



# Network deployments for universal connectivity

- Radical solutions to radical problems
- Universal deployment
- Private deployments on public space and commons infrastructure
- Mandatory infrastructure sharing
- From the experience of a proposed ordinance in Catalan municipalities
  
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# We know that ...

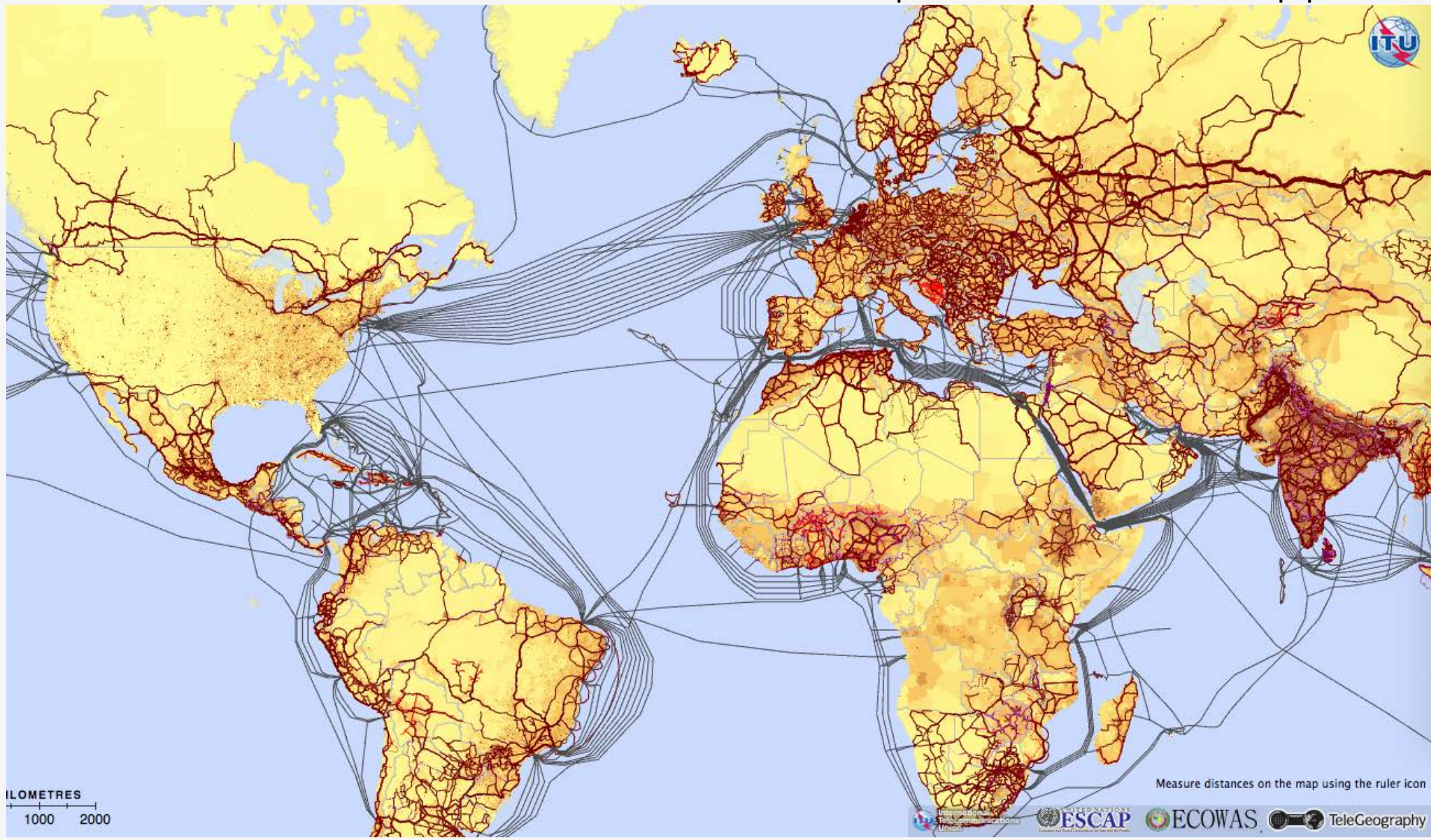
- Companies are regulated to provide “universal service”:  
to “the market” and to everyone else *Makes sense*
- But companies say that they have not provided service  
in some rural and poor areas due to no ROI: *Okay*
- Regulators did not (or have a hard time) finding a way  
to justify making these rural areas a new market area  
and allowing new ideas/new networks? *Unacceptable*
- Clear market failure, or no market at all *Underserved*
- Need for further policy and regulation

# Principles

- Ether: a medium for the propagation of “connectivity”
- WiFi uses ISM open-access bands, a local “*ether*” also for long distance communication: point-to-point
- Fibre: shared *ether* across long distance.
- Service models for universal connectivity: home-made (self-provision) or restaurant (operator, ISP)
- Private infrastructures over public space, occupy public resources: air spectrum, land, sea
- *Belong to everyone, return to everyone.*  
***“Open-access bands” for fibre?***

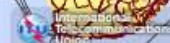
# Cables: terrestrial and undersea

<http://www.itu.int/itu-d/tnd-map-public/>

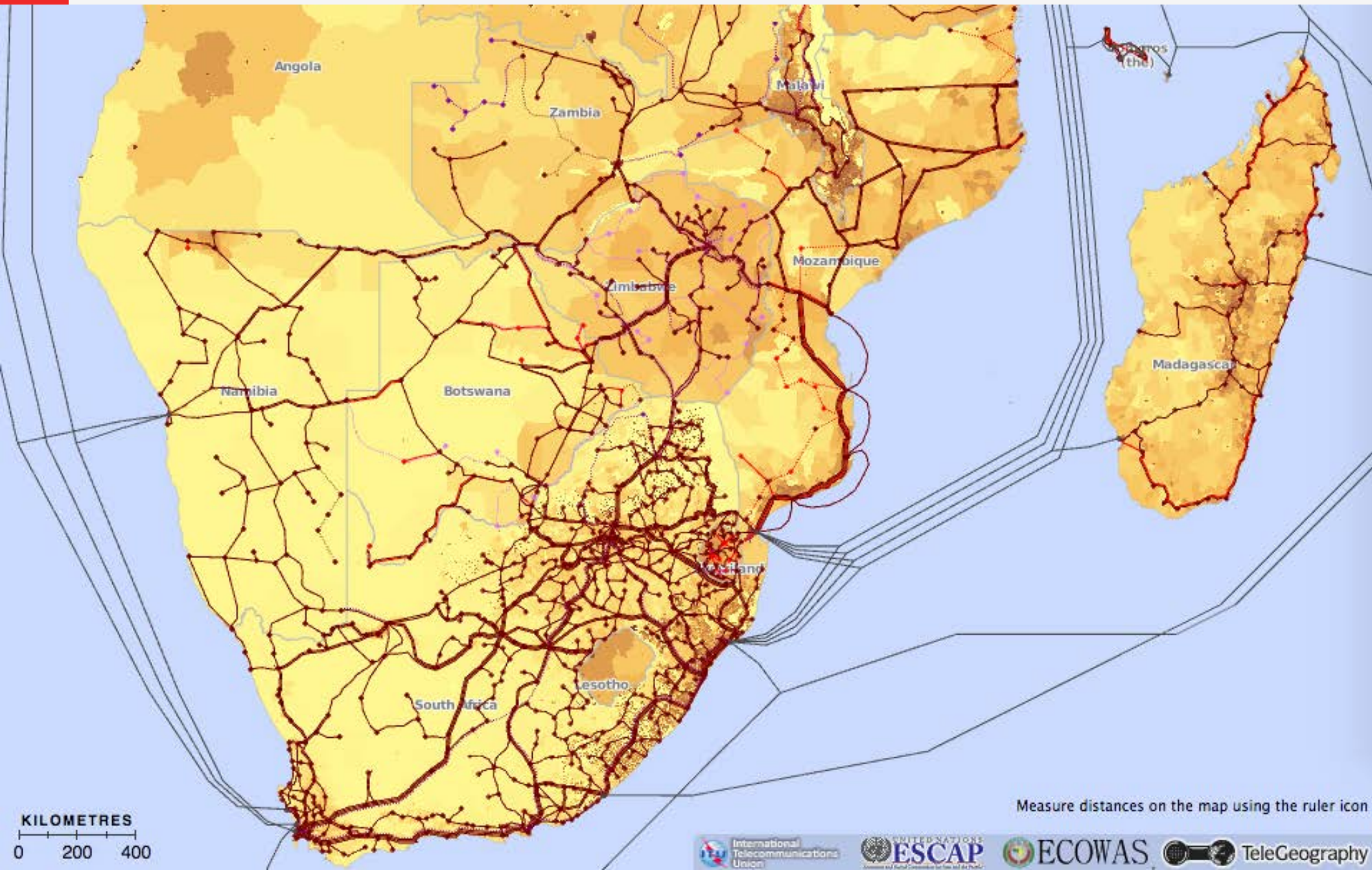


KILOMETRES  
1000 2000

Measure distances on the map using the ruler icon



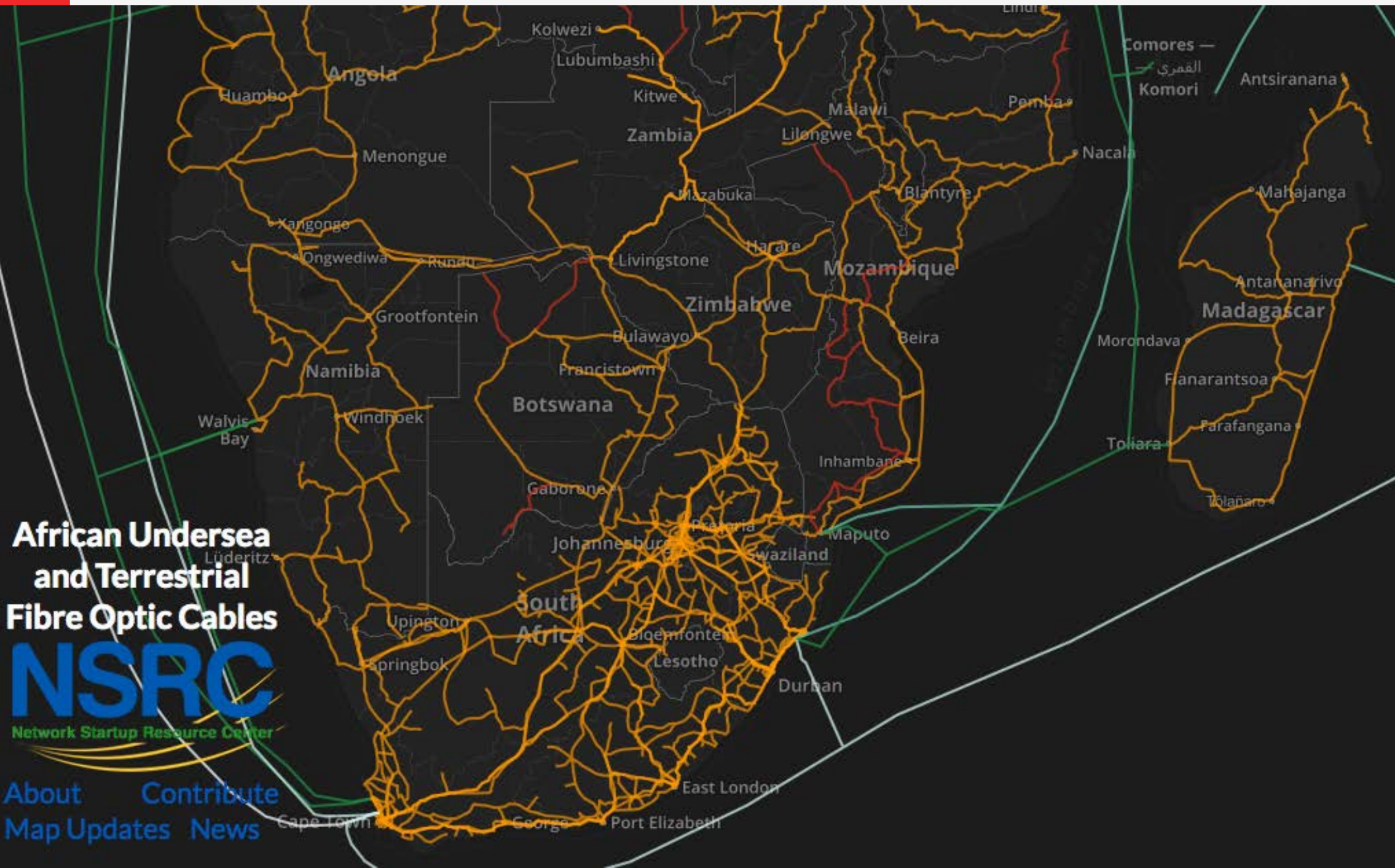
# Cables: terrestrial and undersea



KILOMETRES  
0 200 400

Measure distances on the map using the ruler icon


# Cables: terrestrial and undersea





# Universal Deployment Format

- An initiative of the guifi.net Foundation
- **Municipal ordinance** for the deployment of access networks to next-generation telecommunication services (ANNGTS) in **Universal** format
- In the global, European, Catalan, Spanish legal framework
- **Technological evolution**: “unlimited” capacity of fibre, distance is no major obstacle, still costly civil work
- **Economic transformation**: amplified social effect, new forms of sharing
- **Evolution of normative instruments**: transformation to competitive env, equal conditions, elimination of entry barriers, stimulating investment, best and most diverse range of telecom services to society



# Sharing fibre cables in public space: Effects, incentives

- Users are responsible for the cost of management and maintenance
- Exemption of maintenance costs for self-service of the city council
- Implementation of sharing or commons:
  - The **cost** of management and maintenance of the infrastructure affects the operators that use it **proportionately to the use** made by each, by applying criteria set for transparency, absence of conflicts of interest, and non-discrimination.
  - To comply with these conditions, the implementation of **sharing** of commons is done through an **entity** that is responsible for applying the **governance** of this shared use.

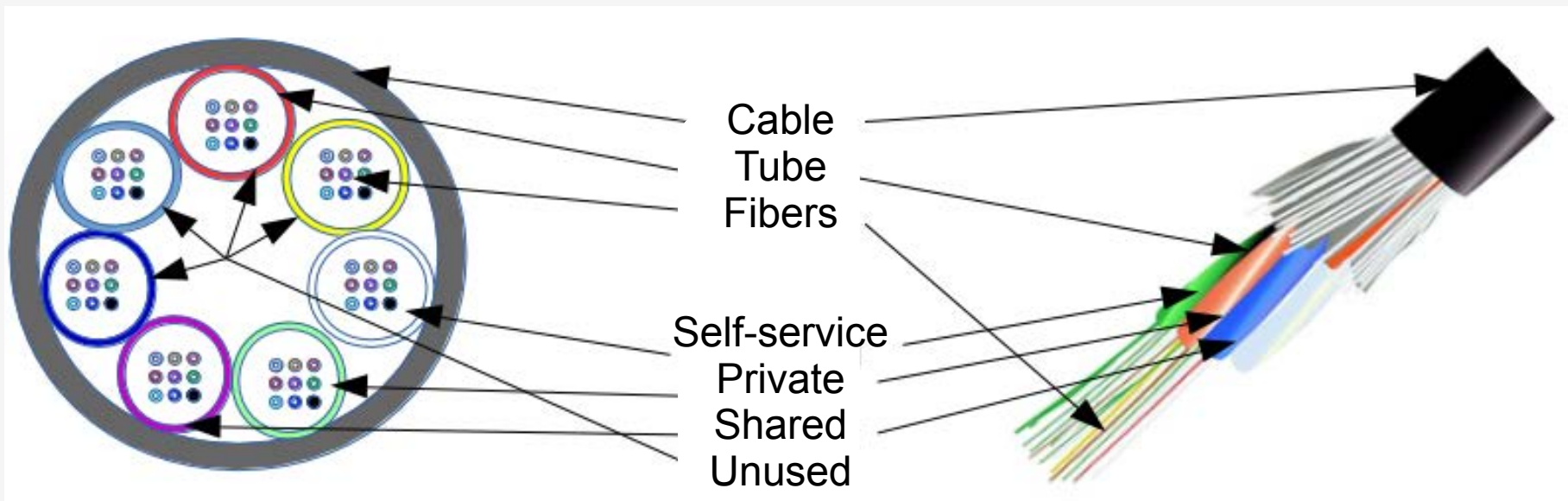


# Uses

- a) Self-service for the city council.  
to provide public communications to smart public services or internal use
- b) Private.  
Done in a private manner by either an operator providing services to third parties (other operators or end users), or a private entity who is not an operator for self-service
- c) Shared or commons.  
Sharing between operators of the same infrastructure in an effective manner, through a governance scheme that ensures the absence of conflict of interest and that is always open to any skilled operator that wants to participate in conditions of transparency and equal conditions, thereby creating **a shared space** (also called commons, neutral, or open), where the costs of management and maintenance are proportionally compensated for by the operators who share the ANNGTS infrastructure and its use

# Deployment in Universal format

- Deployment that simultaneously allows for the three uses described (self-service for the city council, private, and shared/common use)



# Minimal structural unit

- ... that can be allocated to a single use in the most practical way, while allowing the management of a single infrastructure for multiple different uses
- Examples:
  - In a cable with fibres grouped into tubes: the tube
  - In loose bare fibres (blown in micro tubes): the fibre
  - In multiple ducts and tri-tubes: the duct
  - In insulated ducts: the sub-duct
  - In the single fibre: wavelength
- *Development and adoption by municipalities in Catalonia (v28, v14 in English)*



# Imagine universal deployment everywhere

- Expansion of private infra over public land create open-access *ether*: public, education, community, private use
- Occupying public space ⇒ return everyone min cost fibre
- **Regulation**: cost-reduction, **mandatory infra sharing in public space**, public-private-citizen collaboration → commons that benefits all
- From municipal land to regional, national, international land overseas and underseas
- Combined with universal service funds, community networks, Internet exchanges ...
- **Implementation**: mandatory (legal, regulation) or voluntary adoption (CSR) by private Internet companies, + oversight of practices by global organization

# Universal connectivity: universal infrastructure, universal deployment

