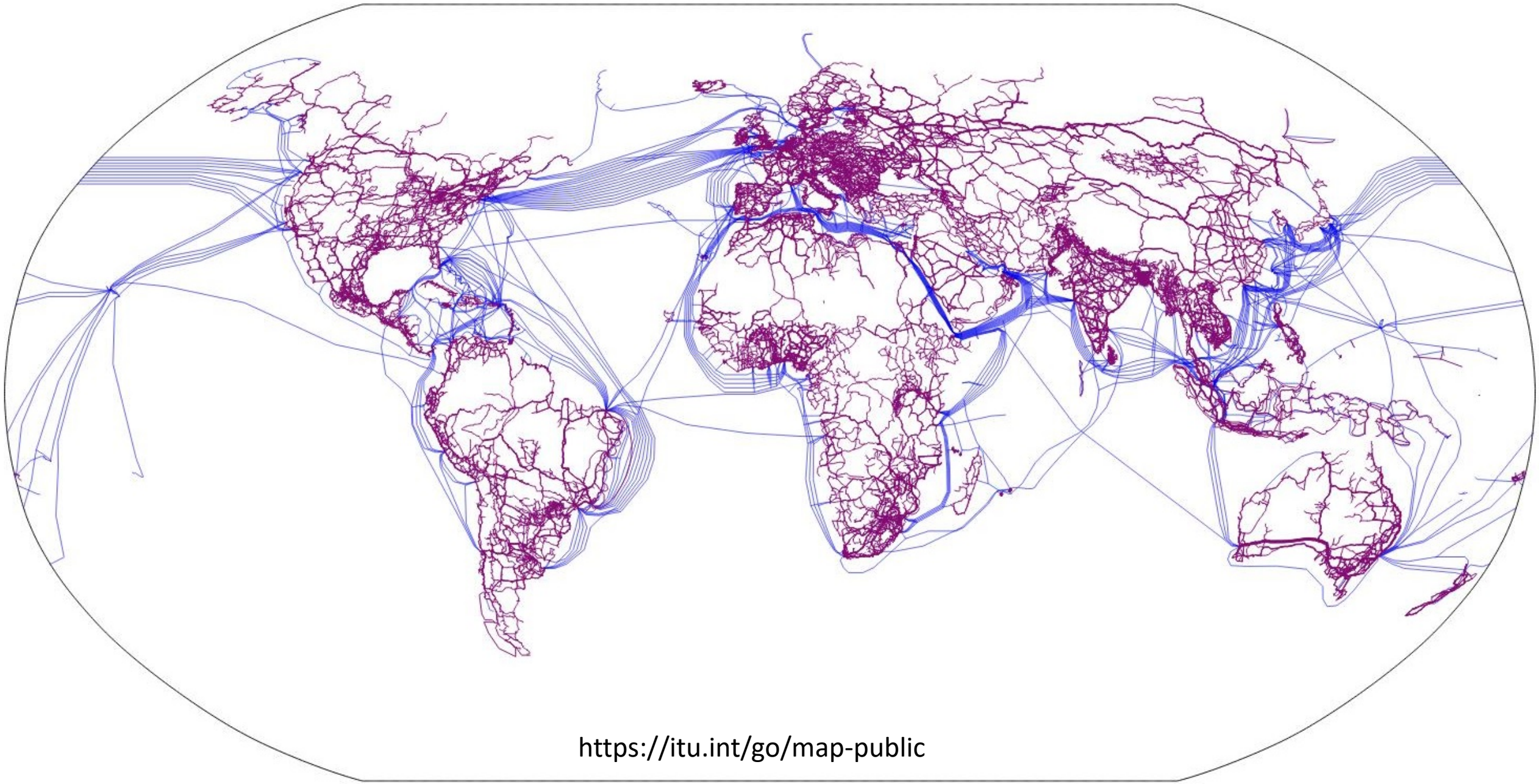
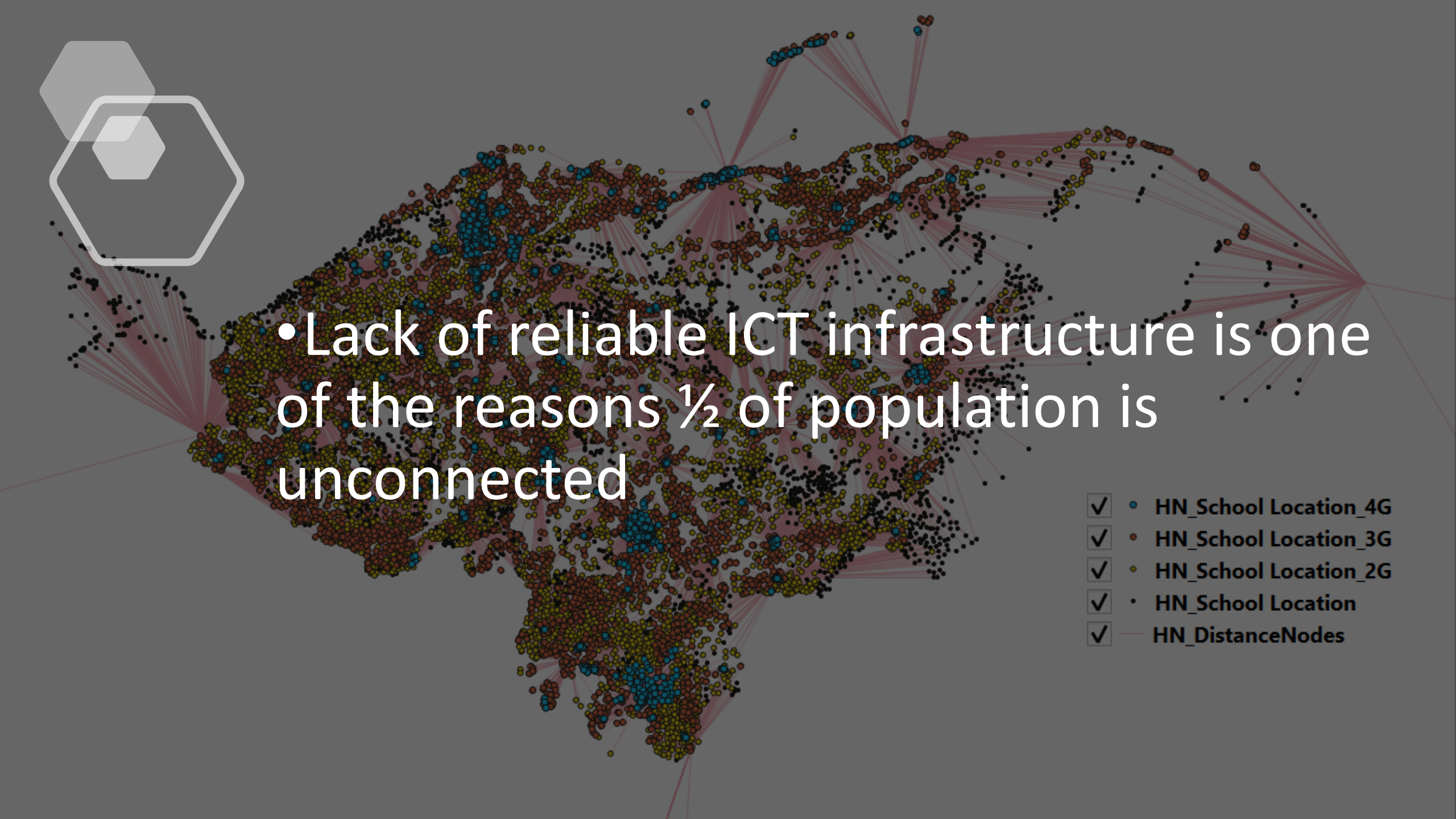
ITU Broadband Maps



https://itu.int/go/map-public



- Lack of reliable ICT infrastructure is one of the reasons ½ of population is unconnected

Agenda

Purpose

Research

Validation

Results

Indicators

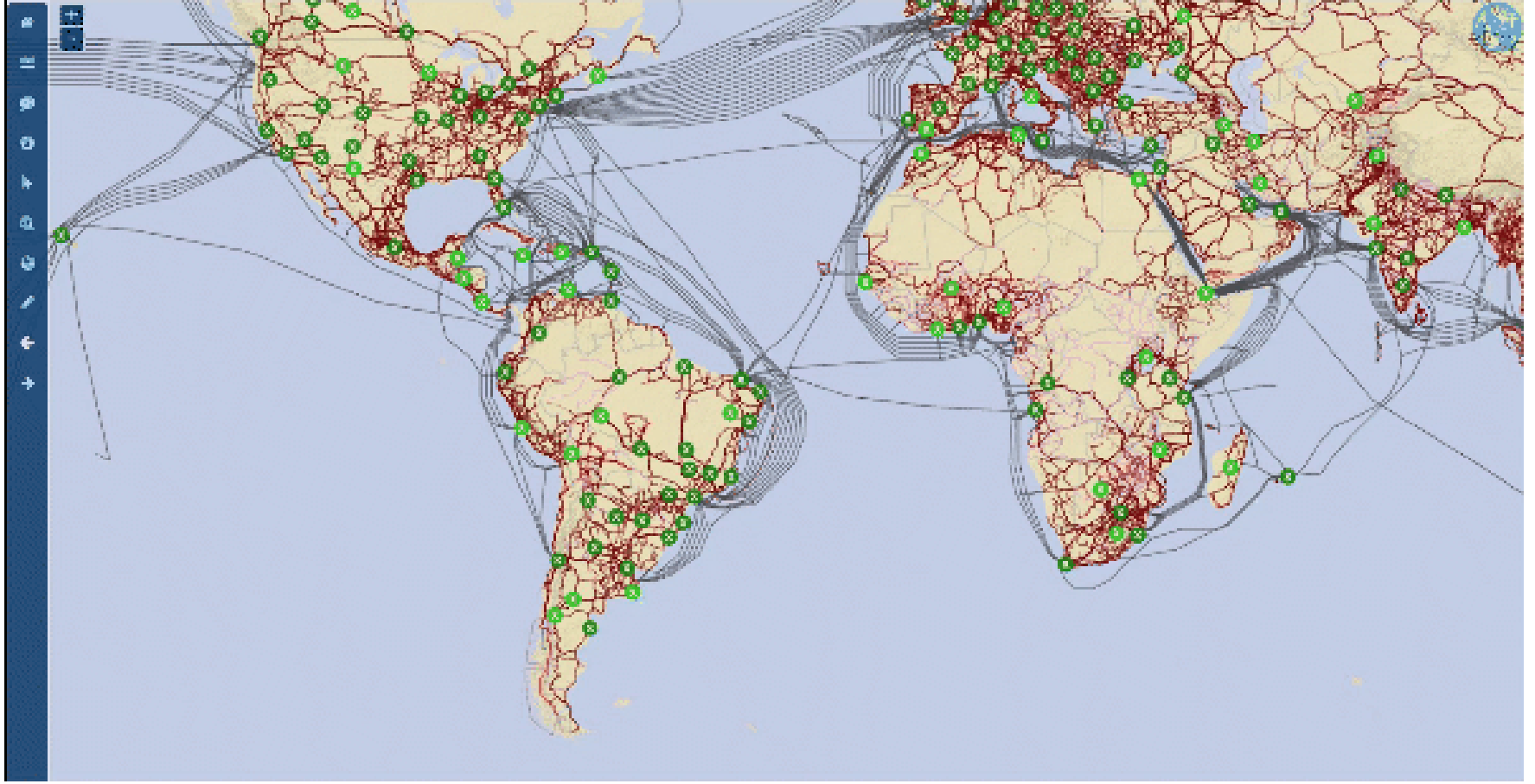
Tools for assistance

Next developments

ITU BBmaps

What is need:

- Status of info-highways and
- identifying connectivity gaps
- investment opportunities in ICT infrastructure
- Harmonized ICT connectivity metrics

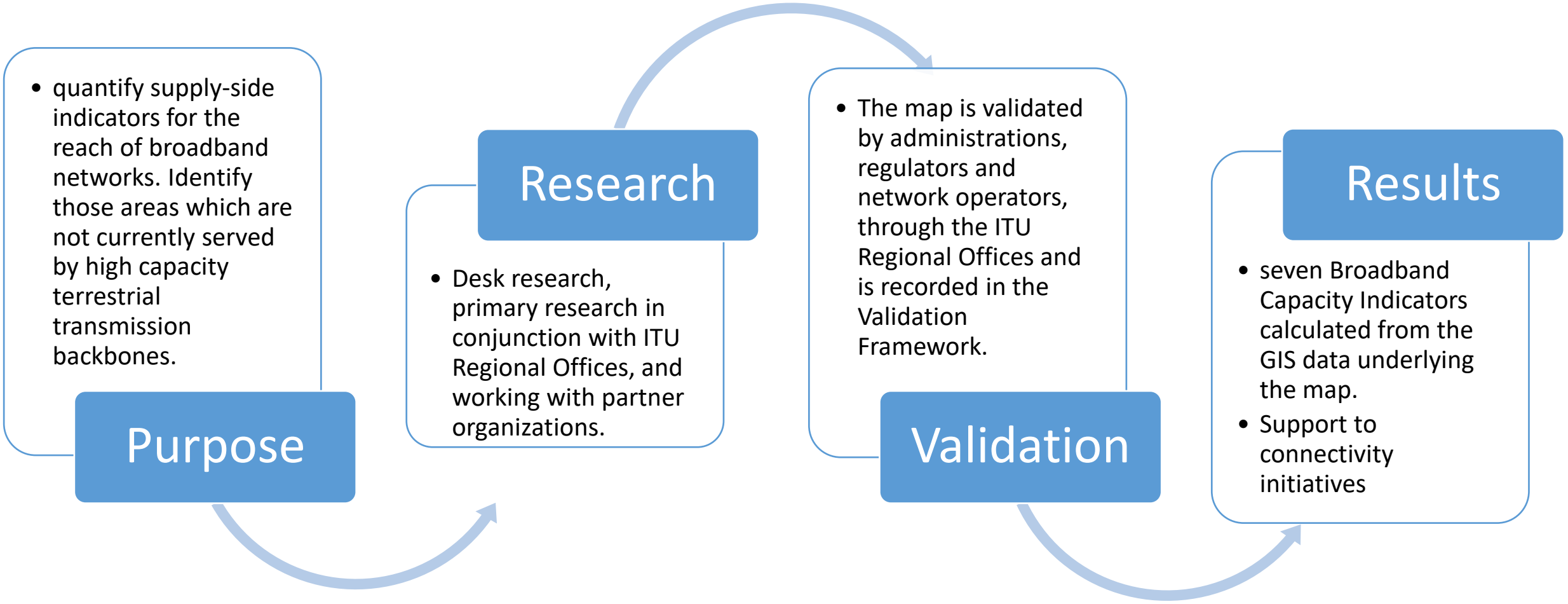


Contribution to **SDG 9**:

The ITU Broadband Maps is taking stock of global backbone connectivity and other key infrastructure metrics to support the

Information on how
countries are connected
to the Global Transmission
networks.

ITU BBmap

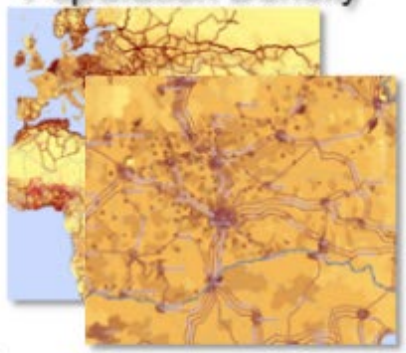

• quantify supply-side indicators for the reach of broadband networks. Identify those areas which are not currently served by high capacity terrestrial transmission backbones.
Purpose
Research
• Desk research, primary research in conjunction with ITU Regional Offices, and working with partner organizations.
• The map is validated by administrations, regulators and network operators, through the ITU Regional Offices and is recorded in the Validation Framework.
Validation
Results
• seven Broadband Capacity Indicators calculated from the GIS data underlying the map.
• Support to connectivity initiatives

Layers

UN Map

Natural Earth

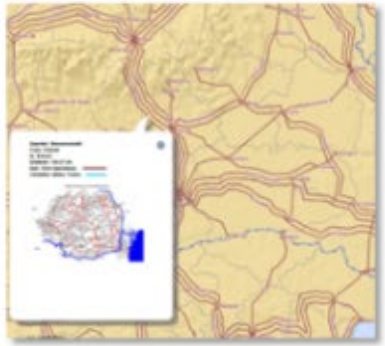
Population Density



Distance to Nodes

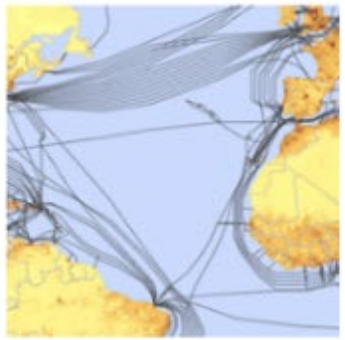
Validation Status

World transmission Links



Satellite Earth Stations

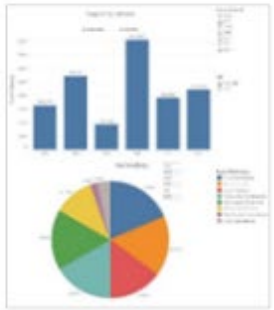
Submarine Cables

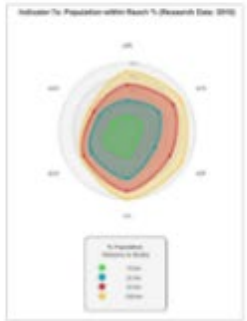


IXPs

Mobile Coverage

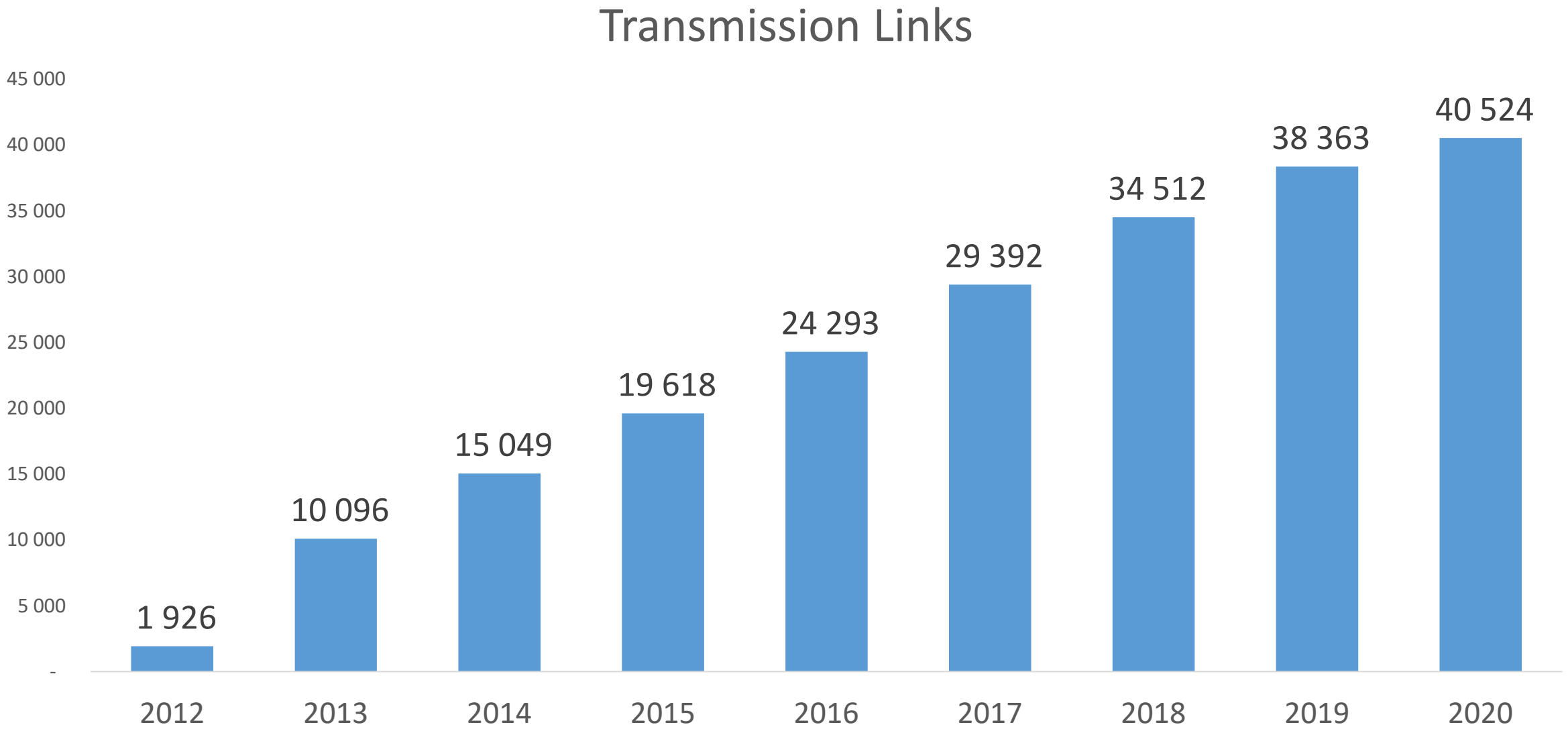
Location Intelligence
Visual Analysis
Dashboards
Indicators





https://itu.int/go/Maps

Data Research



https:/itu.int/go/Maps

Data Research

Terrestrial Backbones

- Countries covered: 88
- Total of Km drawn: 3,885,787
- Number of Nodes: 23,807
- Number of Transmission lines: 40,524

https:/itu.int/go/Maps

Operators:

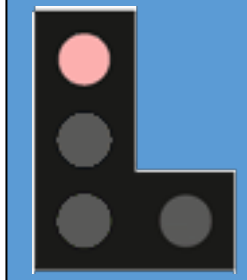
Region	Terrestrial
Africa	93
Arab States	40
Asia & Pacific	94
CIS	26
Europe	141
The Americas	108
Total	**512**

Data Validation Framework

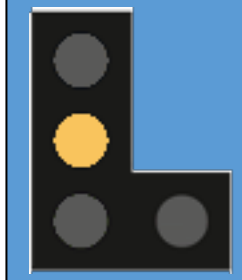
Each link in the map is
given a validation status.

We use a simple traffic
light system:

- Validation - Red Traffic Light
- Validation - Amber Traffic Light
- Validation - Green Traffic Light
- Validation - Public

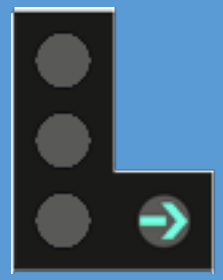


Red: Information was sourced from a restricted document (for example on TIES), a potentially unreliable publicly available source (such as a third party), may contain information which is confidential or regarded as sensitive by the network operator, and/or is very old and could be out of date (if it is more than 3-5 years old). Information must be validated by network operator or stakeholder to provide clearance that the information is correct, up-to-date, and is not confidential.



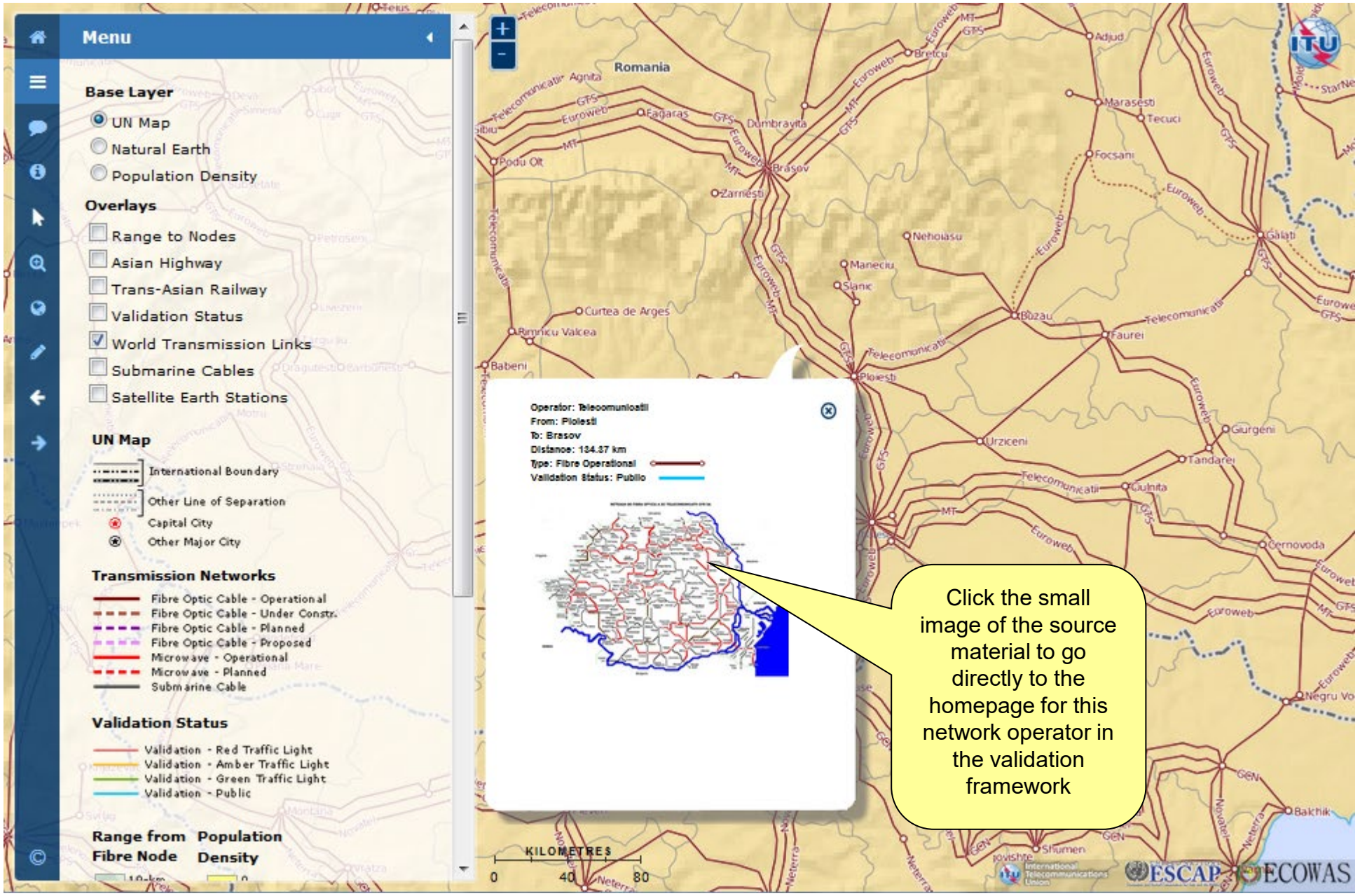
Amber: Information was not taken from a publicly available source, may be unreliable because of difficulties reading or interpreting the source material, and/or may be old and out of date. Operator is asked to provide clearance that the information is correct, up-to-date, and is not confidential.

Green: Information was sourced from an authentic, reliable publicly available source (such as a company website, annual report, presentation, or other publication), and has been deliberately put into the public domain by the network operator or administration (it is therefore not confidential). The information is current and correct, and there is no reason why a public version could not be put into the public domain.



Public: Information has been actively checked and validated by stakeholder through the TIES interactive web map platform, specifically granting permission for this information to be put into the public domain.

Data Validation Framework & Data source



Broadband Transmission Capacity Indicators

Indicator 1: **Transmission network length (Route kilometres)**

Indicator 2: **Node locations**

Indicator 3: **Equipment type of terrestrial transmission network**

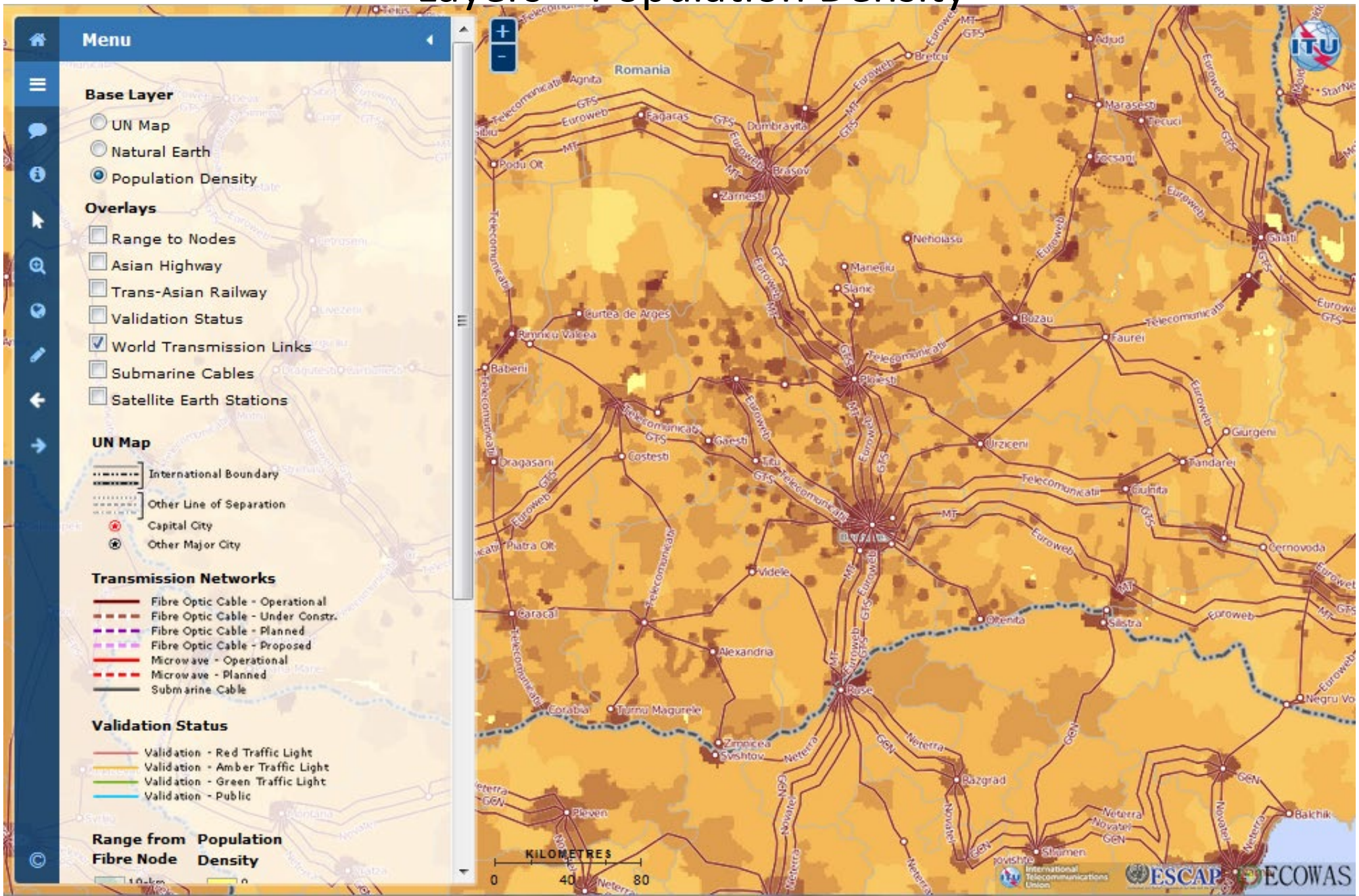
Indicator 4: **Network capacity (bit rate)**

Indicator 5: **Number of optical fibres within the cable**

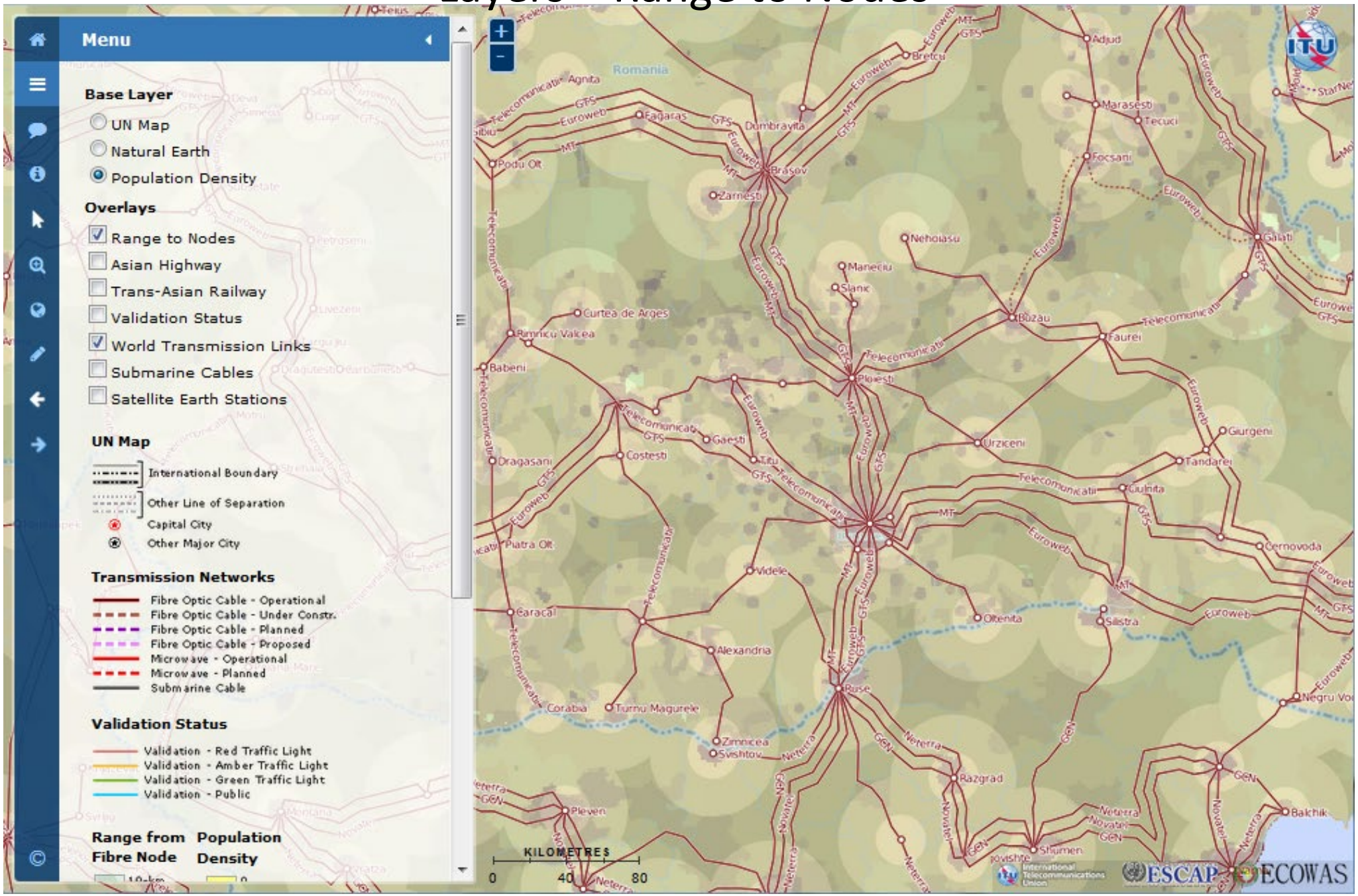
Indicator 6: **Operational status of the transmission network**

Indicator 7: **population within reach of transmission networks**

Layers – Population Density

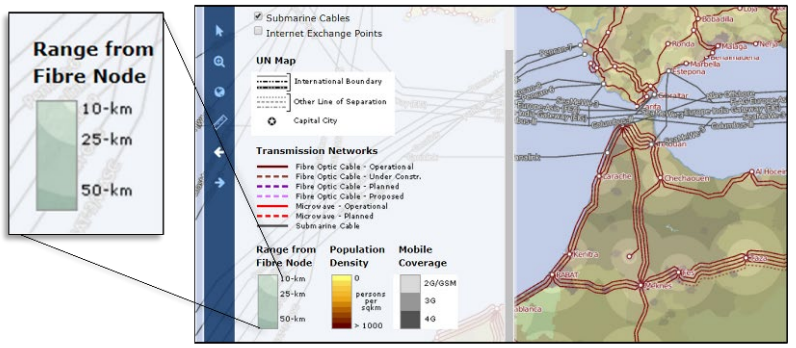


Layers – Range to Nodes

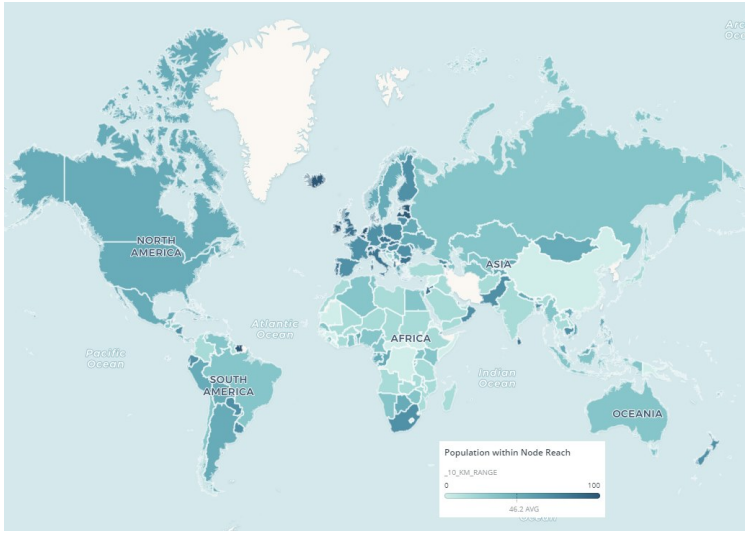


Data Analysis

Distance to Internet high-speed pathways (Access Points)



- **Distance to Internet high-speed pathways (Access Points)**
  - Broadband indicators can help with the questions raised, for instance the “Broadband indicator population within 10 Km reach”. This indicator informs about the percentage of people that are within physical reach of an access point (nodes)
  - The population living within reach of transmission networks is calculated from network nodes because nodes are access points to the network. This is a useful indicator of the catchment area of a core transmission network or networks, and how many people it potentially serves.



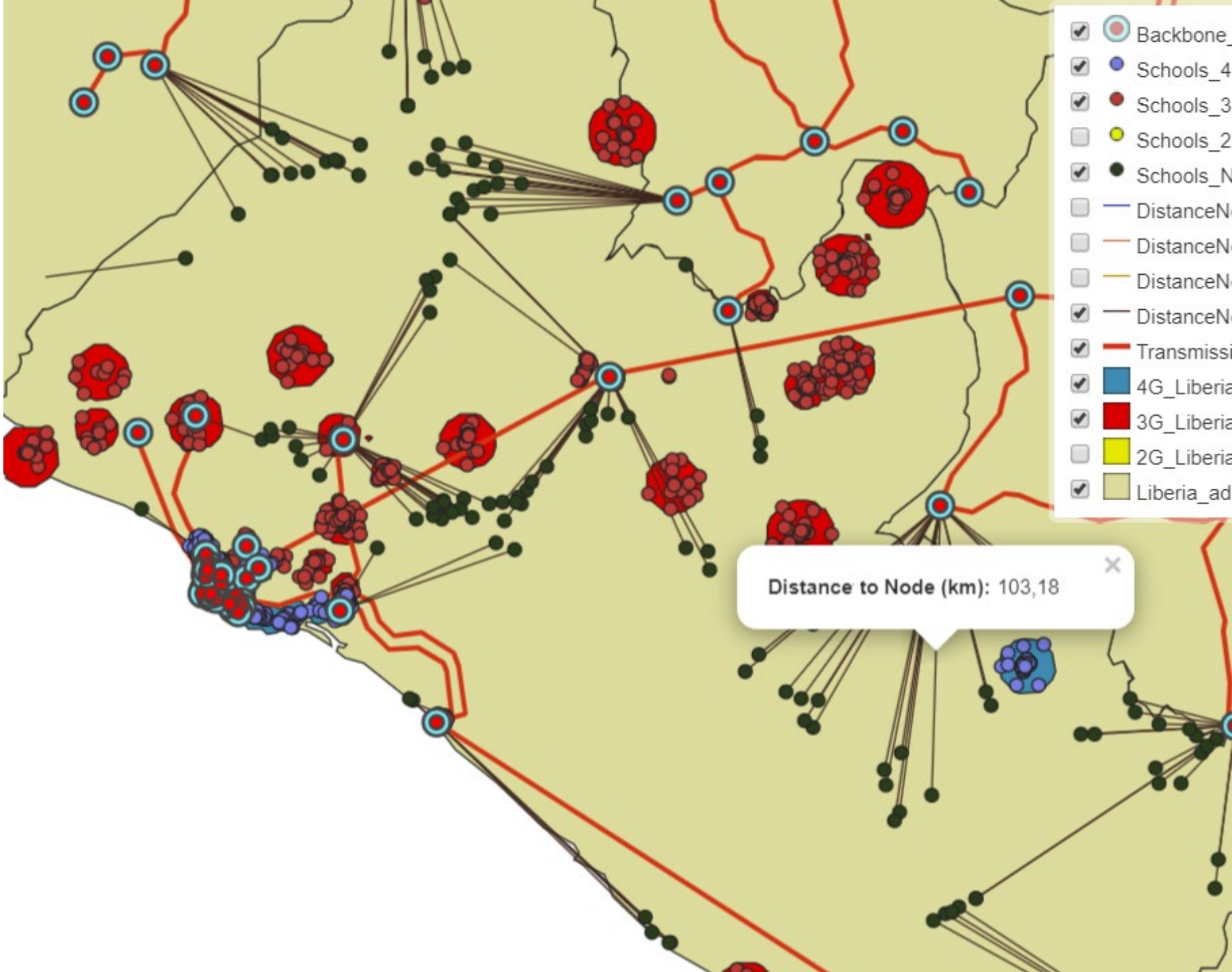
Tool to support connectivity initiatives

Thematic Priority – Reliable Connectivity to all

- FIGI - Mexico
- GIGA
- PRIDA
- UNESCAP
- DCM

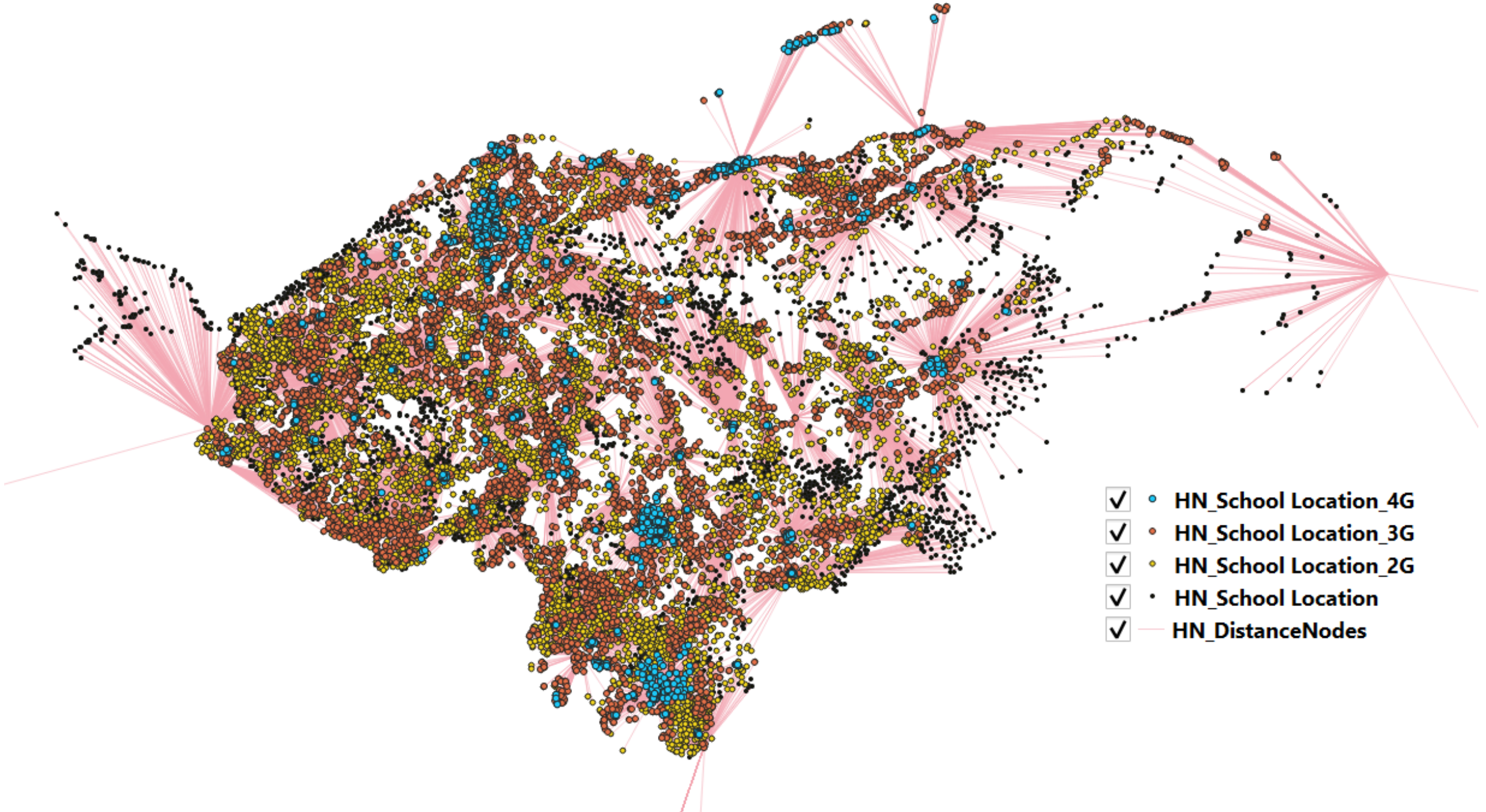
GIGA – Connect every school

- Map
- Connect
- Finance
- Empower

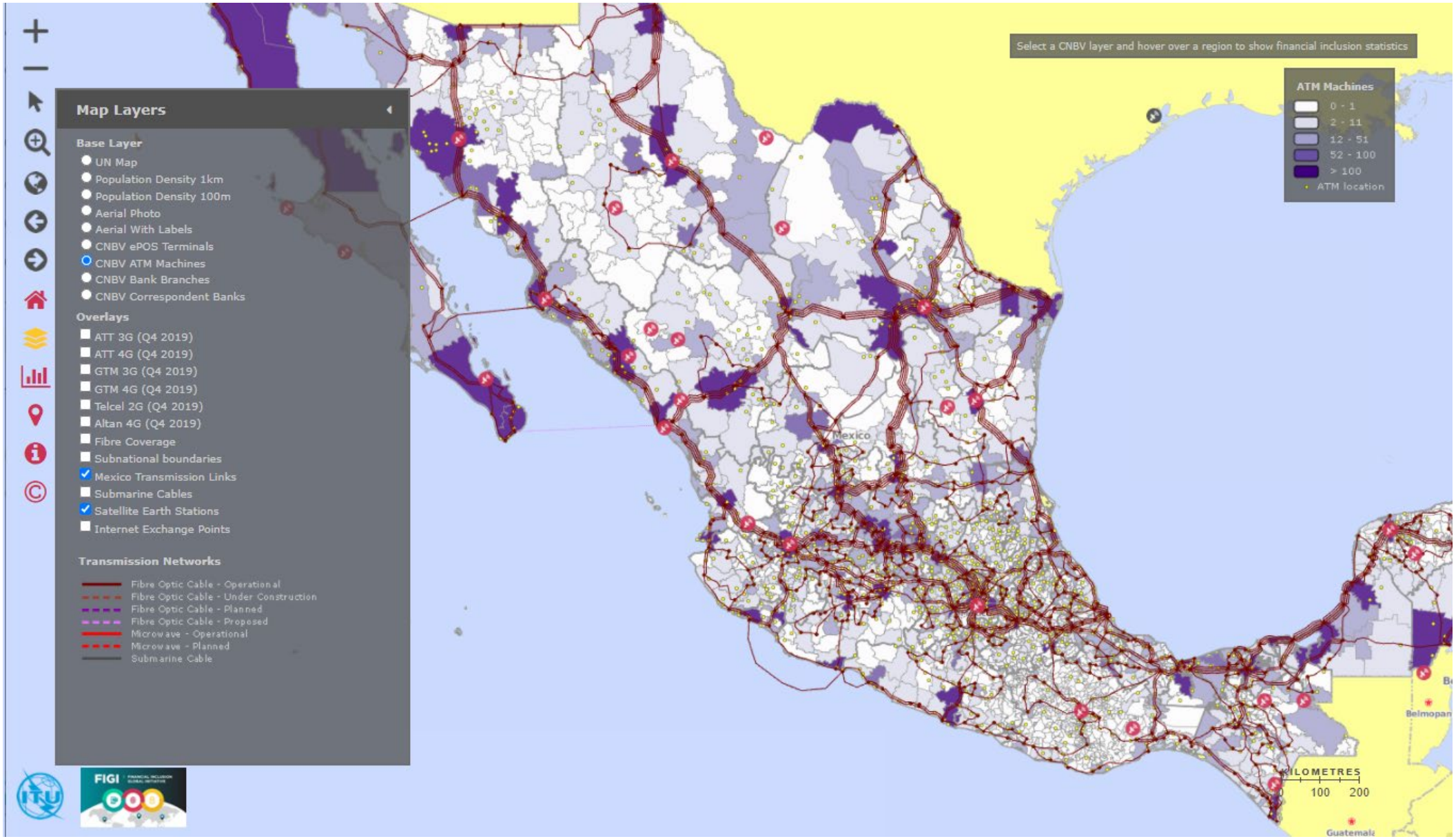


Connecting schools - Increased Data Value (Country case study)

- **Case: school connectivity bid (UNDP)**
  - GIS backbone data as a source of reference to check the level of connectivity of existing and potential candidate sites for free Public Wi-Fi.
  - Ensure that free Wi-Fi sites are in areas that are underserved by service providers.
  - The backbone fiber data was used to determine if there are other significant sources of connectivity options in the sites identified.
- **Lessons**
  - Making existing data available
  - Focused actions -> increased data quality / update
  - Supplement with additional sources to build a robust view of existing infrastructure
  - Consider local terrestrial middle mile providers

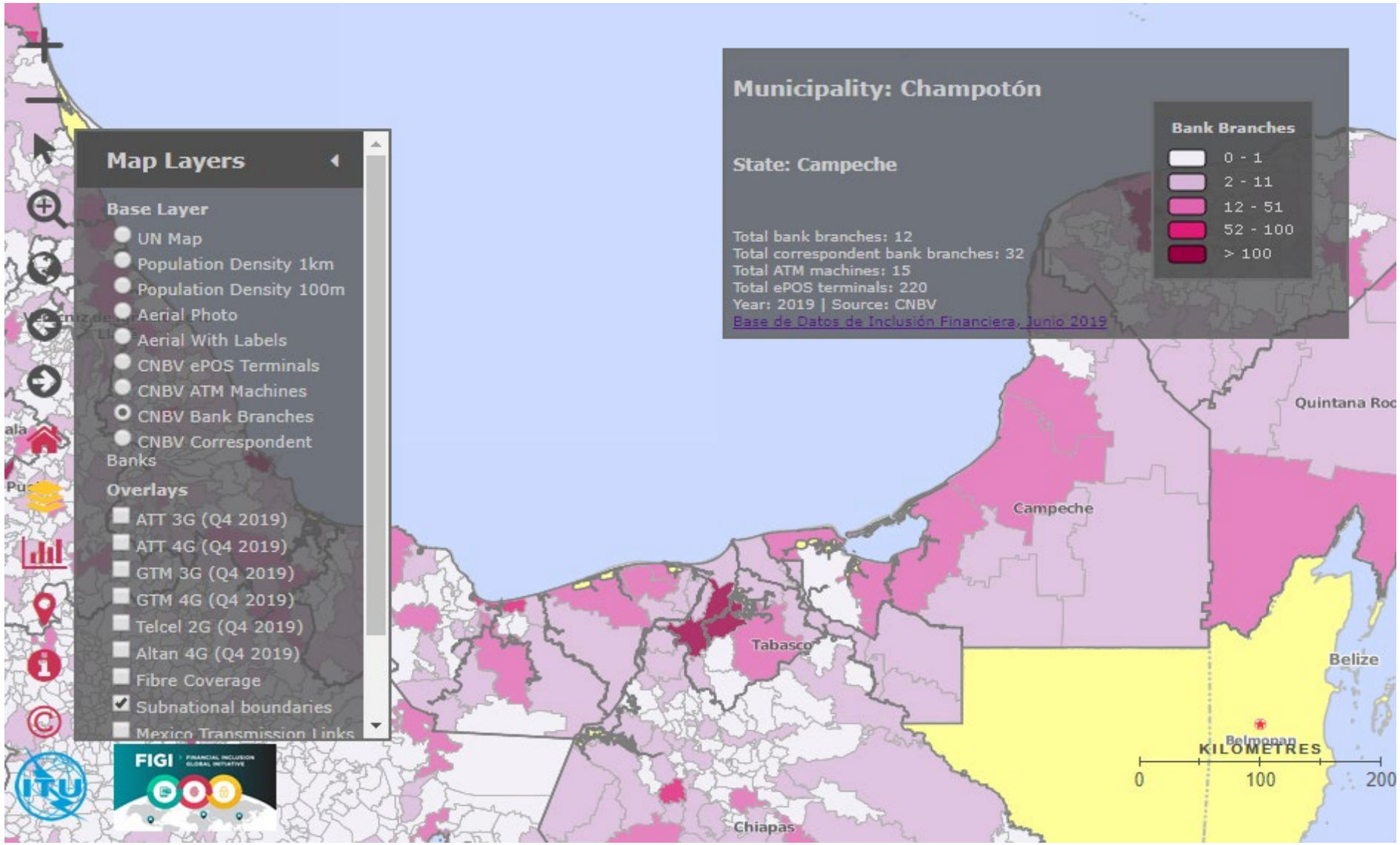

HN_School Location_4G
HN_School Location_3G
HN_School Location_2G
HN_School Location
HN_DistanceNodes

Financial Inclusion - Mexico

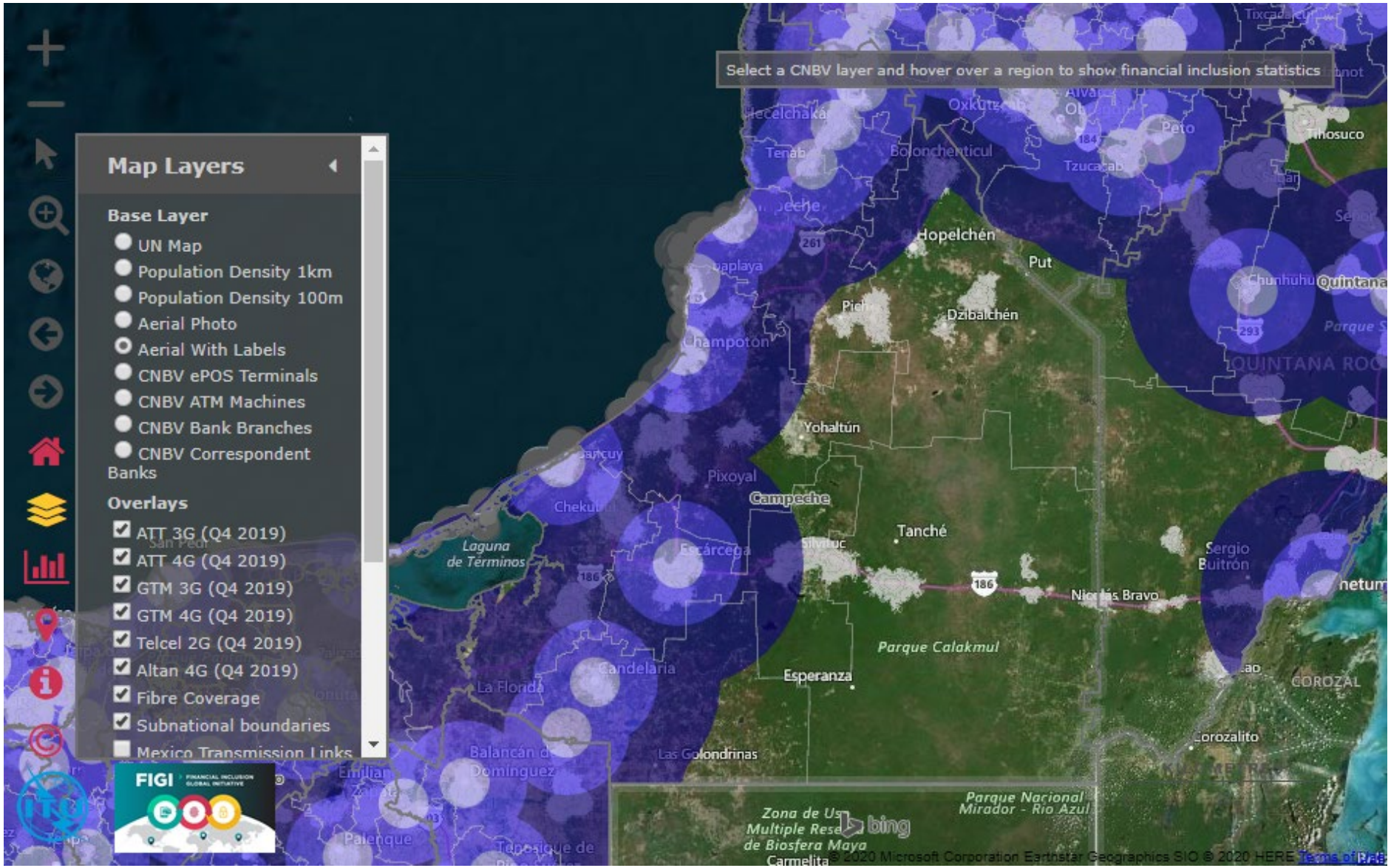


https://www.itu.int/itu-d/tnd-map-public/mx-figi/

Bank Branches by Municipality



Comparison of fibre and mobile coverage



Financial Connectivity Index

- A way to visualise further possible barriers to entry for uptake of FinServ
- Weighted Sum method combines multiple layers:
  - Crime rate per municipality
  - ePOS Terminals
  - ATM Machines
  - Bank Branches
  - Correspondent Banks
- Weighting (adjustable) set to 20%
- To be made available as Web Map Services (WMS) layer, for inclusion into Desktop GIS

ITU-UNESCAP: Asia-Pacific Information Superhighway Maps

Next developments

- Quick Network estimation – ITU Regional Initiative model
- Connectivity estimation – Quality of Service
- New graphical interface
- Support to global, reginal and national Infrastructure development initiatives
- Data collection
  - Terrestrial Transmission -Collaboration with National GIS offices
  - New Layers – Satellite Coverage (BR-GIMS)
  - Improving data collection in Central America: Guatemala, Honduras, and El Salvador
- ITU Assistances
  - Mapping systems
  - Data Structure harmonization

Resources

- Collaboration
  - GIGA
  - ESCAP
  - FIGI – Financial Inclusion - Mexico
  - Investment Opportunities in Europe
- Data Analysis
  - Indicators
  - Hub Analysis
- More Information
  - Video
  - Prezi presentation
  - https://itu.int/go/Maps

Thank you

https://itu.int/go/Maps