



# **ITU Regional Workshop on** *Organizational and Technical* *Aspects of Broadband* *Development*

*Odessa, Ukraine, 27-29 September 2017*

**Broadband Rural Development**  
**ITU Leadership and Broadband Commission work**

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IEE/TND

International Telecommunication Union

# Telecommunication Technologies and Network Development Division



## Key Areas



## Products and Services in Focus

Our work is carried out by various means, including symposia, workshops, conferences, seminars and expert advice as well as information sharing, creation of tools and training material, direct assistance, partnership, publications and events. Our priority areas are as follows:



**Next-Generation Networks:** assistance on planning, deployment, migration, interoperability, digitization and evolution of networks, network elements and applications

**Broadband Networks (wired and wireless technologies including IMT):** assistance with planning, implementation and development of national ICT broadband networks, including promoting IXPs

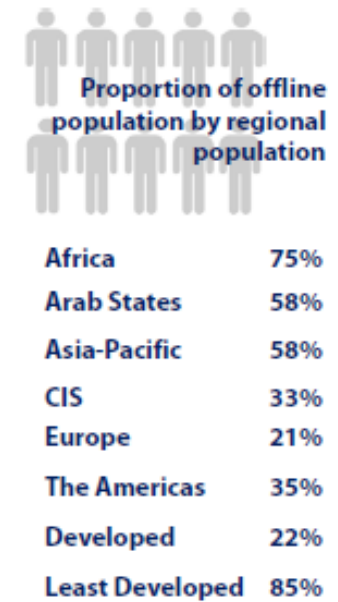
**Rural communications:** provision of information on access and backhaul technologies and source of power supply, latest technologies and best practice, implementation of projects on public community broadband access points

**Conformance and interoperability (C&I):** assistance on the establishment of national, regional or subregional C&I programmes, assessment and feasibility studies, providing information and training to technicians, policy-makers and businesses on C&I, providing guidelines on C&I

**Bridging the Standardization Gap:** Increasing the knowledge and capacity of developing countries for the effective application/implementation of standards developed by ITU

- **ITU Guidelines on Conformity and Interoperability:** Different Guidelines relating to best practice for planning and review of C&I regimes, Mutual Recognition Agreements, establishment of C&I Test Labs and others
- **ITU Trainings on C&I:** provision of trainings to enhance knowledge, increase awareness, promote experience sharing, present practical learning on standards, regulations, real lab experience and accreditation procedures; provision of Lecture on C&I Regimes; and C&I Testing Domains
- **ITU C&I Regional Assessment Studies/ Conformity Interoperability Programme:** to promote Harmonized C&I Programmes in collaboration with Regional Organizations
- **ITU Broadband, IPv6 and Internet Exchange Implementations:** to provide broadband connectivity free or low cost digital access for schools, hospitals, underserved populations; IXPs to reduce transmission costs, optimize Internet traffic, improve QoS
- **ITU Interactive Transmission Maps:** cutting-edge ICT-data mapping platform to take stock of national backbone connectivity and other key ICT metrics.

# Distribution of the offline population 2016 by region and development level

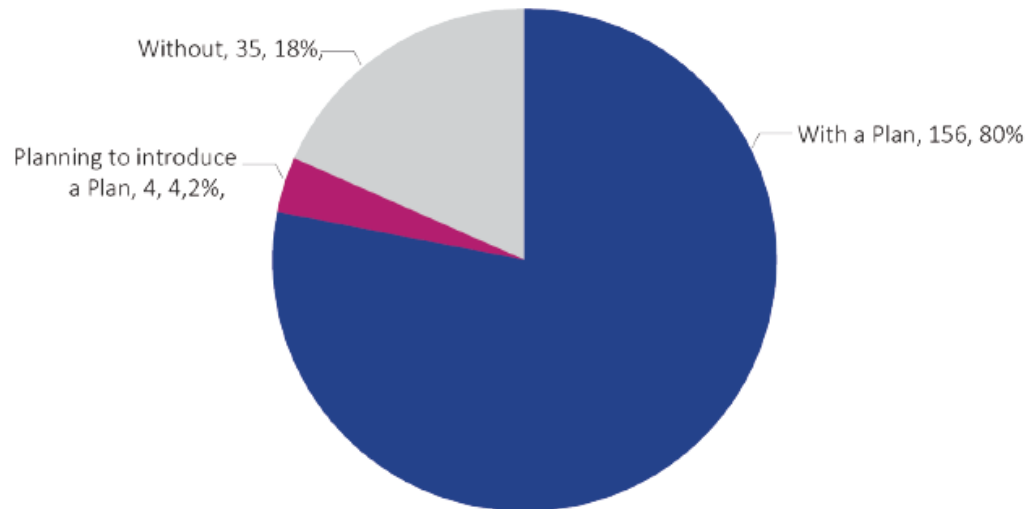
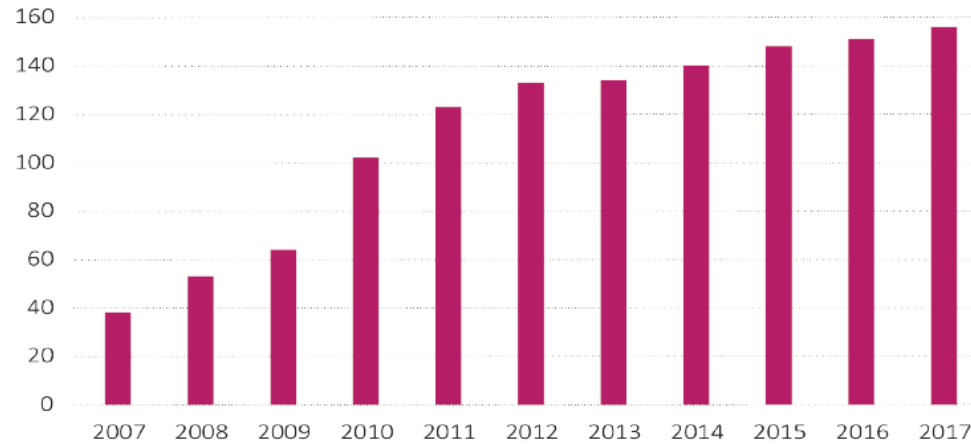


Source: Broadband Commission, adapted from ITU.

# Policy Leadership in National Broadband Plans, 2007-2017



Growth in National Broadband Plans, 2007-2017 (top chart); Number of countries that have adopted a Plan or Strategy, planning to adopt or without (bottom chart).



Source: ITU. Note: Bottom chart based on data for 195 countries. National Broadband Plan or strategy includes: a plan, strategy or policy specific to broadband; digital plan, agenda, strategy or policy; ICT plan, strategy, or policy; or a communication plan, strategy, or policy.



# Broadband Plans : Policy Leadership

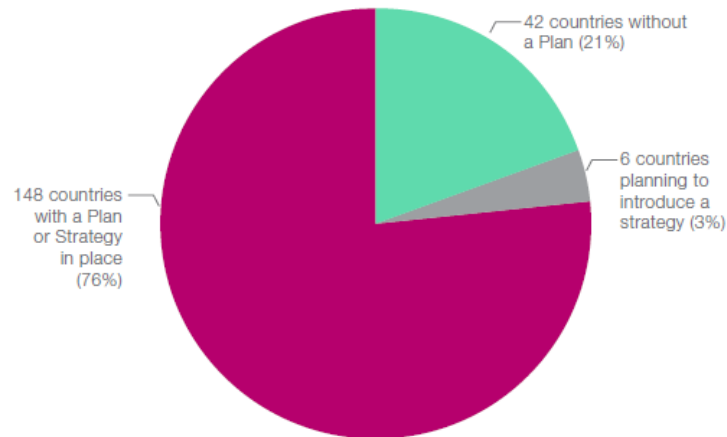


Number of Countries with National Broadband Plans, 2005-2015



## Broadband plans 2005-2015

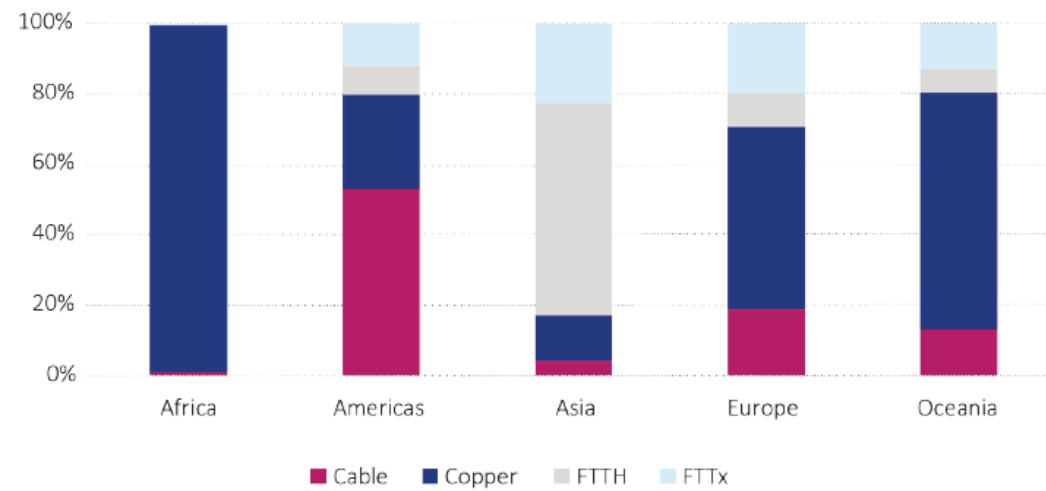
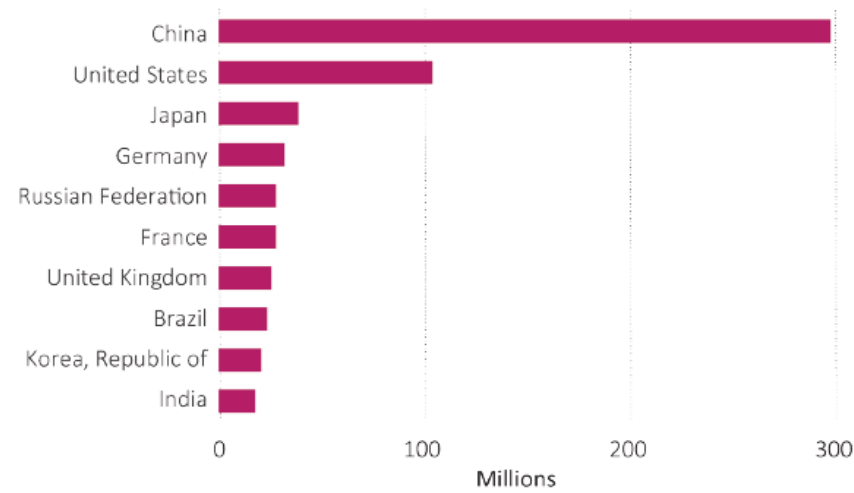
Phase	1) Deployment	2) Adoption	3) Integration
Focus	Broadband network availability	Broadband access & capacity building for effective use	Broadband integration in economy and society
Examples	Optical fibre cable and wireless broadband access networks	Digital literacy programmes; community access projects & programmes	e-health, e-governance, e-education and e-commerce strategies
Indicators	Telecom indicators	Performance indicators	Outcome/impact measures



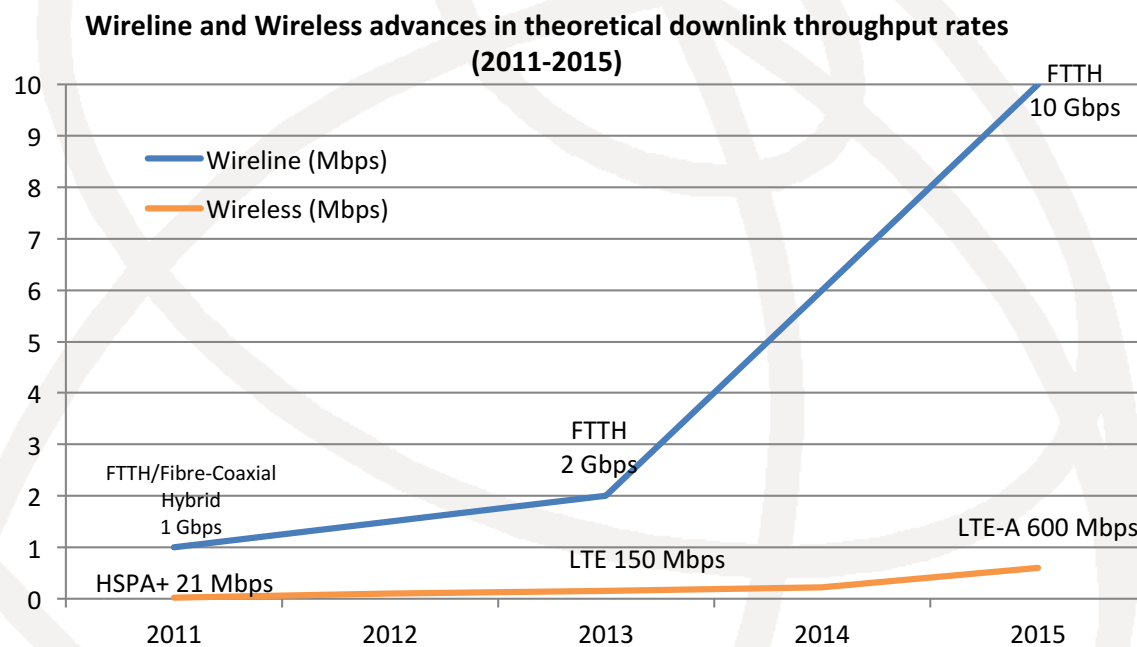
# Global Fixed Broadband Subscribers, 2016



Distribution of fixed broadband subscriptions by region, 2016 (top); Evolution of fixed broadband subscriptions by technology, Q4 2014-Q4 2015 (bottom).



Source: Point Topic, available at: <http://point-topic.com/free-analysis/fixed-broadband-subscribers-q4-2016/>

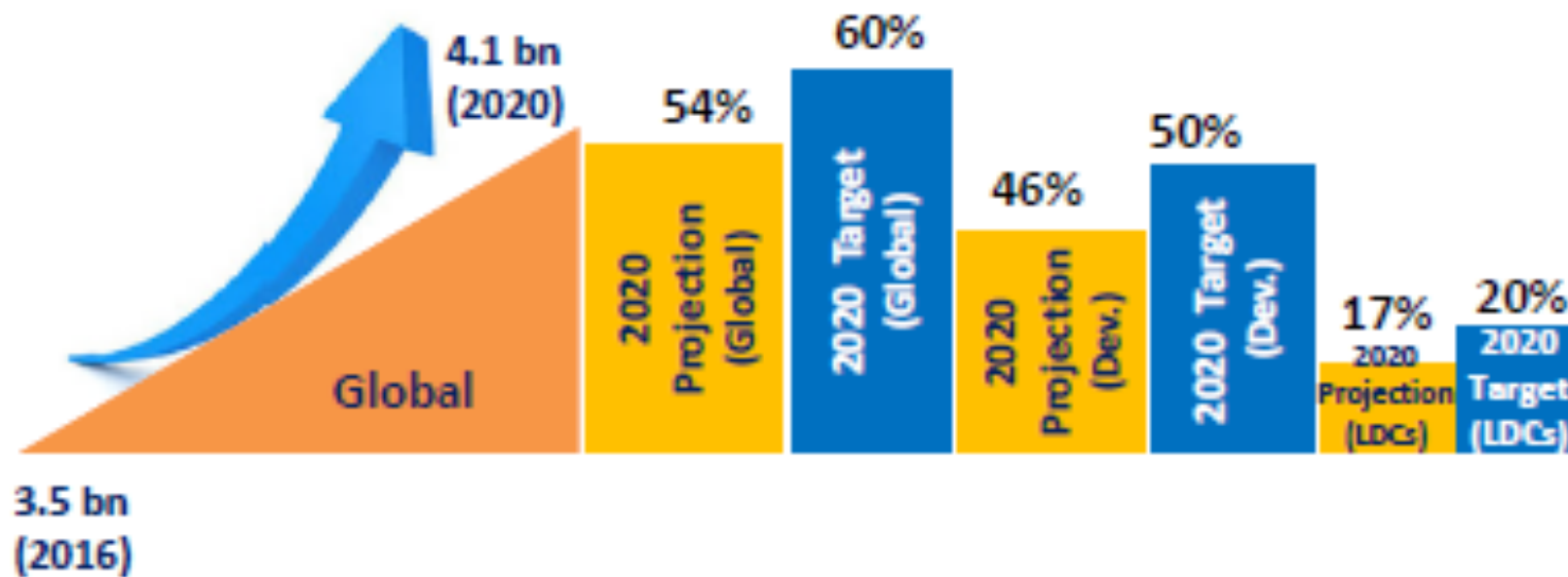


Wireline and Wireless advances in theoretical downlink throughput rates (2011-2015)



# ITU CONNECTING THE UNCONNECTED 2020 Agenda Targets

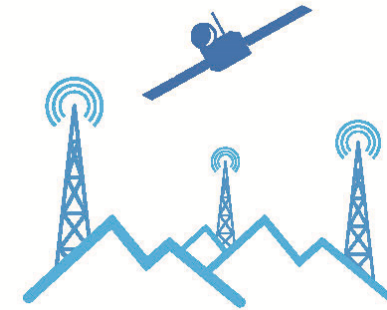
Global Online Population 2016 (actual) and 2020 (projected and target)







Q5/1



## **Question 5/1**

# **Telecommunications/ICTs for rural and remote areas**

The output is a report on the results of the work conducted by ITU-D

<https://www.itu.int/md/D14-SG01/en>



## **Challenges that developing countries planning to extend ICTs to rural and isolated**

- Shortage of power
- Expense of maintaining power backup - usually diesel - and environmental hazards thereof
- Difficult terrain
- Difficult access and transportation
- Lack of skilled manpower
- Installation and maintenance of networks is quite challenging and difficult
- Very high operating cost
- Low potential ARPU
- Sparsely populated areas and scattered population clusters.



# ITU-T and Affordable Broadband Infrastructure

- Highlights:
  1. Tariff and economic issues in ITU-T Study Group 3 aimed at reducing rates for services
  2. Broadband access and optical transport in ITU-T Study Group 15 'transport, access and home'
  3. 5G in Focus Group on IMT-2020
  4. ICT and Climate Change in Study Group 5 'environment and climate change'
  5. IoT and Smart City in Study Group 20 'Internet of Things and applications, smart cities'



# Broadband & Internet of things: the way to Smart Sustainable Cities





# Smart sustainable cities

By 2050, 70% of the world's population is expected to live in urban environments.

By reimagining the role of technology and connectivity in today's cities, we're not only addressing current challenges, but we're creating countless smart and sustainable solutions built for the future.



9 INDUSTRY, INNOVATION  
AND INFRASTRUCTURE

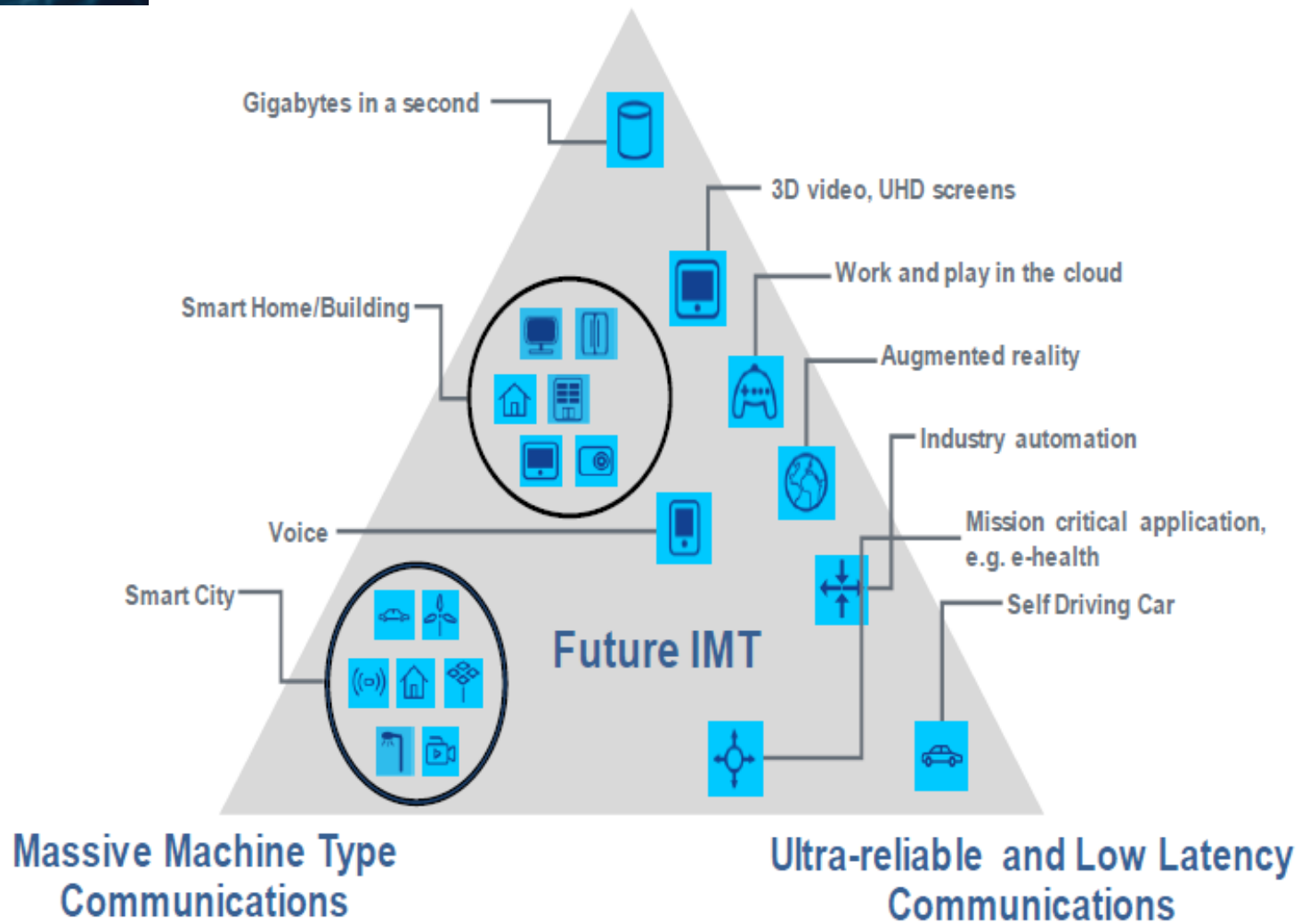


11 SUSTAINABLE CITIES  
AND COMMUNITIES





## Enhanced Mobile Broadband





## Related ITU-R studies

### ITU-R – radio standards and spectrum

- **SG1** - spectrum management, licensing, short range devices, cognitive radio
- **SG3** – propagation studies – incl. studies > 6 GHz
- **SG4** – satellite systems
- **SG5** – machine-type comms, intelligent transport systems, sensor networks, **IMT**

### ITU-T – fixed network aspects

- **SG13** - Future networks (& cloud)
- **SG20** - IoT and applications, smart cities
- Focus Group on IMT-2020 (FG IMT-2020)



## IMT-2000, IMT-Advanced, IMT-2020

- All of today's 3G and 4G mobile broadband systems are based on the ITU's IMT standards.
- ITU established the detailed specifications for **IMT-2000** and the first "3G" deployments commenced around the year 2000.
- In January 2012, ITU defined the next big leap forward in wireless cellular technology – **IMT-Advanced** – and this is now being progressively deployed worldwide.
- The detailed investigation of the key elements of **IMT-2020** is already well underway, once again using the highly successful partnership ITU-R has with the mobile broadband industry and the wide range of stakeholders in the 5G community.



