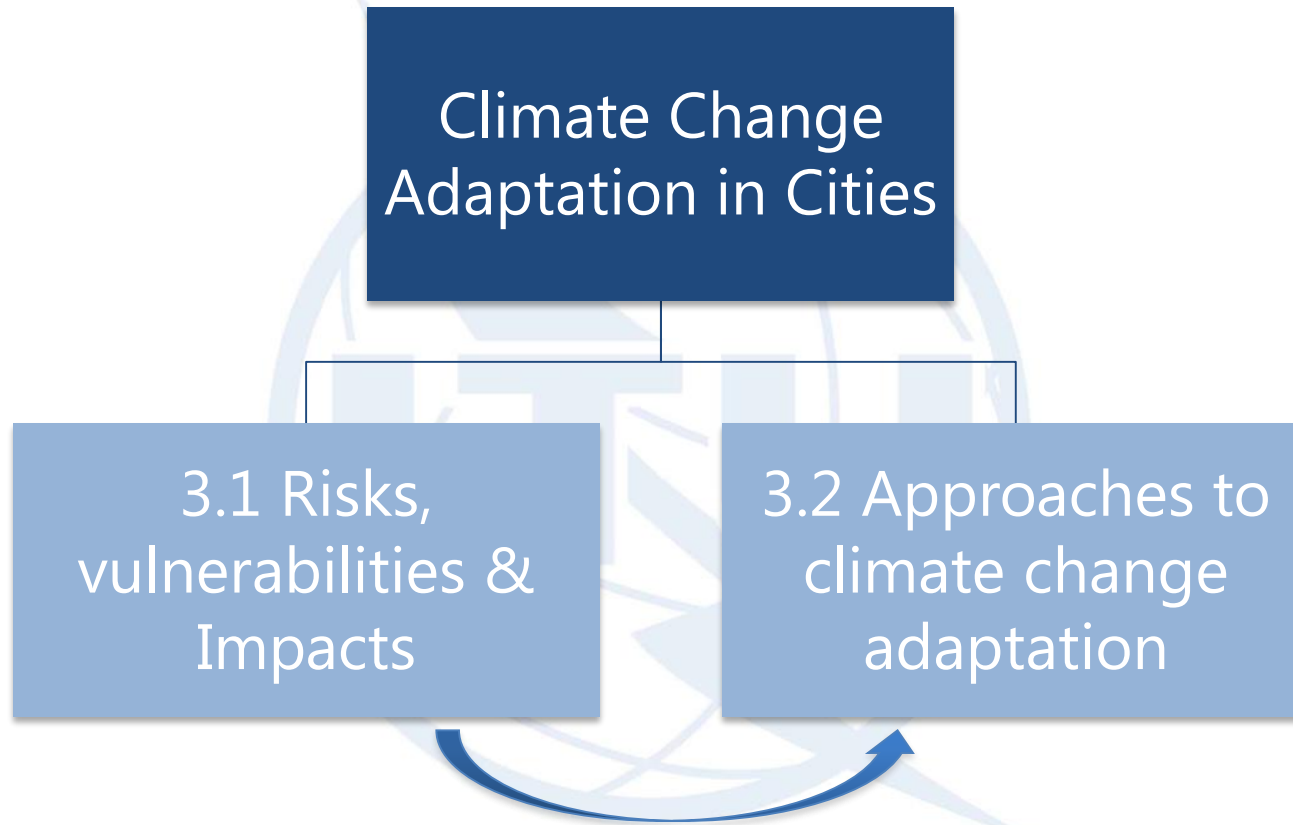


Source: Technical report on “ICTs for Climate Change Adaptation in Cities”. Box 1, page 3-4 (IPCC, 2007)

Climate Change Adaptation in Cities

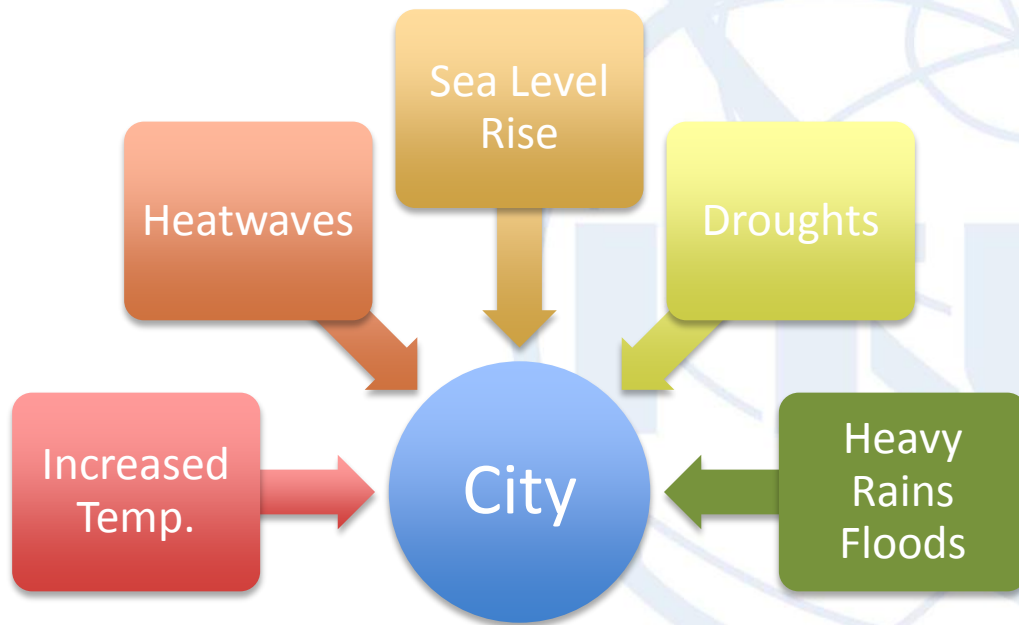


Climate Change Adaptation in Cities



Source: Technical report on “ICTs for Climate Change Adaptation in Cities”. Box 1, page 2-12

Direct Climate Change Impacts



Coastal Cities: are exposed to extreme coastal water level events. 65% of cities in the world with population greater than 5 million are in these areas

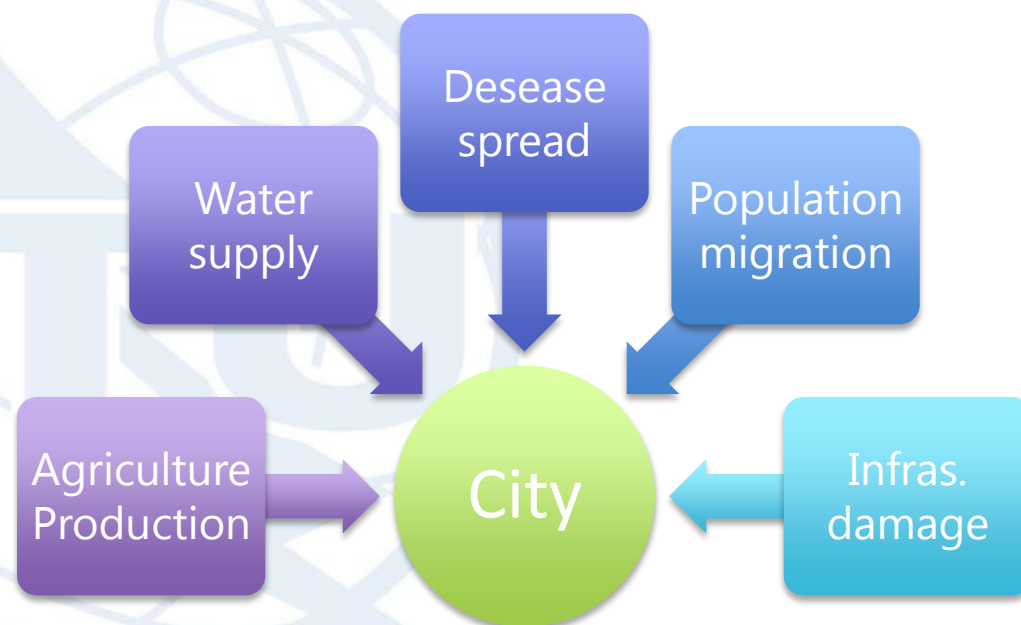
Inland cities: They are found in the interior part of the mainland. These cities like their coastal counterparts are also at risk.

Source: Technical report on "ICTs for Climate Change Adaptation in Cities". Page 4

Indirect Climate Change Impacts

The specific impacts on each city will depend on the actual changes experienced, and on **their geographical location**, among other factors.

City Infrastructure and services may be affected including **ICT Infrastructure**



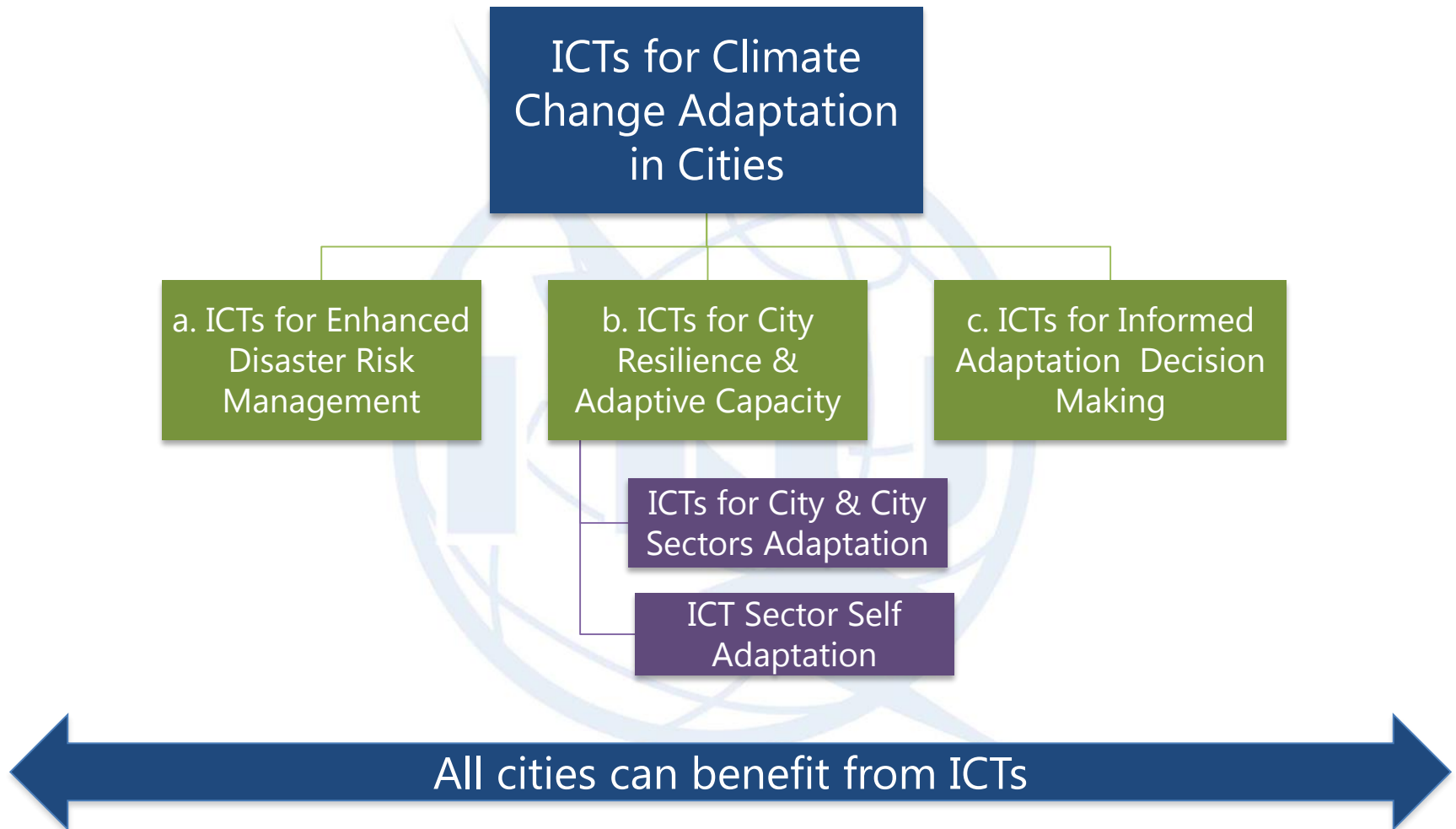
Approaches to Climate Change Adaptation in Cities

- UNFCCC has established that countries must develop National Adaptation Plans (NAP) and **Cities should apply the same planning principles.**

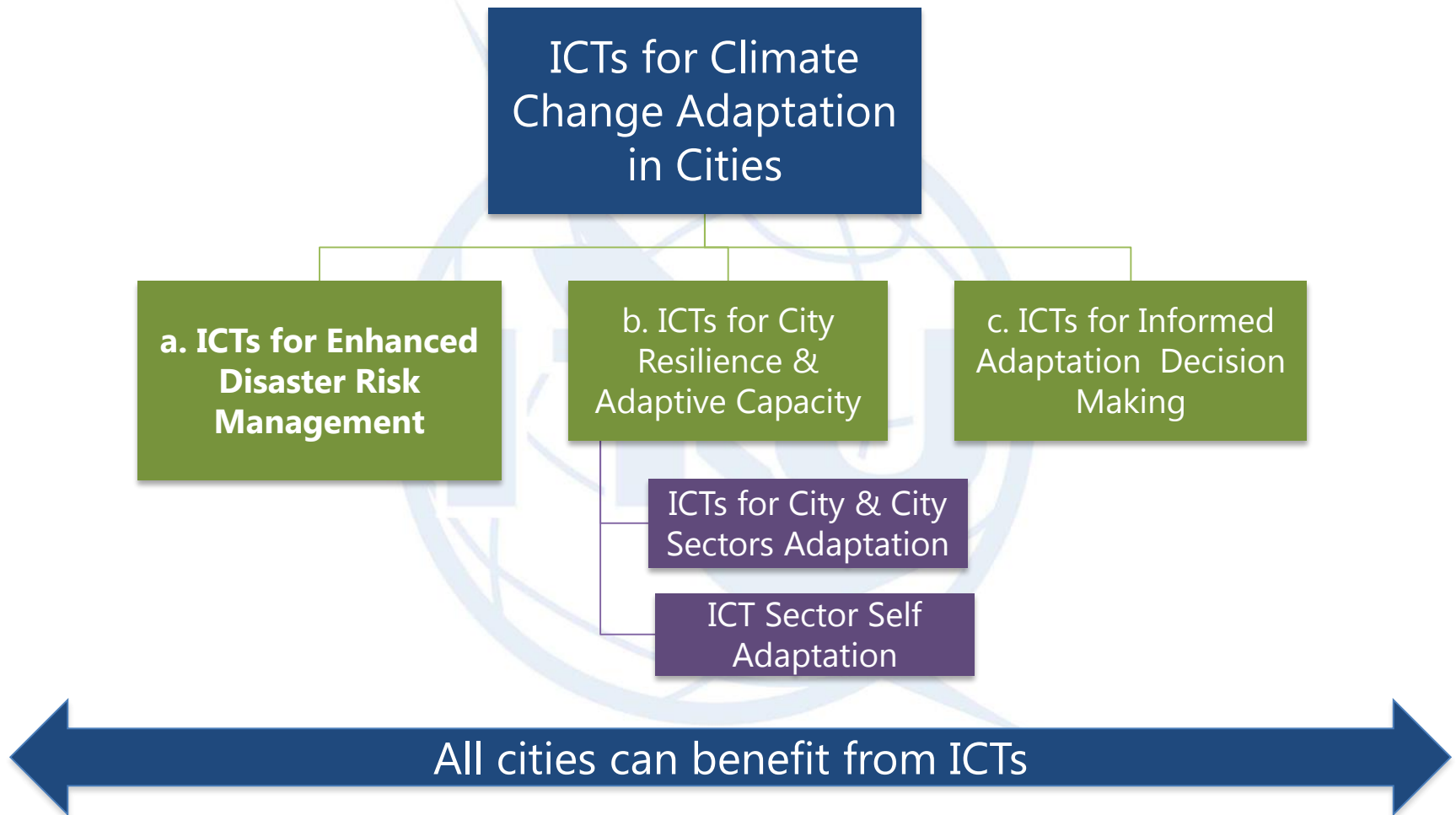
Element A. Lay the groundwork & address gaps	Identify available information on climate change impacts, assess development needs and climate vulnerabilities
Element B. Preparatory elements	Analyze current & future climate change scenarios; assess vulnerability per sector level, review adaptation options and communicate plans.
Element C. Implementation strategies	Prioritizing climate change adaptation in national planning and enhancing capacity for planning and implementation.
Element D. Reporting, monitoring & review	Monitoring the NAP process. Assess & report progress and effectiveness.

Source UNFCCC: http://unfccc.int/resource/docs/publications/publication_ldc_nap_techguidelines.pdf

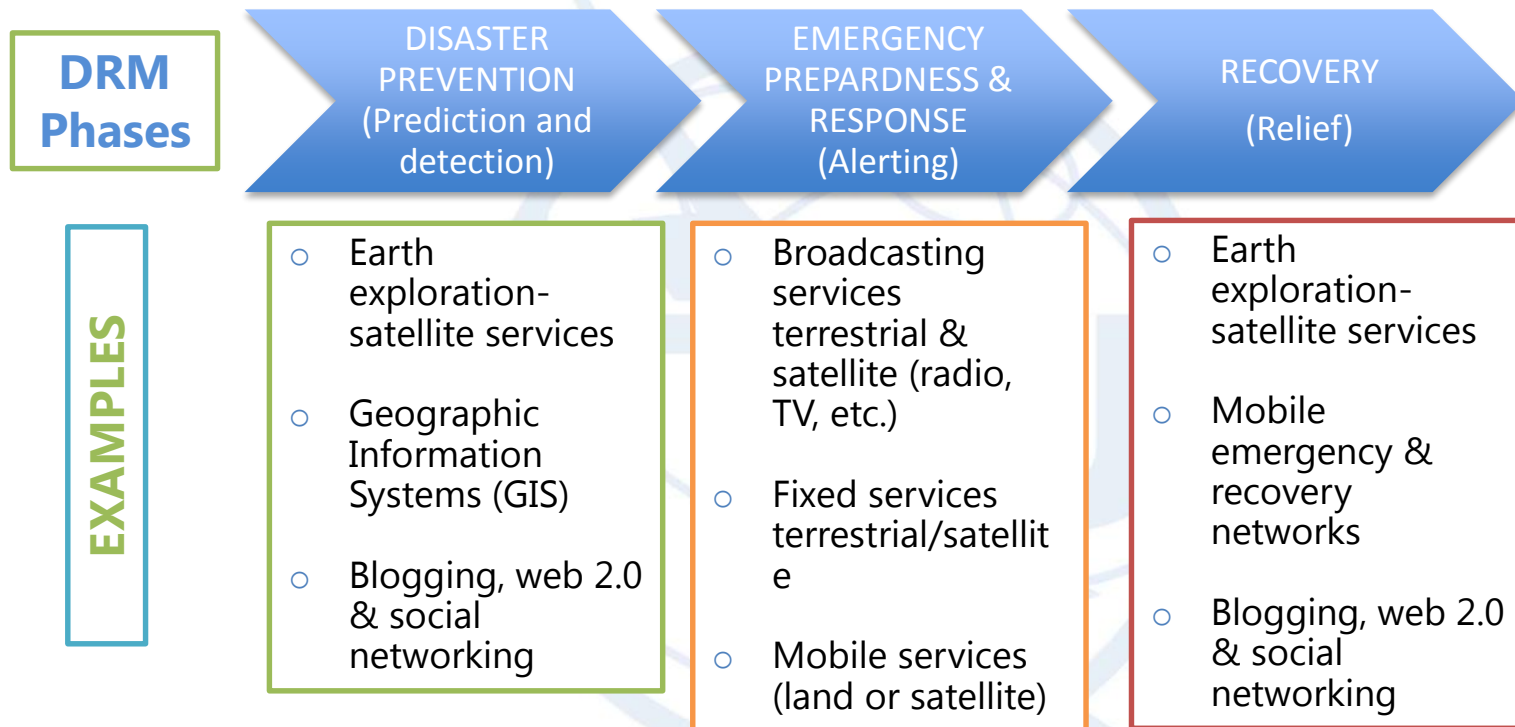
ICTs Role for C.C Adaptation in Cities



ICTs Role for C.C Adaptation in Cities



a. ICTs for enhanced Disaster Risk Management (DRM)



ITU-T Standards for DRM

-ITU Common Alerting Protocol (CAP) – general format to exchange all-hazard emergency alerts. Increase warning's effectiveness & simplify warning tasks.

-ITU-T E164 that assigns the country code 888 to the UN Office of the Coordination of Humanitarian Affairs (OCHA)

a. ICTs for Enhanced Disaster Risk Management



Colombo - Sri Lanka

Disaster Early Warning Network (DEWN)

- *Provide timely, reliable & cost-effective massscale disaster early warnings.*
- *Via Cell Broadcast (CB) & short messages (SMS)*

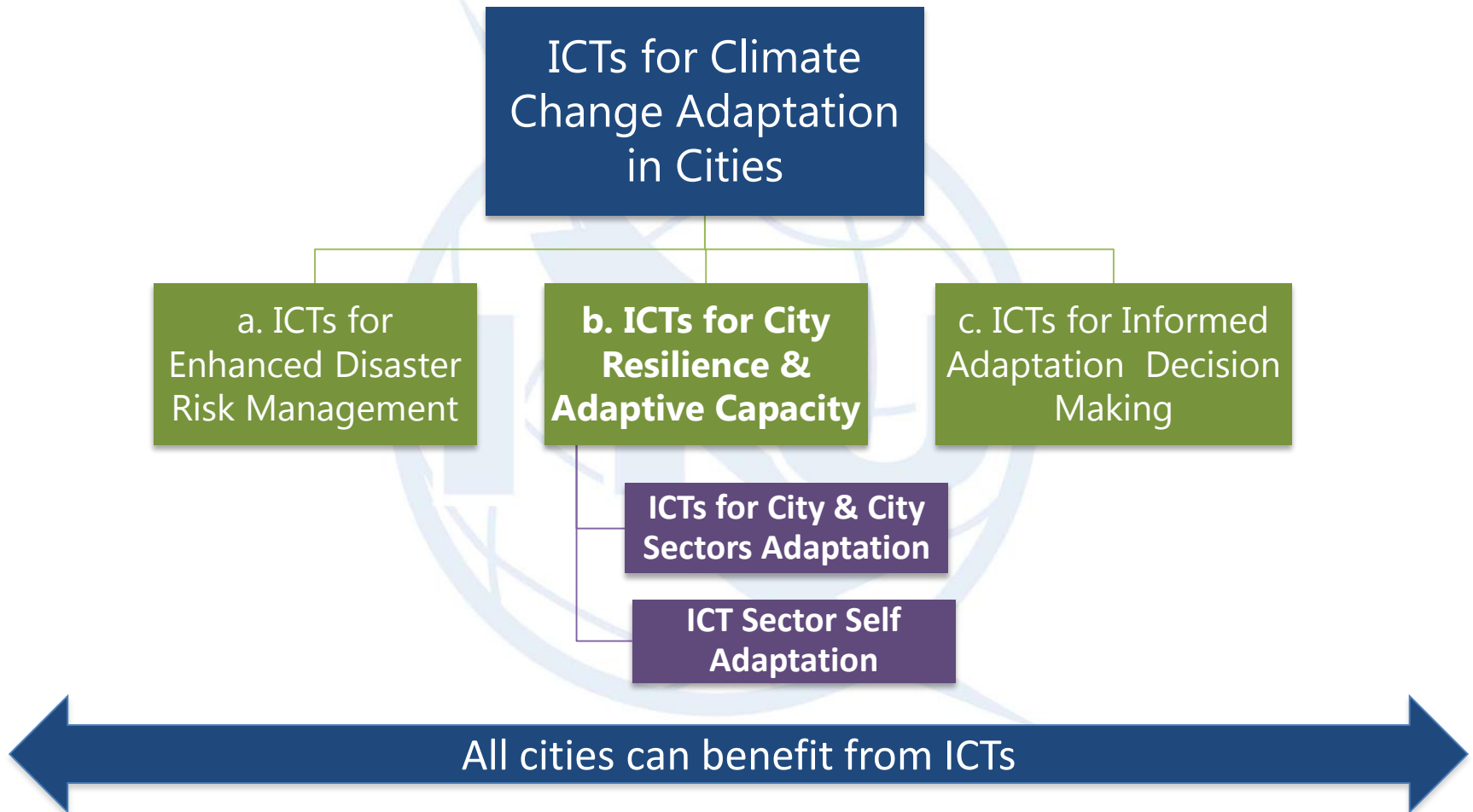


Mexico City - Mexico

Virtual Centre on Climate Change (CVCCCM)

- *Decision making tool disaster early warnings*
- *Metropolitan hydro.meterological monitoring (fires, native crops recovery, etc)*

ICTs Role for C.C Adaptation in Cities



b. ICTs for City Resilience & Adaptive Capacity



ICTs for Climate Change Adaptation in city agriculture sector. Miyagi (Japan)

- *Fujitsu has worked with farmers to provide sensing network, cameras and cloud service system for environmental monitoring*
- *System to control GHG temperature, humidity, etc*



ICTs for urban planning & climate change adaptation. Wuppertal (Germany)

- *SUDPLAN Web-based planning, prediction & training tool to support long term urban planning.*
- *Facilitated 3D models to simulate the surface drainage during a heavy rain event, allowing climate planning.*

Source: Technical report on "ICTs for Climate Change Adaptation in Cities". Page 20-21 & Germany SUDPLAN:
<http://sudplan.eu/results/workshop/sudplan-workshop/sudplan-workshop-on-climate-change-and-urban-planning-1.26065>

b. ICTs Sector Self-Resilience & CC Adaptation



Information Technology & Telecommunications Network Resiliency New-York (USA)

- *After Sandy the city decided "A stronger more resilient NY"*
- *Program to guarantee telecommunications services resilience planning & preparation. All Telecom Operators collaborate*



Telecommunications Networks Climate Risks Management – Lima (Peru)

- *Telefonica has worked to manage the rainy season in Peru which affects mobile networks base stations with floods.*
- *Risk management and preparation in other counties of South America*

Source: Technical report on "ICTs for Climate Change Adaptation in Cities". Page 18-19
New York: <http://www.nyc.gov/html/doitt/html/citywide/citywide.shtml>

c. ICTs for Informed Adaptation Decision Making



Vivo-Clima: Real time rain monitoring & pubic information delivery. Maua Town (BRAZIL)

- *Vivo Clima is a platform M2M that receive rain information in real time. Captured in web for pubic access*
- *Pluviometers installed in cell sites of Telefonica. Captured are sent through mobile network (3G/GPRS)*



Social Media for Rising Temperature Adaptation Eldoret (Kenya)

- *To raise public awareness about how to adapt to climate change & raising temperatures*
- *Receive information on temperature through Facebook page and SMS in their phones*

Source: Technical report on "ICTs for Climate Change Adaptation in Cities". Page 22-23
Eldoret: <http://www.trust.org/item/20130716085920-k63xg/?source=spotlight>

Framework to include ICTs in Climate Change Adaptation Policies

Setting the basis. Observation and understanding
(ICTs inside the initial evaluation)

Assessing climate change risks and vulnerabilities
(Assess vulnerabilities including ICT infrastructure)

Planning of adaptation options
(ICTs to find options and ICTs as an option)

Implementation of adaptation actions
(Adaptation options into actions with business models)

Monitoring and evaluating adaptation actions
(ICTs support in monitoring success)

Conclusions

- Adaptation may seem challenging due to cities and communities need to adopt long-term time horizons and cope with deep uncertainty.
- ICTs can support this process but is important to include them in early stages of climate change adaptation planning.
- Stakeholder collaboration is needed to integrate ICTs in adaptation plans: central government, cities and citizens
- There are lots of initiatives on ICTs and climate change adaptation to learn from

Source: FG-SSC “Technical Report on Stakeholders for Smart Sustainable Cities”, page 22



Thank you

**ITU-T, Environment
and Climate Change**

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