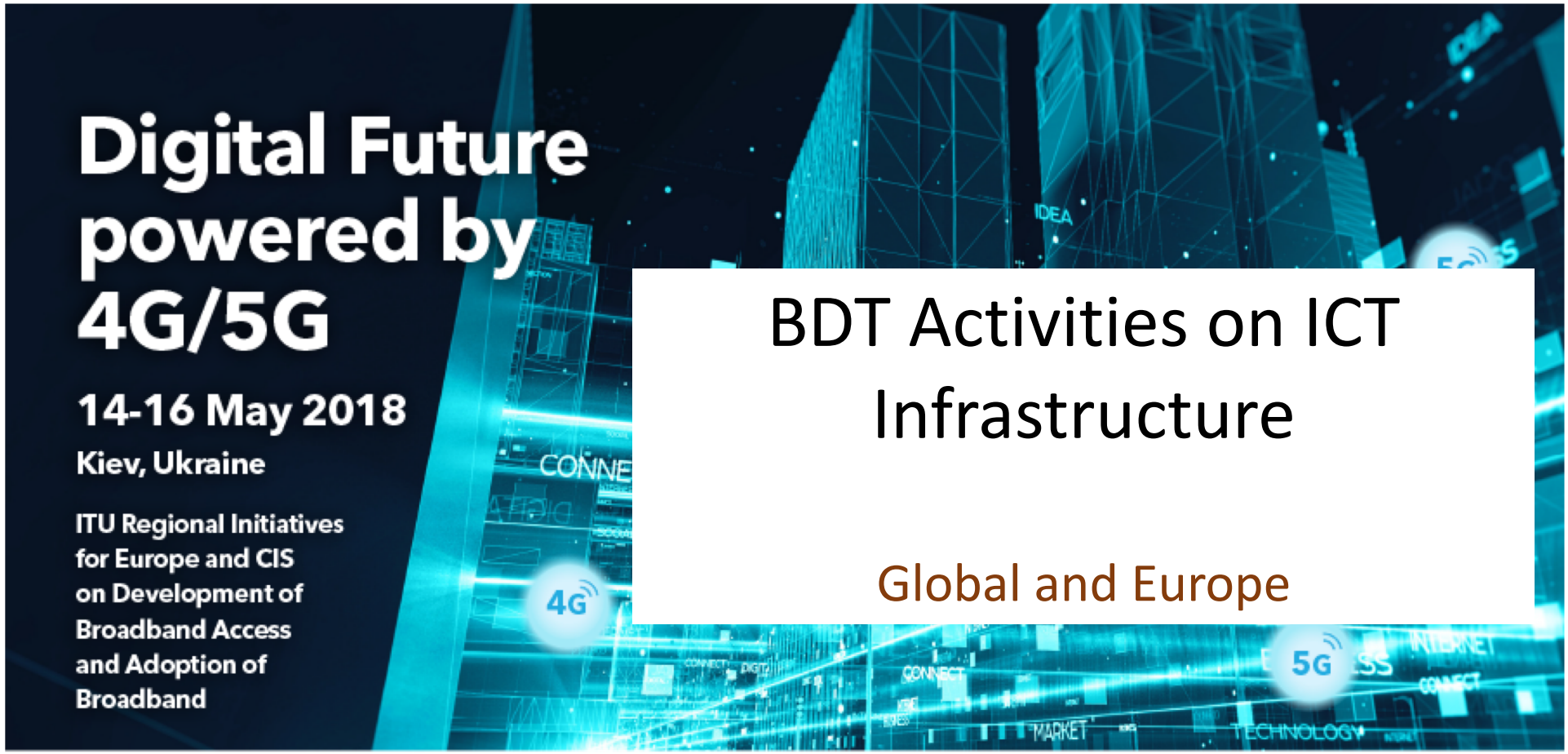


BDT Activities on ICT Infrastructure

Global and Europe

DIGITAL TRANSFORMATION

CYBERSECURITY

INNOVATIVE SERVICES

LEGISLATIVE/REGULATORY ENVIRONMENT

HOSTED BY

ICT Infrastructure for connecting the unconnected

- BDT is responsible for projects on implementing ICT broadband networks.
- Aiming at addressing the issues of developing countries, **WTDC-17 approved Resolution 2 and the SG1 Question 1/1- Strategies and policies for the deployment of broadband in developing countries**
- In this context, capacity building activities and guidelines on ICT Infrastructure (wireless and wireline technologies) are being to assist the spread of broadband access and the achievement of the SDGs

Areas of Action

beyond WTDC-2017

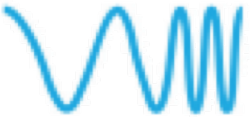
TECHNOLOGY & NETWORK DEVELOPMENT

- BDT will continue assisting ITU Member States and ITU D Sector Members and Associates to maximize the use of new technologies for the development of their information and communication infrastructures and services and building global Telecommunication/ICT infrastructure, using efficient technological solutions
- New element/fostered activities:
  - Future networks, including ICT networks for smart grids
  - Broadband networks: ICT broadband network plans (including 5G); ITU Interactive Transmission Maps; transition to IPv6; development of new ecosystems for Internet of Things (IoT)
  - Rural communications: backhaul, power supply, and business models for financial and operational sustainability
  - Conformance and interoperability: Capacity building on C&I programmes and testing; implementation of MRAs; combating counterfeit and mobile theft, tampered telecommunication/ICT devices;
  - International Connectivity: Best practices for international connectivity (e.g. IXP)

SPECTRUM MANAGEMENT

- BDT strengthened its role on assisting national regulatory bodies in frequency planning and assignment, management, spectrum monitoring, development of spectrum-management structures, procedures and tools, including new spectrum-sharing approaches, spectrum-management assessments;
- Continuing to maintain, update and expand the Spectrum Management System for Developing Countries (SMS4DC) software;
- Strengthened the BDT role in providing assistance on spectrum fee regimes, including direct assistance in the establishment of such regimes; in the harmonization of regional spectrum allocations, including coordination procedures in border areas; and in the optimization and cost-effective use of spectrum-monitoring systems and networks.

BROADCASTING



- Extended roles of BDT for providing assistance in transition from analogue to digital terrestrial television broadcasting, introduction of new broadcasting services and allocation of the digital dividend.
- Recognized importance of providing assistance on policy and regulatory frameworks for digital terrestrial broadcasting, including frequency planning and optimization of spectrum use;
- Raised awareness by organizing regional meetings between ITU members on the use of spectrum for broadcasting services and other services.

WTDC-17
Buenos Aires Action Plan

Objective 2: Foster an enabling environment for ICT development and foster the development of telecommunication/ICT networks as well as relevant applications and services, including bridging the standardization gap

Output 2.1

The Objective of this Output is to assist ITU Member States and ITU-D Sector Members and Associates in maximizing the use of the of appropriate new technologies for the development of their information and communication infrastructures and services.

Specific areas of work include

- Spectrum management and radio monitoring
- Broadcasting
- Next generation networks
- Broadband networks: wired and wireless including IMT
- Rural communication
- Conformance and interoperability (C&I)

Next generation, ICT Networks for Smart Grids, Future Networks, Broadband Networks to support IoT and Rural communications

- **Next-Generation Networks:** assistance on planning, deployment, migration, interoperatbility, digitization and evolution of networks, network elements and applications (e.g case studies on implementing next-generation networks (NGN) in Bangladesh, India, Philippines and Sri Lanka etc.).
- **Broadband Networks (wired and wireless technologies) IPv6 and Internet Exchange Implementations:** to provide broadband connectivity free or low cost digital access for schools, hospitals, underserved populations, e.g ITU/Craig and Susan McCaw Broadband Wireless Network project for Africa (USD 6.4 Millions - 4.0. Millions provided by McCaw foundation and other partners and USD 2.4 by ITU- / ICT-DF). IXPs to reduce transmission costs, optimize Internet traffic, improve QoSassitance with planning, implementation and development of national ICT broadband networks, including promoting IXPs . E.g IXP in Montenegro, Future Internet Exchange Publication etc.
- **Rural communications:** provision of information on access and backhaul technologies and source of power supply, latest technologies and best practice, implementation of projects on public community broadband access points.

Example of achievements

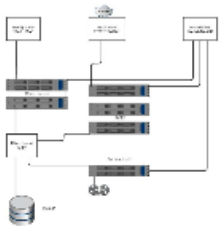
Broadband Wireless Projects in Africa, and IXP

Djibouti – 4G Mobile WiMax

Burundi Training & Network Installation

Swaziland Project Implementation – 4G LTE

IXP (Internet Exchange) in Montenegro



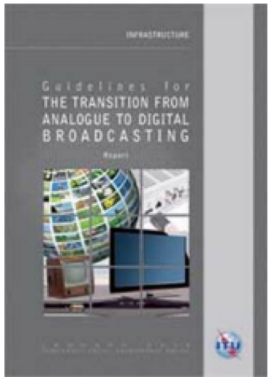
Spectrum management and digital broadcasting

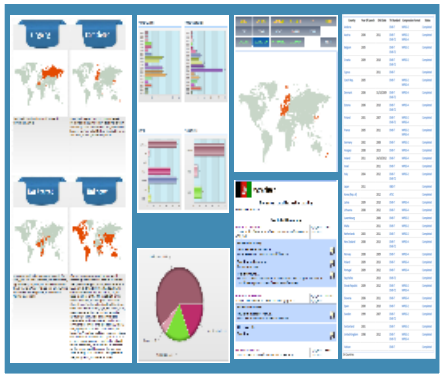
Spectrum Management Software (SMS4DC) has helped developing countries manage radio frequency. Around 50 countries adopted it since 2007. The International Meeting of Users of the Spectrum Management System for Developing Countries took place from 8 to 9 December 2016 in Geneva

- Guidelines:
  - ✓ Spectrum Management Assessment,
  - ✓ National Table of Frequency Allocation (NTFA) preparation,
  - ✓ Spectrum monitoring
  - ✓ Spectrum pricing
- Assistance to more than 30 countries on NTFA preparation, SM assessment and cross-border frequency coordination

Transition to digital terrestrial television broadcasting

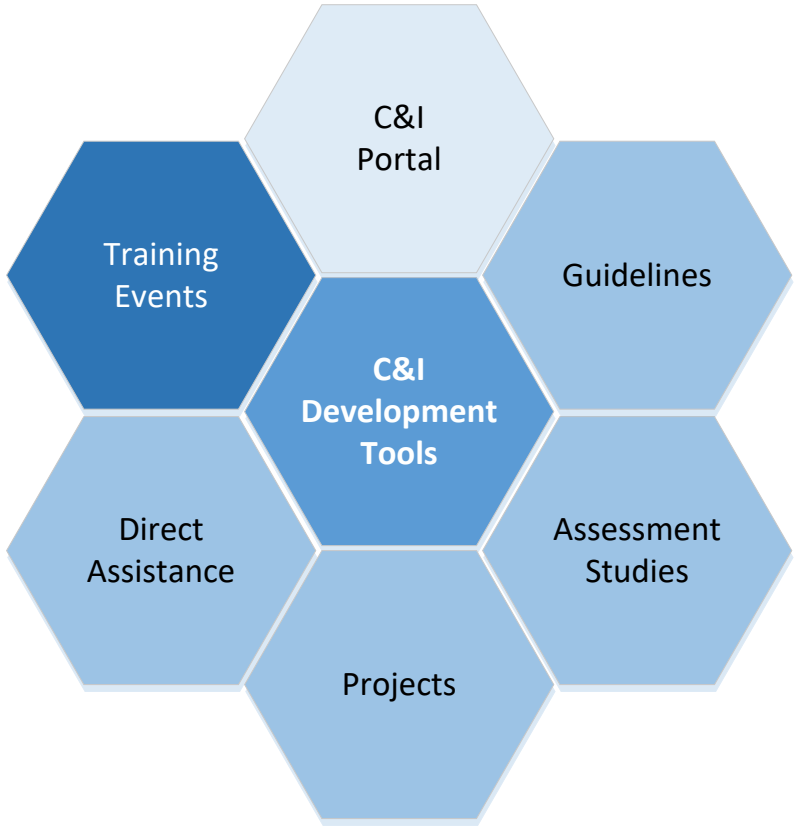
- More than 40 countries have been assisted for transition
- Projects funded by Republic of Korea, Japan, Australia, CAF (Latin-American Development Bank)
- Digital broadcasting transition (DSO) database





www.itu.int/en/ITU-D/Spectrum-Broadcasting

Conformity and Interoperability, combat counterfeit ICT devices and mobile theft

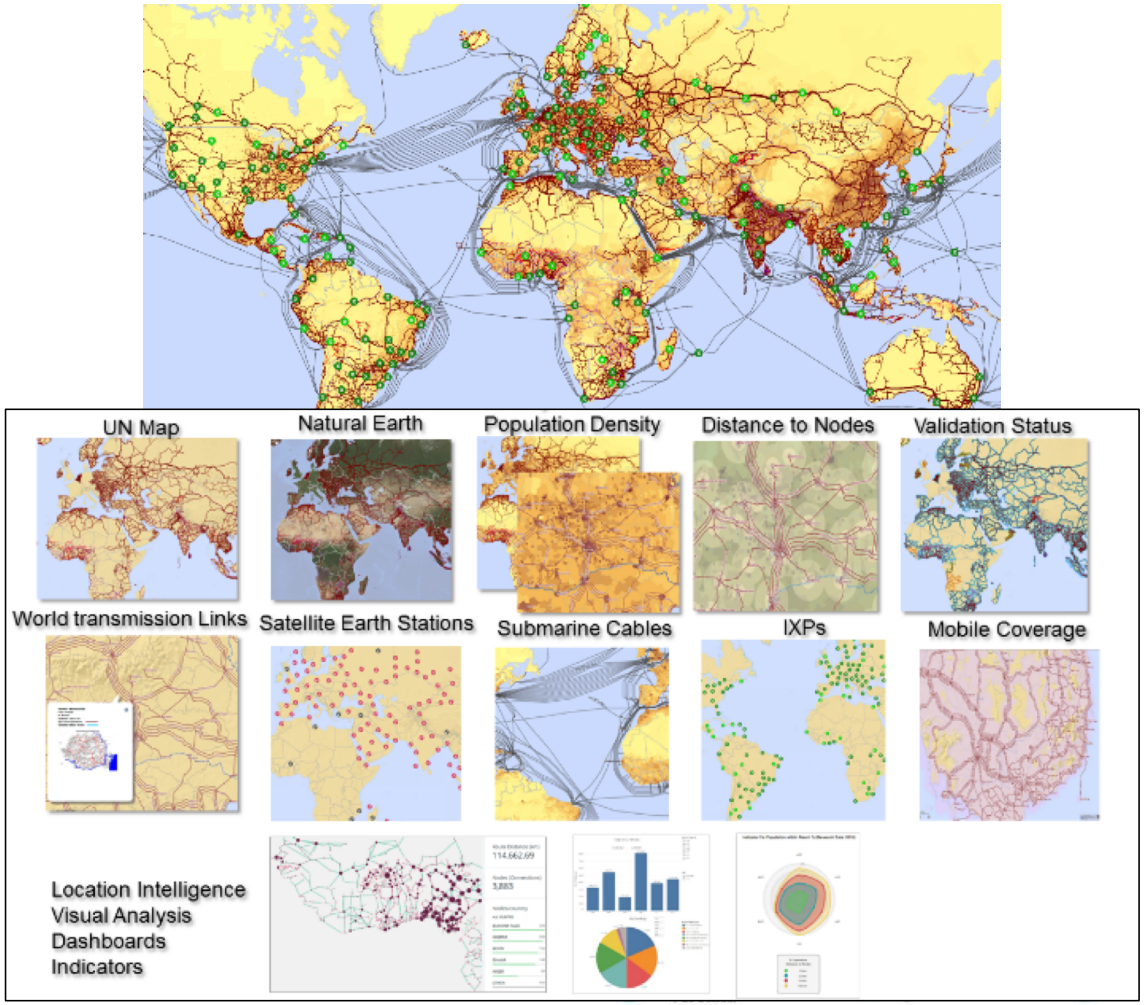


https://itu.int/go/CI_Development

ICT Infrastructure development

ITU Interactive Transmission Maps

- Broadband Network Planning
  - Infrastructure Business Plan
  - Cost Modelling
- Interactive transmission Map
  - Infrastructure Strategic Data
  - Location Intelligence (geo/tech/policy variables)
  - Informed Investment tools
  - Partnership with other development Agencies



TND Major Outputs

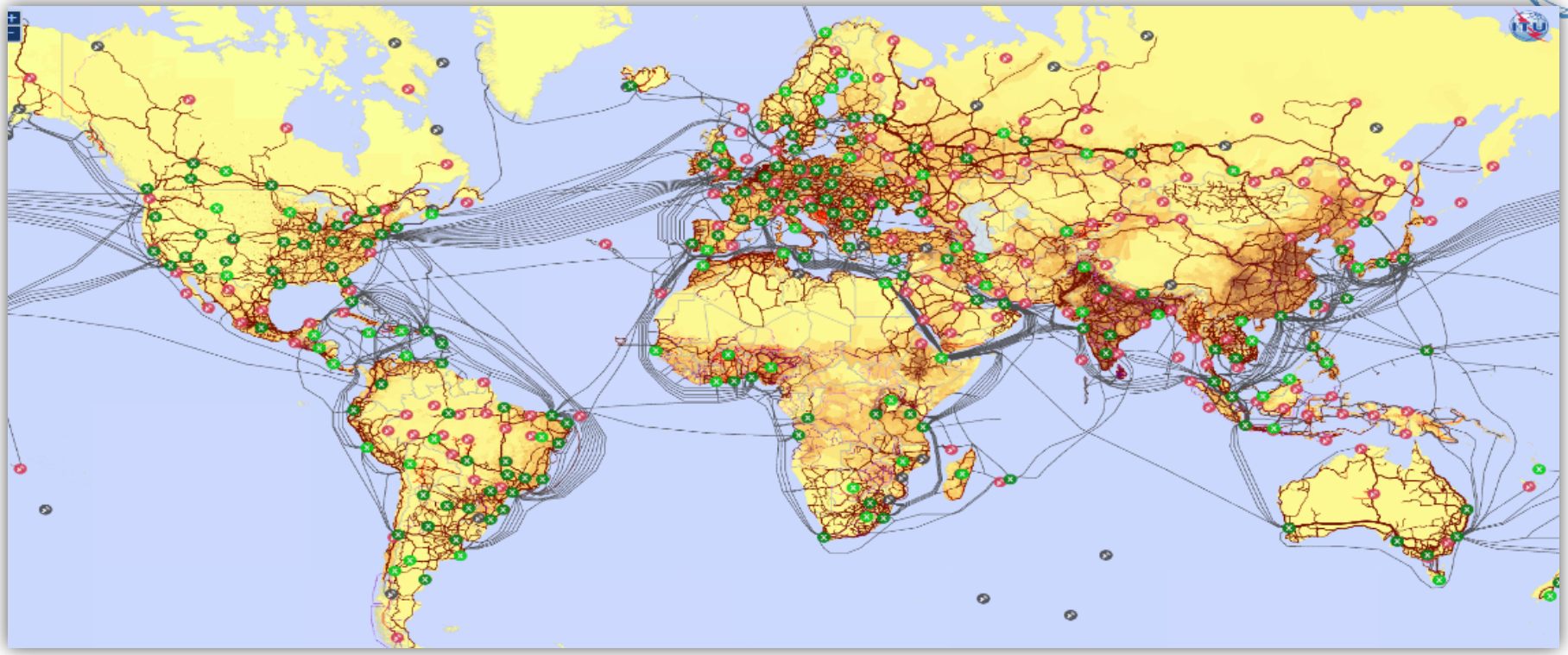
Key Areas

- Spectrum Management
- Broadcasting
- NGN
- Broadband N/W
- C & I
- Bridging S-Gap
- Rural communications

Main Activities

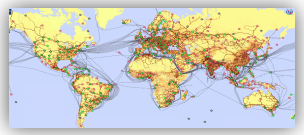
- Training
- Providing Tools & Guidelines
- Publications
- Direct assistance to members
- Partnerships & collaboration with various org.

ITU Interactive Transmission Maps



Supporting connecting people to the digital economy

Identify Gaps – Promote investment – Decision making tool for network deployment



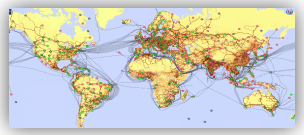
Introduction

- ITU is taking stock global ICT Infrastructure
- High-speed broadband links, such as:
  Fiber Optic
  Microwaves
  Satellite Earth Stations

- Location Intelligence - Data Visualization

- Business Plan for ICT network deployment
  GIS tools for ICT Development
  Infrastructure cost estimation

- Partnership opportunities



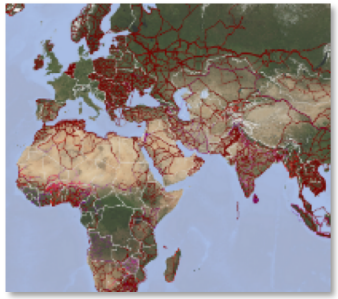
Objectives

- To report on the Global coverage, promote coordinated actions regionally and promote actions at local level;
- To increase knowledge on existing ICT networks in the all Regions and foster new infrastructure deployment, considering different technology options;
- Identification of network coverage and overcome geo-economic challenges;
- Foster collaboration and coordination with regional and development organizations.
- Location Intelligence – GIS and Big Data. Improve the representativeness of data Layers and Infrastructure Indicators
  - UN cartography; population density, geography
  - Terrestrial Optical Fiber, Submarine Cables, Satellite Earth Stations, Microwaves Links, mobile coverage
  - Other infrastructure can be considered: transportation, smart grid, finance, etc.

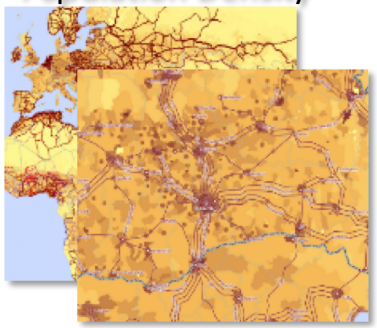
Layers

UN Map

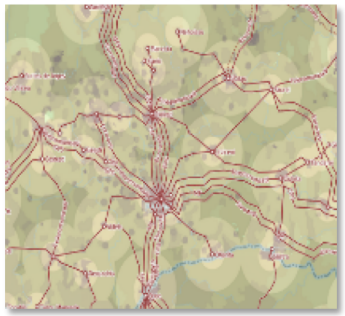
Natural Earth



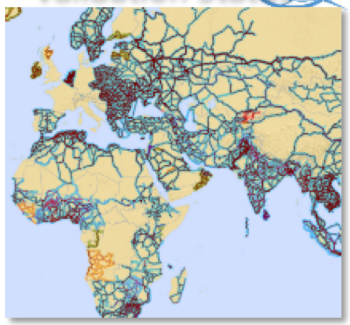
Population Density



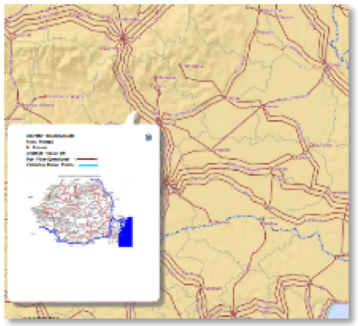
Distance to Nodes



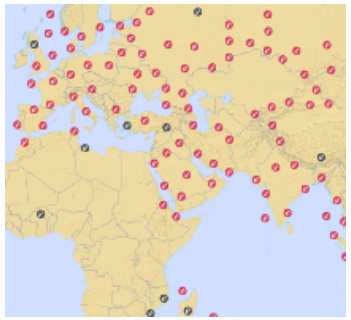
Validation Status



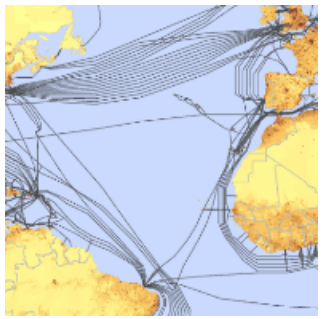
World transmission Links



Satellite Earth Stations



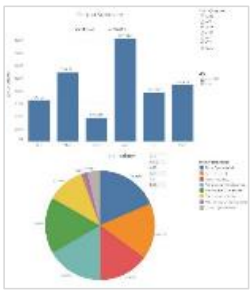
Submarine Cables

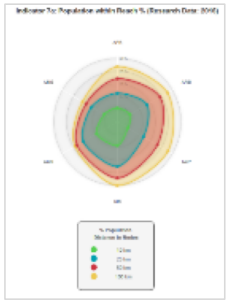


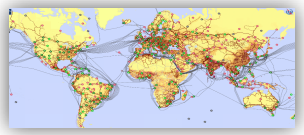
IXPs

Mobile Coverage

Location Intelligence
Visual Analysis
Dashboards
Indicators

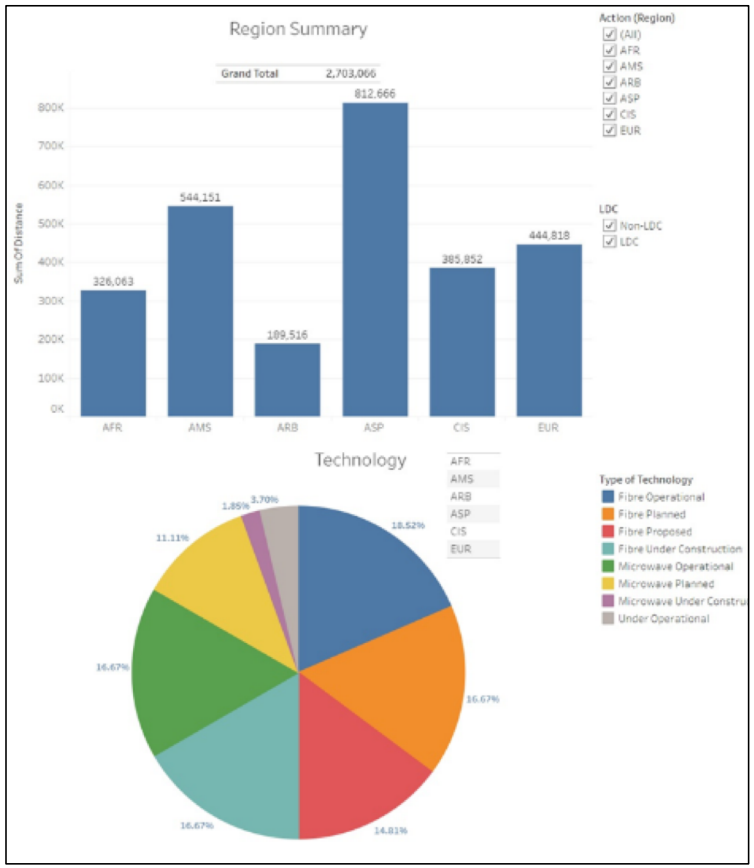


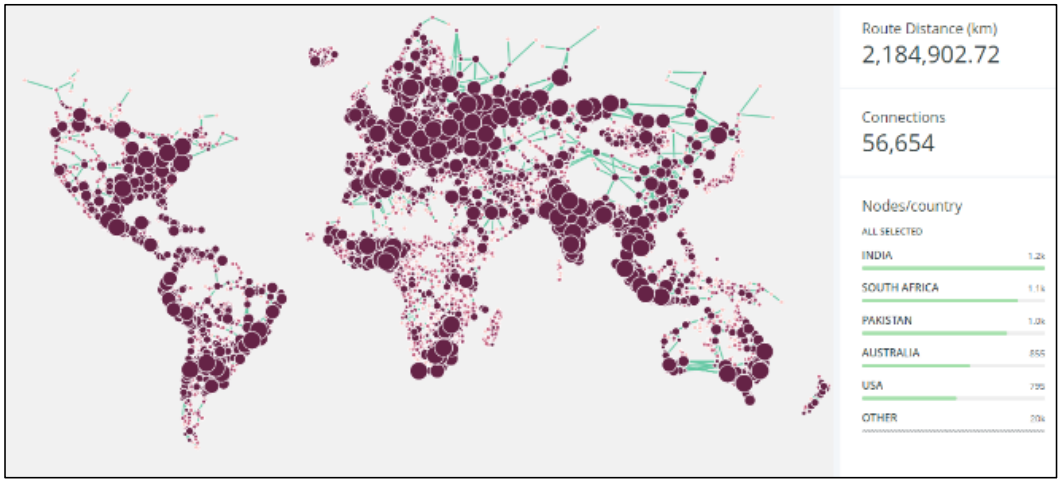




Statistics and Indicators

New Reports to inform Membership on the research progress





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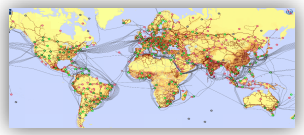
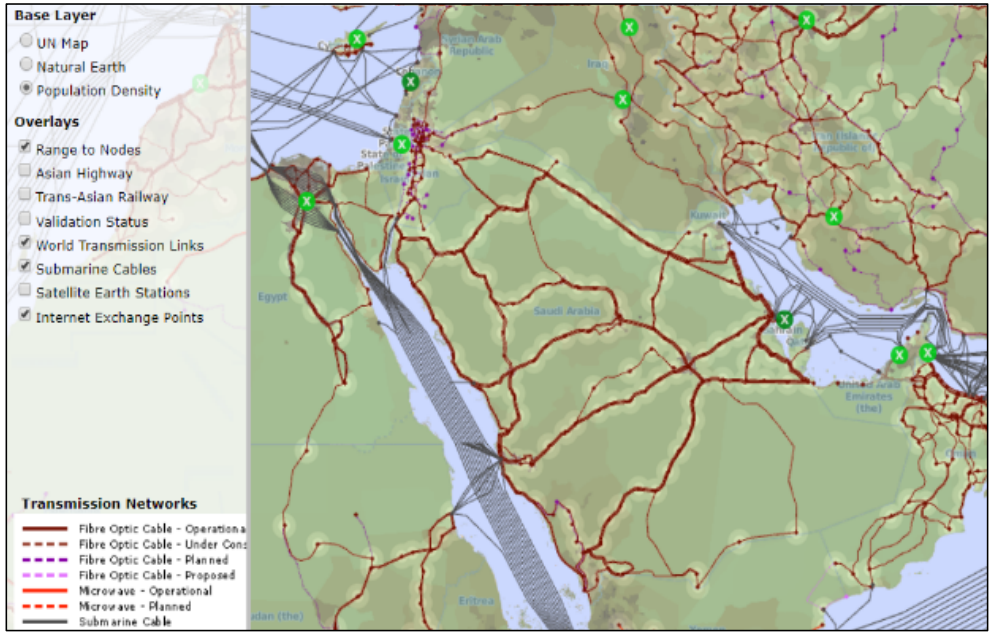
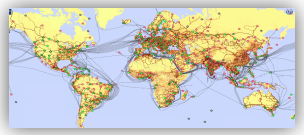


Project for Countries/Regions

Expected Results

- Augmented understanding of the ICT infrastructure in place
- Data collection increased
- Support future assistance to selected countries
- Recommendations on ICT Infrastructure deployment
- Capacity building on Network analysis, planning
- Finance mechanisms to the Region





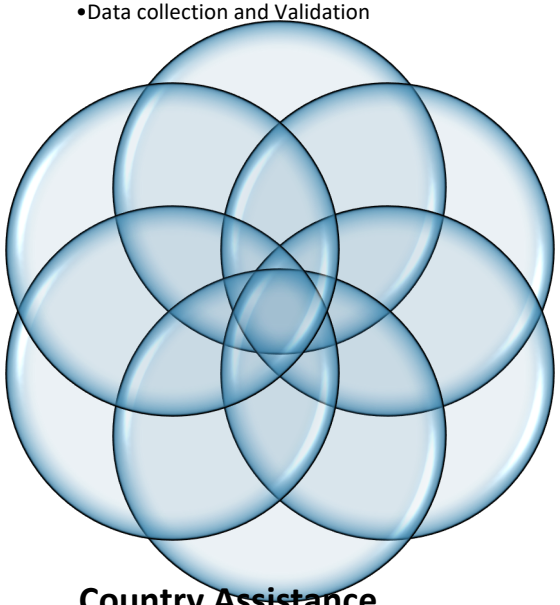
ITU-Maps Implementation Strategy

Capacity building

- Capacity building is an essential component for success and sustainability of the project. To link capacity building to the substance of the project, training will be delivered at different stages of the project, more

Infrastructure Stocktaking

- Regional view and coordination, local activities where applicable
- ICT, transportation, and other utilities as specified by the Project Document
- Network Placement: cost estimation: Geographical, technological, and regulatory variables considered
- Data collection and Validation



ICT Infrastructure Toolkit

- Methodology definition and software development

Reports and Guidelines

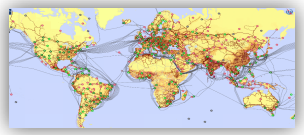
- Based on the analysis of the assessment study, a set of Reports and Guidelines will be developed for determining regional and national constraints and requirements. They will included tailored finance mechanisms.

Regional assessment study and pilot projects

- In order to determine areas of commonalities and differences, an assessment of the present situation will be carried out in the ARB region together with regional partners.

Country Assistance, Infrastructure cost estimation and finance mechanisms

- The project will use new GIS technologies and Location Intelligence methodologies to take stock and estimate ICT infrastructure placement as well as tailored finance methods.



ITU-Maps

Europe Regional Initiatives approved by WTDC-17
EUR1: Broadband Infrastructure, Broadcasting and Spectrum Management

- **Objective:** To facilitate high-speed connectivity with resilient and synergistic infrastructure development, deployment and sharing, whilst ensuring a trusted and quality user experience.
- **Expected results:** Assistance to the countries in need in the following:
  - Development of plans (national and regional) and feasibility studies for deployment of ubiquitous resilient high-speed connectivity, **including 5G/IMT2020** and digital broadcasting deployment, with all relevant components including legislation, standards, organizational set-up, capacity building and cooperation mechanisms, as needed
  - Sharing of guidelines on collaborative regulation between the telecommunication sector and other synergistic sectors such as energy, railway and transportation
  - Assessment of dynamics, challenges and opportunities in respect of the roll-out of diverse broadband technologies across Europe in the context of the creation of ubiquitous resilient high-speed broadband infrastructure
  - Sharing of best practices and case studies in cable TV, digital broadcasting, 5G experience, early use cases and trends in next-generation access network roll-out
  - Mapping of the ubiquitous infrastructure and services, fostering harmonization of approaches across the region and taking into account infrastructure-sharing approaches applied by countries
  - Establishment of quality-of-service systems and consumer-protection frameworks
  - Development of plans for ICT for sustainable energy covering different types of ICT applications and innovations.

Regional Initiative on Broadband, Broadcasting, Spectrum Management: Technical Assistance

1. Future of Cable TV: Discussion Paper
2. Cross regional study on 5G Strategies
3. Cross regional study on EMF
   - Electromagnetic Fields and 5G
4. Albania
   - Technical specification for upgrade of spectrum monitoring system
   - Broadband policy review
5. Bosnia and Herzegovina
   - Feasibility study for establishment of national IXP and deployment of IPv6
6. Montenegro
   - Assistance for IPv6 deployment
7. Serbia
   - Assistance for IPv6 deployment

Broadband: 5G & EMF

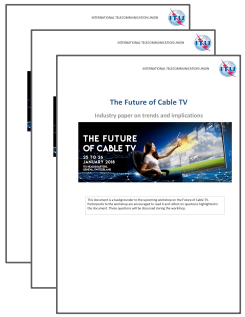
Exchange of views and experiences to identify current practices and proposed future collaborative actions in addressing Electromagnetic Field (EMF) levels without slowing down 5G deployment

Meeting Outcomes

- Establish mechanisms for future collaboration between countries and develop country case studies.
- Proposed studies to be included in ITU-D SG Question 7/2 (revised by WTDC-17)
- Request WHO to revise its backgrounder on EMF exposures from base stations and wireless networks in view of 5G Roll-out
- Meeting of relevant ITU and WHO experts in 2018 [deferred to 2019]
- ITU-T EMF guide update in view of 5G roll out
- Investigate possible avenues for adjusting compliance processes for EMF level in countries where there are significant local differences between the theoretical and the actual exposure levels
- Contribution to ITU-R Working Party 1C in response to Question ITU-R 239/1 on “Electromagnetic field measurements to assess human exposure”

CABLE TV

- **Future of Cable TV**
  - Joint action of BDT and TSB
  - 25/01/2018 – 26/01/2018
  - Geneva, Switzerland
- **Discussion Paper**
- **Inputs to Study Groups**
  - ITU-T Study Group 9: Broadband Cable and TV
  - ITU-D Study Group 1: Enabling environment for the development of telecommunications/ICTs
  - ITU-D Study Group 2: ICT Services and Applications for the Promotion of Sustainable Development
  - ITU-R Study Group 6: Broadcasting Service



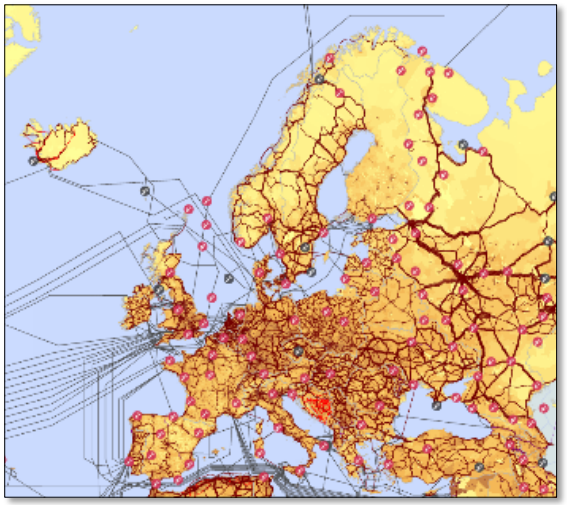
DIGITAL FUTURE

- **Digital Future Powered by 4G/5G**
  - Joint action of BDT and BR
  - 14/05/2018 – 16/05/2018
  - Kiev, Ukraine
- **The Conference is aimed at discussing the following questions:**
  - Legislative/regulatory environment
  - Innovative services
  - Cybersecurity
  - Digital transformation
- **ITU-D Study Groups**
  - ITU-D Study Group 1: Enabling environment for the development of telecommunications/ICTs
  - ITU-D Study Group 2: ICT Services and Applications for the Promotion of Sustainable Development

Building human capacity building and providing coordination, and executive trainings in 2018

1. ITU Event on **The Future of Cable TV** (25-26 January, Geneva)
2. ITU Workshop for Europe and CIS on **Digital Future Powered by 4G/5G** (May 14-16 May, Kiev)
3. ITU Seminar for CIS Countries and Europe on **Development of the Modern Radiocommunication Ecosystem** (6-7 June, 2018; St. Petersburg)
4. ITU Regional Development Forum for Europe (11 June 2018; Prague)
5. ITU Seminar for Europe and CIS on **Spectrum Management and Broadcasting** (3-5 July, 2018; Budapest, Hungary)
6. **Regulatory Conference for Europe** (1-2 October 2018, Budva)
7. ITU Workshop for Europe on **Fostering Implementation of 5G** (December 2018; Rome) TBC
8. **ITU Academy: 10 Trainings by Centres of Excellence** (Jan – Dec 2018)
   - Face-to-Face and Online

Regional Initiative on Broadband, Broadcasting, Spectrum Management:
Investment Opportunities Map



1. Establishment of Consortium
   - International Telecommunication Union
   - European Commission
   - UKE
   - Other stakeholders

2. Pilot in one Western Balkan country

3. Project roll out at the regional level

Thank you!