

# **ITU Workshop on “Fiber Optics for Communication Networks: From Standards to Deployment**

**(Algiers, Algeria, 24-25 November 2013)**

## **ITU Interactive Terrestrial Transmission Map (Optical fibres and Microwaves)**

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# Introduction

- With the landing of submarine cables in many countries and the expansion of national and cross-border fiber backbone networks in addition to mobile and wireless services, **broadband connectivity is achieving significant progress**
- Creating online Interactive Terrestrial (Optical Fibers and Microwaves) Transmission Maps will serve as **a powerful tool for all concerned stakeholders for facilitating the development of the Broadband connectivity worldwide**
- Thanks to collaboration between ITU and Regional Organization as well as all related Stakeholders, **it was finalized and released an authoritative, cutting-edge ICT-data mapping platform to take stock of national backbone connectivity** as well as of other key metrics of the ICT sector
- **Data collection for building the online Interactive Terrestrial (Optical Fibers and Microwaves) Transmission Maps is performed with the contribution of concerned operators and Administrations** through a public and transparent validation process

# Project Scope

- Research + processing + creation of maps of core terrestrial transmission networks for the following ITU regions:
  - Arab region
  - CIS region
  - Asia Pacific region
  - North America region
  - Latin America and the Caribbean region
  - Africa region
- Maps will be published in various ITU documents and reports, and in 2D and 3D web map formats
- Indicators derived from the map can be published through the map itself and in various ITU publications

**Source:** Framework and Methodology for ITU World Terrestrial Transmission Map Project – 3rd March 2013

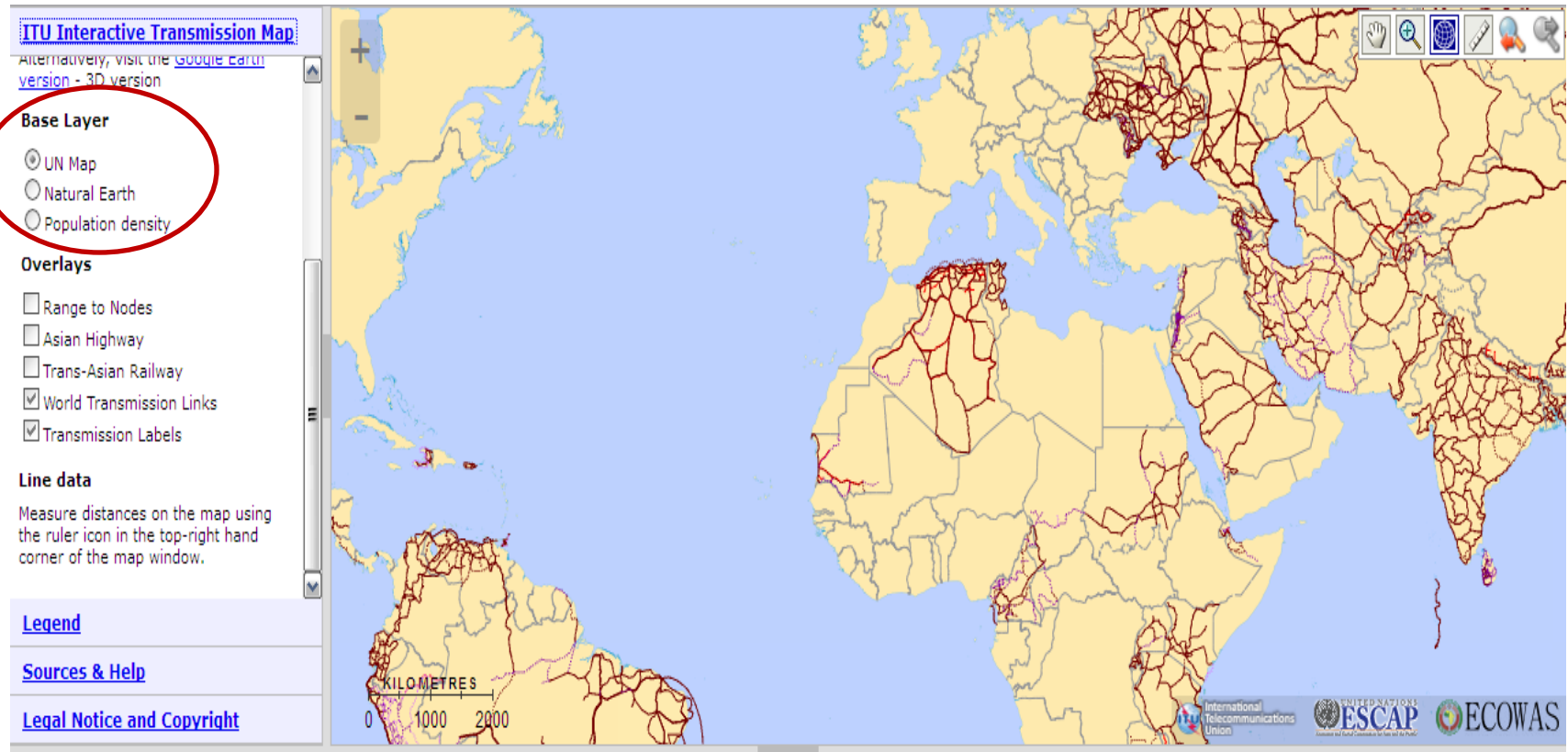
# Product Advantages (1)

- **Demonstrating ICT connectivity current status around the globe** + monitoring their evolution over time
- **Providing accessible multi-criteria analysis** based on robust and reliable evidence
- **Empowering network planners, policy makers and regulators from developing countries with tools to assess the status of national connectivity and to identify gaps**
  - ➔ possibility to design targeted strategies and implementation programs that expand the reach and increase the use of broadband

# Product Advantages (2)

- **Providing industry with a powerful tool to assess market opportunities** = management tool for :
  - making investment decisions
  - promoting broadband
  - achieving universal connectivity
- **Offering an informed insight to abundant, current data on global ICT connectivity** to all interested stakeholders

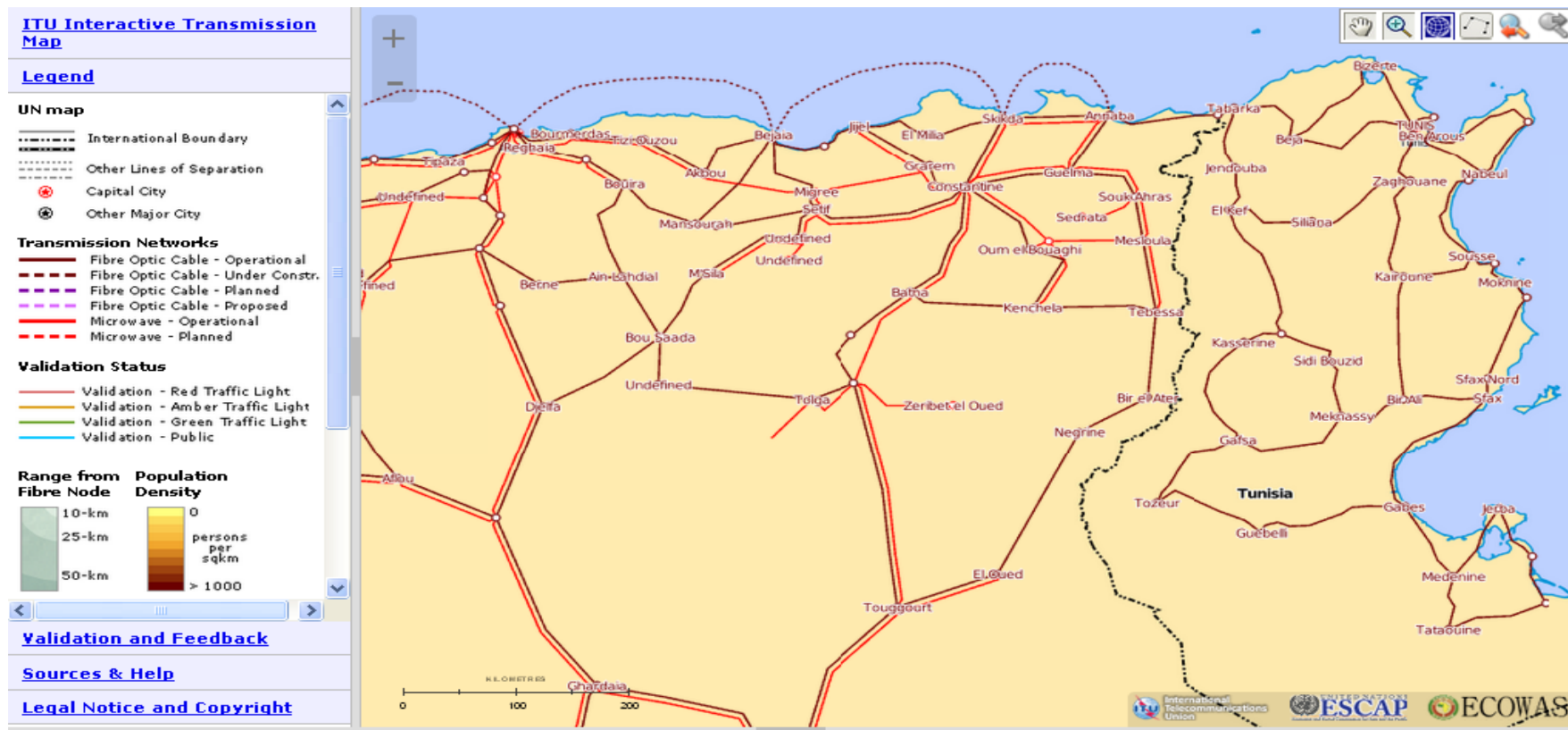
# Online Interactive Terrestrial Transmission Maps (screenshot)



**UNCS Disclaimer:** The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. Final boundary between the Republic of Sudan the Republic of South Sudan has not yet been determined. Final status of the Abyei area is not yet determined. A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

**Sources:** UN Map base layer The base map for this infographic is based on the UNmap database, of the United Nations Cartographic Section. The UNmap0 is prepared at a scale of 1:1,000,000. UNmap is being updated on a continuous basis. Transmission Map data The data for building the infographics have been collected through: primary sources: Reply to an official request for information (RFI) document has been sent to all Regions outlining the purpose of the project for operators, indicating what level of detail is required, and what format the data is to be published. Secondary sources: On average, around 25 to 40% of the data was readily available in the public domain, from operator websites, annual reports, company presentations, and presentations at industry conferences. Partnership: A number of organizations do already research and produce transmission network maps for particular countries or regions, for various technical reasons. Wherever possible, partnerships with these organizations were established, to seek permission to display their network maps work through the ITU world transmission map. The collection of data as well as their validation from Concerned Operators/Administrations is currently a work in progress. The source for the Asian Highway and Trans-Asian Railway networks is the ESCAP Secretariat.

# Base Layer 1 : UN Map (UN Cartographic Service)

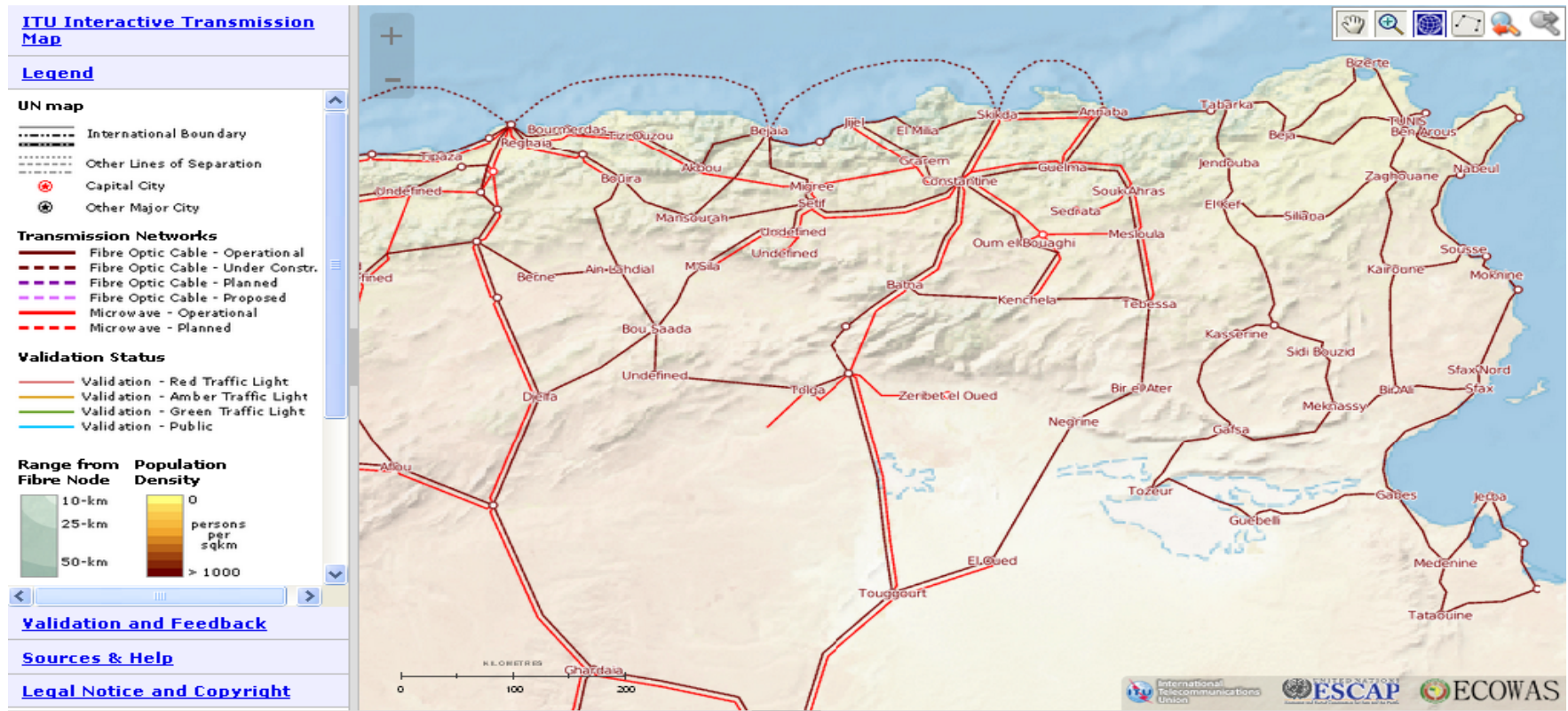


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# Base Layer 2 : Natural Earth

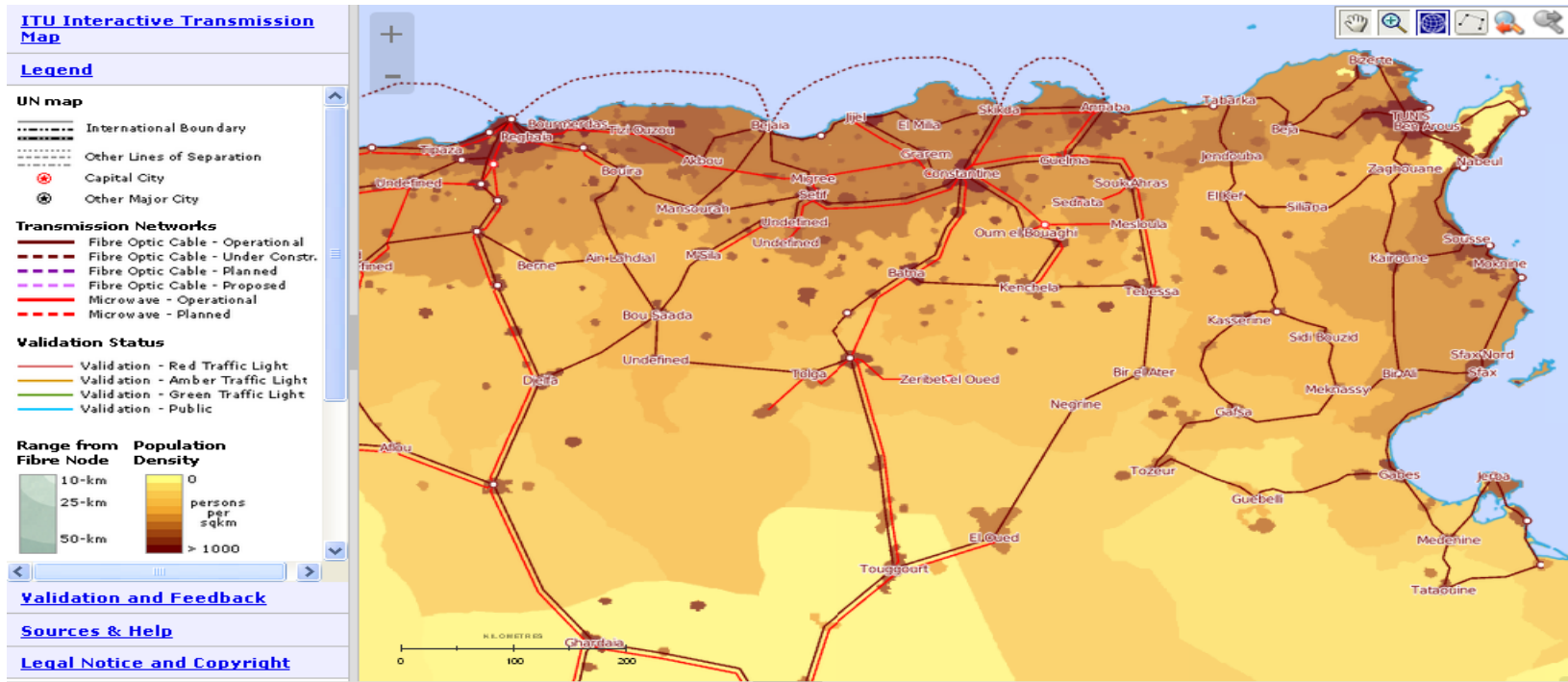


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# Base Layer 3 : Population Density



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**Possibility to compare the location of transmission networks against the population they serve**

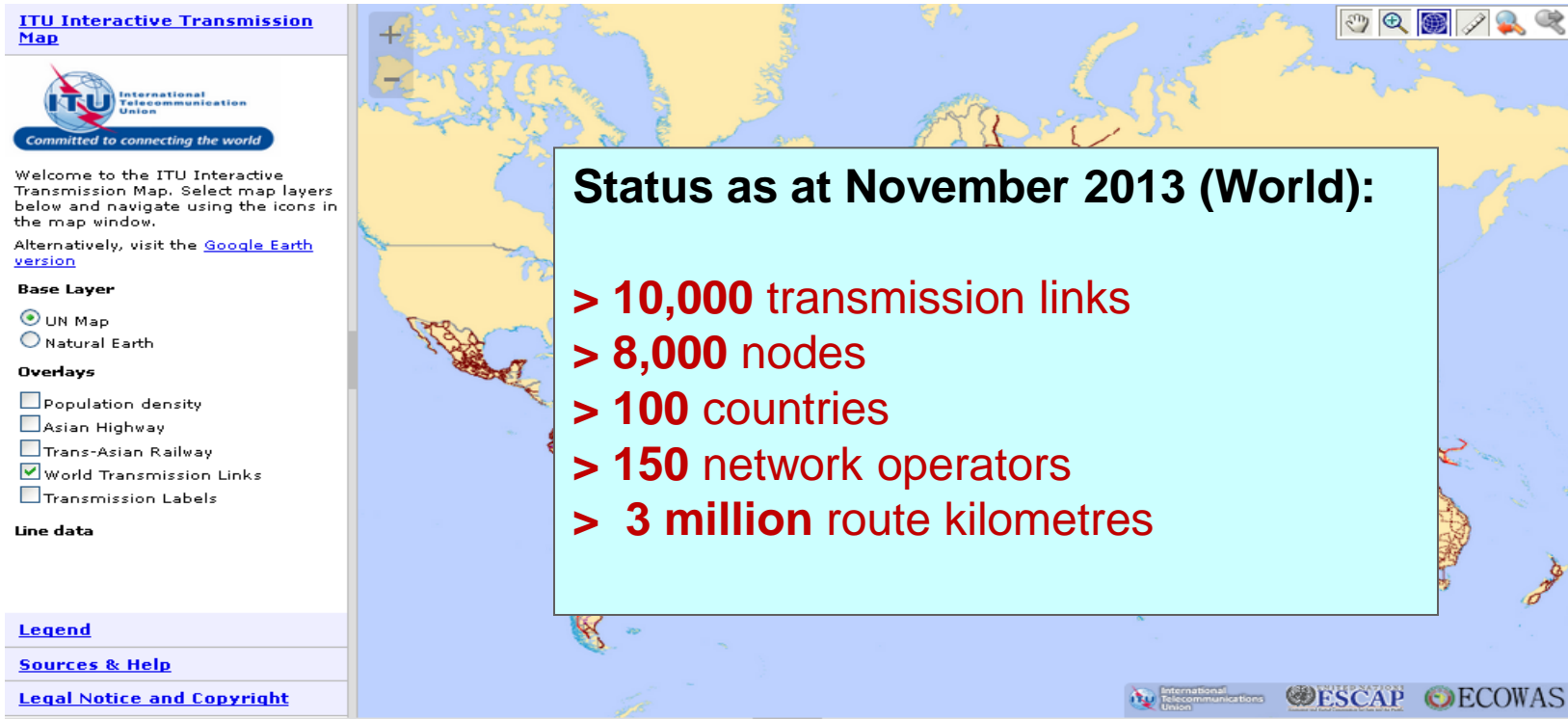
# Indicators generation

- Indicators are produced at the country or regional level, and in annual intervals
  - ➔ track changes in terrestrial transmission networks deployment of over time
- List of indicators
  - ➔ fiber optic cable length (Route kilometers)
  - ➔ Node locations
  - ➔ Equipment type of terrestrial transmission network
  - ➔ Network capacity per channel (bit rate)
  - ➔ Number of optical fibers within the cable
  - ➔ Operational status of transmission network
  - ➔ Percentage of population within reach of transmission networks

**Source:** Framework and Methodology for ITU World Terrestrial Transmission Map Project – 3rd March 2013

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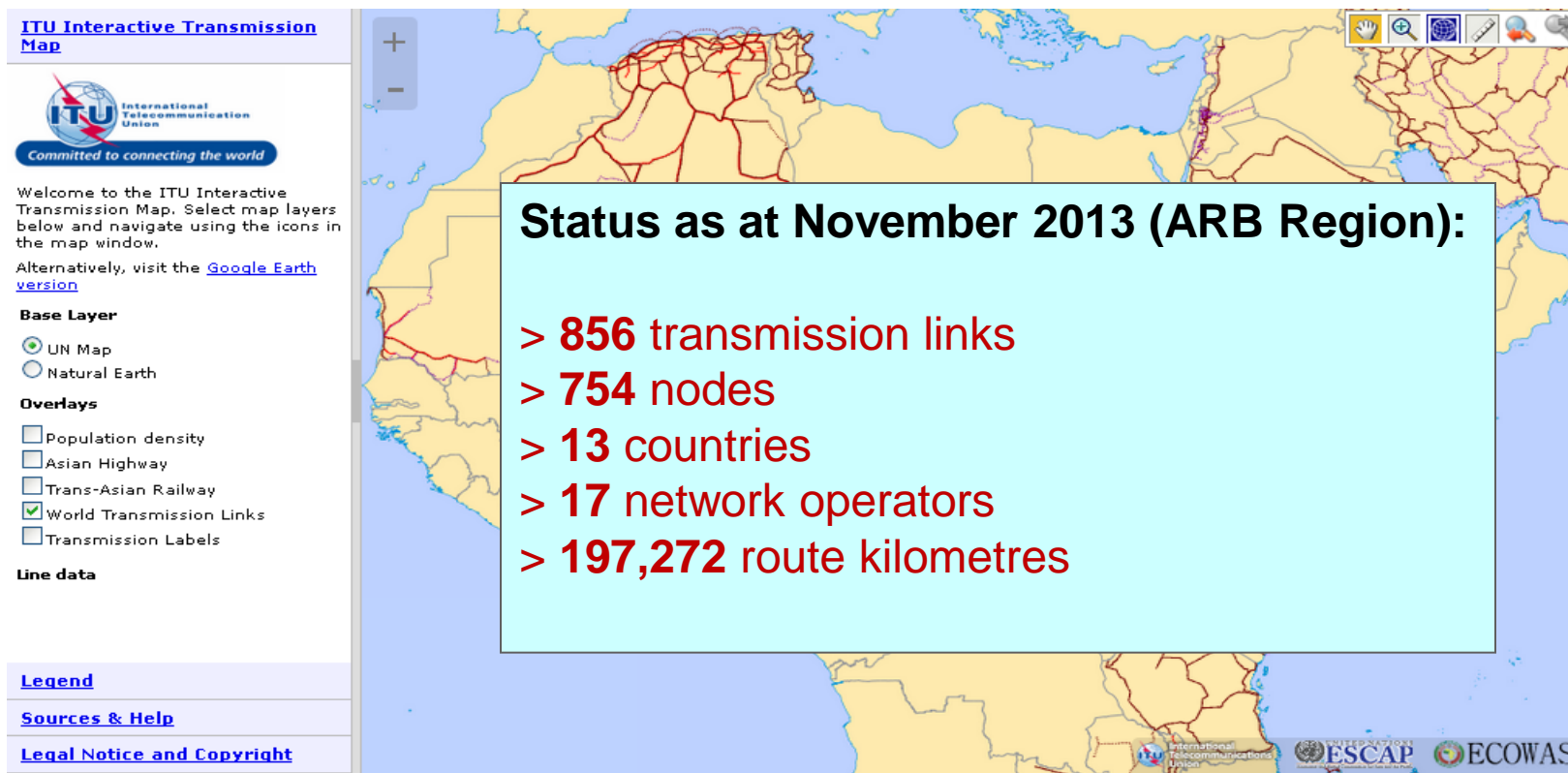
# Example 1: Global Status November 2013



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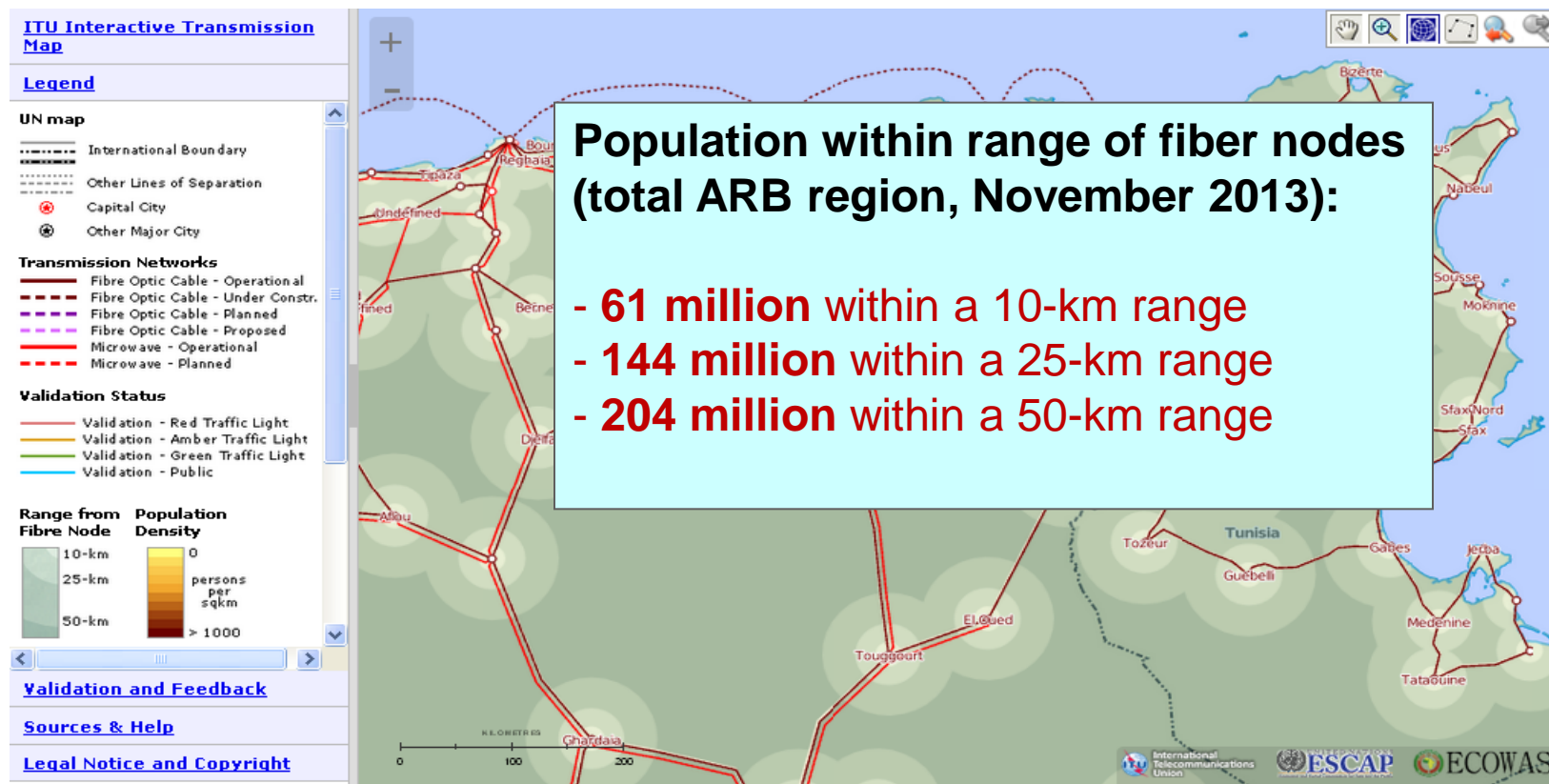
# Example 2: Arab Region Status November 2013



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# Example 3: Range to Nodes Arab Region - November 2013 (1)



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# Example 3: Range to Nodes

## Arab Region - November 2013 (2)

Country	Route-Km	10-km Range	25-km Range	50-Km Range	10-km Range	25-km Range	50-Km Range
Units	Km	Per Cent	Per Cent	Per Cent	Inhabitants	Inhabitants	Inhabitants
Algeria	77,700	31.8	69.7	93.5	12,479,002	27,345,498	36,651,140
Bahrain	97	75.0	94.1	100.0	999,312	1,253,717	1,332,067
Comoros	607	32.3	60.8	90.6	237,204	447,007	665,689
Djibouti	248	75.3	84.2	94.0	657,539	734,558	820,814
Egypt	27,000	24.6	63.8	88.3	20,220,842	52,364,831	72,460,857
Iraq	n.a.	12.6	38.1	59.7	4,239,435	12,849,073	20,170,808
Jordan	1,134	69.4	90.0	96.8	5,050,582	6,546,207	7,037,121
Kuwait	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Lebanon	1,800	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Libya	13,943	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Mauritania	704	13.6	27.2	37.9	528,600	1,058,785	1,474,421
Morocco	30,410	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Oman	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Qatar	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Saudi Arabia	25,257	15.2	54.5	80.7	4,388,527	15,720,423	23,263,436
Somalia	-	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sudan	15,060	17.9	36.1	56.5	6,798,169	13,696,467	21,460,130
Syria	n.a.	7.8	21.0	35.5	1,703,144	4,604,732	7,782,608
Tunisia	3,312	34.1	68.5	97.5	3,749,494	7,528,244	10,723,958
UAE	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Yemen	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total</b>	<b>197,272</b>	<b>16.7</b>	<b>39.4</b>	<b>55.7</b>	<b>61,051,850</b>	<b>144,149,542</b>	<b>203,843,049</b>

# Data Collection (1)



## ■ **Primary sources: Operators**

An official request for information (RFI) document is drafted outlining the purpose of the project for operators and indicating:

- Required details level
- format of data to be published in

## ■ **Secondary sources**

- On average around 25 – 40% of the data is readily available in the public domain (operator websites, annual reports, company presentations, presentations at industry conferences...)
- Presentations made at ITU workshops and events, some of which may not be publicly available (restricted to TIES users)

**Source:** Framework and Methodology for ITU World Terrestrial Transmission Map Project – 3rd March 2013

Algiers, Algeria, 24-25 November 2013

# Data Collection (2)

## ■ **Partnership**

- It is beneficial to seek partnership with organizations having already do research and produce transmission network maps for particular countries or regions, for various technical reasons
- Seeking permission to display organizations network maps work through the ITU world transmission map

## ■ **Feedback Loop**

- Gathering information when operators provide feedback on maps which have been published
- Both positive and negative feedback is useful



**Source:** Framework and Methodology for ITU World Terrestrial Transmission Map Project – 3rd March 2013

Algiers, Algeria, 24-25 November 2013

# Maps Validation



- Operators are the only organizations which are capable of validating (or invalidating) maps of their own network infrastructure
- In the case of non-response from a network operator regarding information which is readily available in the public domain, it may be possible that regulatory authorities are able to validate or invalidate the information
- **Validation process** : ITU Regional Office is asked to :
  - notify the operators that the map of their network has been added to the regional map
  - invite them to log in to TIES to check and validate the network, and send a confirmation that they have no objection for this information to be included

**Source:** Framework and Methodology for ITU World Terrestrial Transmission Map Project – 3rd March 2013

Algiers, Algeria, 24-25 November 2013

# Maps Validation (Example)

## ITU Interactive Transmission Map – Validation

[VALIDATION HOME](#)

[TRANSMISSION MAP](#)

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# Conclusion

- The creation of a Interactive Terrestrial (Optical fibers and Microwave) Transmission Map **would be beneficial for all broadband actors (operators, policy makers, regulators...) especially in developing countries**
- This map will constitute an important reference work that allows the generation of useful and meaningful indicators of broadband supply
- The development of such map requires the contribution of **operators and telecom organizations all over the world** that will be involved in the data collection and/or validation process
- For this purpose, **telecom operators within the Arab region are invited to contribute in this map development** by providing required updated data about their networks and participate in the validation process in order to benefit from the numerous map advantages
- **Data collection should be continuing for including further information** in addition to covering Europe as well as North America (starting since next year)

# **ITU Workshop on “Fiber Optics for Communication Networks: From Standards to Deployment**

**(Algiers, Algeria, 24-25 November 2013)**

## **Thank You For Your Attention**

**Slaheddine Maaref**

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