E-Environment Climate Change Adaptation in Africa
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Connectivity & Bridging the Last Mile in Africa

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ITU Overview

Helping the World Communicate

ITU-T
Telecommunication standardization of network and service aspects

ITU-R
Radiocommunication standardization and global radio spectrum management

ITU-D
Assisting implementation and operation of telecommunications in developing countries

193 Member States
+700 Sector Members

ITU
ITU is committed to help connect Africa
Africa is home to some of the most vulnerable economies

**LDCs**
- Angola
- Benin
- DR Congo
- Djibouti
- Equatorial Guinea
- Eritrea
- Gambia
- Guinea
- Liberia
- Madagascar
- Mauritania
- Mozambique
- Senegal
- Sierra Leone
- Somalia
- Sudan
- Togo
- Tanzania

**SIDS**
- Cape Verde
- Mauritius
- Seychelles

**Both LDCs and SIDS**
- Comoros
- Guinea-Bissau
- Sao Tome &Principe

**Both LDC & LLDC**
- Burkina Faso
- Burundi
- Chad
- Ethiopia
- Lesotho
- Malawi
- Mali
- Niger
- Rwanda
- South Sudan
- Uganda
- Zambia

**LLDCs**
- Botswana
- Zimbabwe
WHAT ICT FOR CLIMATE CHANGE

Observing systems
- EO satellites
- Remote sensing
- In-situ sensors
- SensorWeb
- Smart dust

Information systems
- Socio-economic data
- Hazard, vulnerability, crisis maps
- Common spatial data infrastructure
- Web services
- Semantic web

Interoperable Command Control Communication systems

Telecommunications Systems
- IPv6
- UMTS
- TETRA/TETRAPOL
- CAP, TSO
- Cell Broadcasting
- Wimax
- Positioning systems
- UWB
- UWB
The integrated Disaster Risk Management cycle approach

**Risk assessment**
- Hazard prediction and modeling
- Systemic, multi-risk approach
- Vulnerability management
- Building resilient communities...

**Preparedness**
- Scenarios development
- Emergency Planning maps
- Training

**Alert**
- Real time monitoring & forecasting
- Early warning
- Public warning
- Scenario identification

**Response**
- Emergency telecommunication
- Command control coordination
- Situational awareness, crisis maps
- Information communication
- Dispatching of resources
- Victims identification and tracing

**Recovery**
- Early damage assessment
- Re-establishing life-lines, transport & communication infrastructure

**Post Disaster**
- Lessons learnt
- Scenario update
- Socio-economic and environmental impact assessment
- Vulnerability re-assessment
All countries have benefited from a more connected world

Terrestrial optical fibres and microwave transmission networks, 2014

Source: ITU, Telegeography    Note: Data collection is work in progress
AND INTERNET TRAFFIC CONTINUES TO GROW DAILY

Source: ITU, based on 2015 estimates
Impressive growth in ICTs, especially mobile networks and services

Percentage of the population covered by a mobile-cellular network, 2015*

- 84% of Africa’s population covered by a mobile network
- Mobile cellular penetration in Africa reaches 74%

Great potential for services and applications in the area of climate change

BUT

urgent need to connect those left behind

Source: ITU
Note: *Estimates
Strong but unequal growth in mobile broadband

Mobile-broadband penetration by region, 2015*, and in African countries, 2013

Source: ITU
Note: *Estimates **2014
Limited national backbone infrastructure is a major challenge and an opportunity

Share of kilometres of fibre and microwave routes, 2013

Route metres per capita, 2013

Source: ITU
The international Internet bandwidth divide

International Internet bandwidth per inhabitant, by region, 2014*, and in African countries, 2013

Source: ITU

Note: *Estimates
Very low fixed-broadband levels across Africa

Fixed-broadband penetration, by region, 2015* and in African countries, 2013

Source: ITU
Note: *Estimates **2014
AFRICA PROVIDES A WORLD OF OPPORTUNITIES

- LDCs in particular provide a host of market opportunities
- Capacity Building and Skill Development are key
- Innovation, Creativity, and Improvement are key
- Policy, Legal, and Regulatory Frameworks allow ICT to play a catalytic role in disaster risk reduction and management, as well as in socio-economic development
WHAT WE NEED IS A VISION

EMPHASIS ON RESILIENCE

Prevent
Prepare
Monitor
Detect
Predict
ADAPTATION RESILIENCE STRATEGY

RESILIENCE REINFORCES PREPAREDNESS

Incident Response Capability

Degree of Functionality

Standard

Advanced

Resilience

Preparedness
THANK YOU

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