

BEREC work on 5G Regulation

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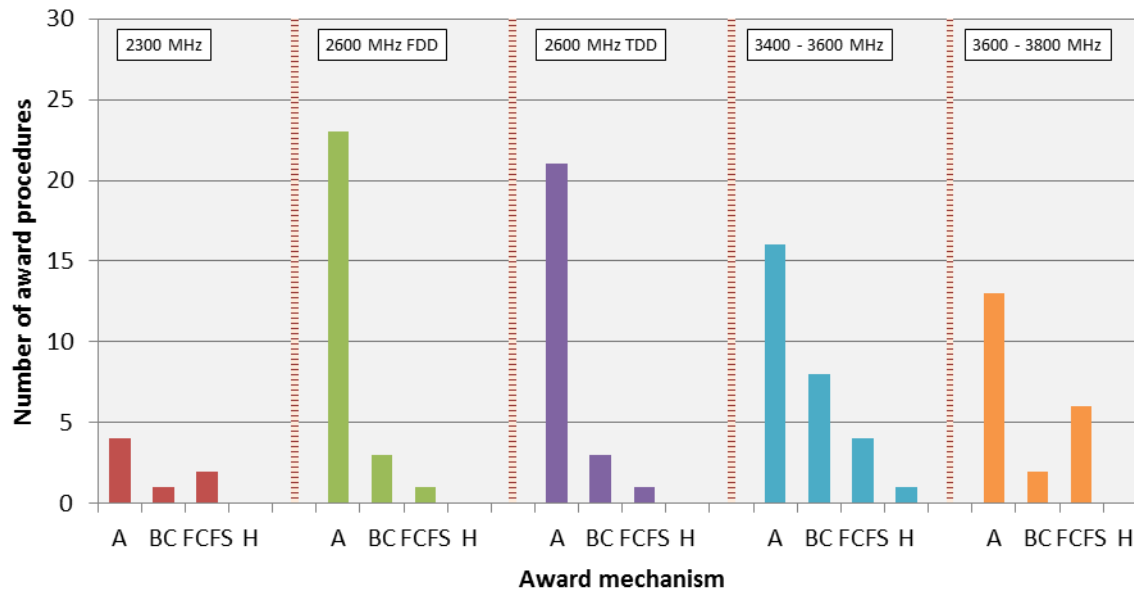
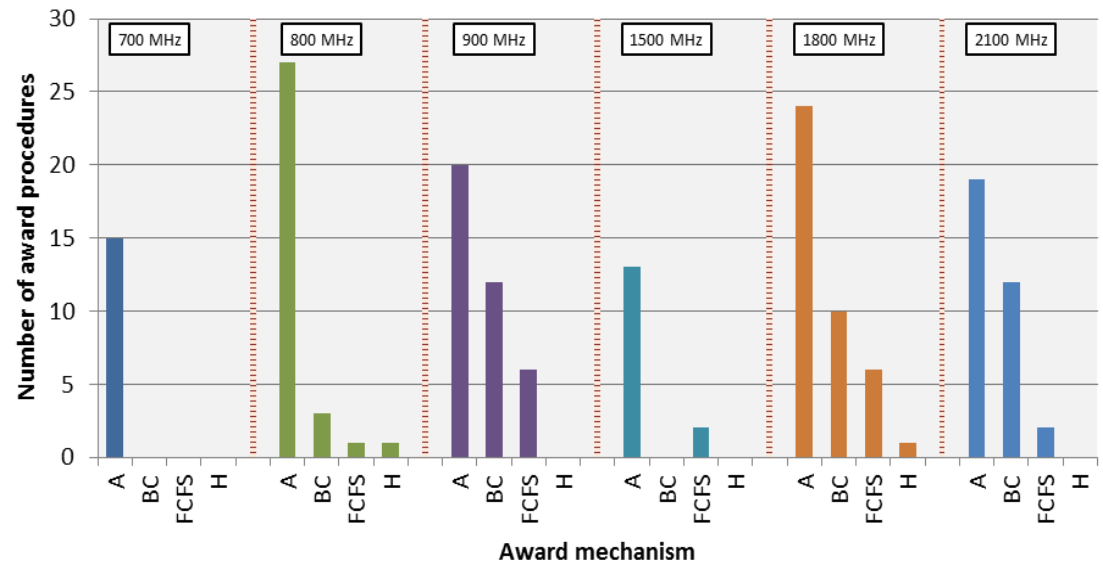
Body of European Regulators
for Electronic Communications

BEREC

The logo for BEREC (Body of European Regulators for Electronic Communications) features the word "BEREC" in a bold, sans-serif font. The letters "B", "E", "R", and "E" are blue, while the "C" is maroon. A blue curved line starts under the "R" and sweeps under the "C".

- **BEREC Report on practices on spectrum authorization, award procedures and coverage obligations with a view to considering their suitability to 5G**
- Common position on mobile network infrastructure sharing
- Common position on information to consumers on mobile coverage
- Future work of BEREC

- Auctions
- Beauty contents
- First come first serve
- Hybrid form



What are the design objectives of award procedures

Competition

Efficiency

Coverage

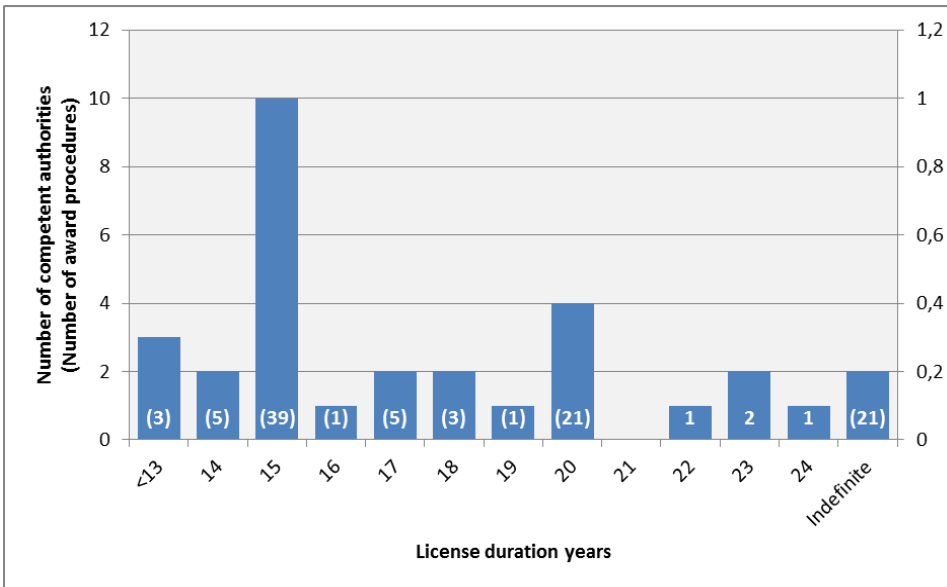
Innovation

Other
objectives

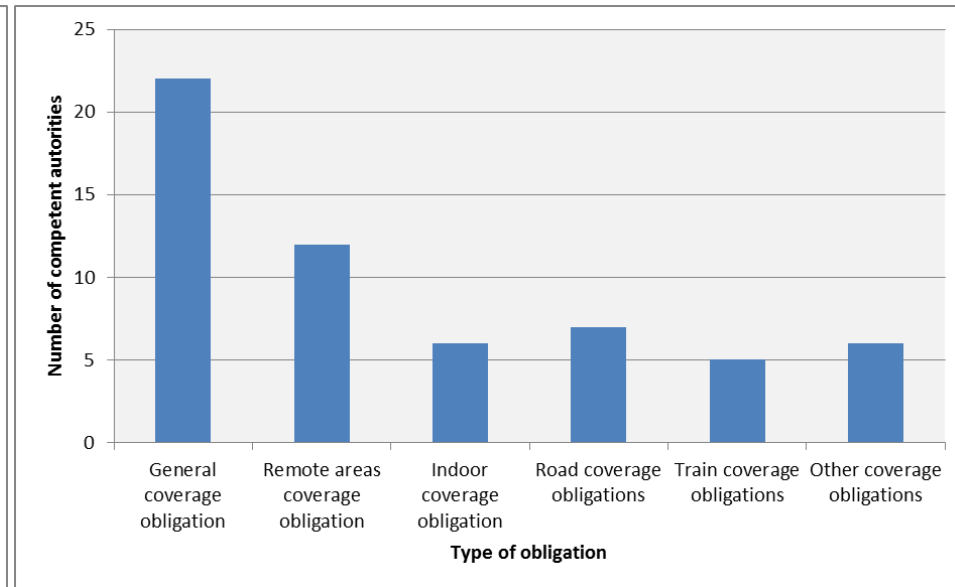
Competition factors considered in award procedures

- **Competition concerns were mentioned by most respondents to be considered when designing award procedures**
- **Concerns relate to extremely asymmetric spectrum holdings, foreclosure strategies, tacit collusion,...**
- **Measures to safeguard competition**
 - Spectrum Caps
 - Reserved spectrum for certain bidders or group of bidders (e.g. new entrants), happens only in a few cases
 - Wholesale access obligations: half of respondents do not consider any wholesale access obligations
 - band-bundling to facilitate market entry (access to an appropriate set of bands)

Licence durations



Coverage Obligations



Spectrum Authorisation for 5G

- Mix of bands used:
 - 700 MHz (coverage)
 - 3.4-3.8 GHz (capacity and FWA)
 - 26 GHz (high capacity and very low latency)
- Different bands will require different authorisation regimes
- Innovative ways of authorising spectrum may be necessary

Too early for concrete conclusions!

Coverage obligations and targets for 5G

- Focus on road and railway seem to increase
- Remote area obligations
- Specific locations obligations
- Area coverage
- Enhanced mobile broadband
- Specific quality of service requirements

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CP1: typology of infrastructure sharing types

For the purposes of promoting common understanding between NRAs on sharing, BEREC is of the common position that NRAs should use the following definitions

passive sharing

- co-location, site sharing, mast sharing

active sharing

- RAN sharing, MORAN, MOCN, frequency (or spectrum) sharing, national/local roaming

other sharing types

- core network sharing
- backhaul sharing

CP2: main objectives to be pursued when considering network sharing agreement

When NRAs are to assess sharing agreements (i.e. spectrum awards, third party request, dispute settlement), BEREC is of the common position that NRAs should aim at achieving/maintaining at least the following regulatory objectives

Effective competition

- Infrastructure-based competition
- Service-based competition

Better connectivity

- Service improvements
- Allow the development of IoT, M2M, network slicing,...
- Reduction of cost of deployment for passive infrastructure

Efficient use of spectrum

CP3: parameters to consider when assessing network sharing agreements

BEREC is of the common position that, inter alia, the following parameters are to be considered when assessing network sharing agreements in order to achieve/maintain the objectives

Competitive market forces evolution	Feasible level of competition	Type of sharing	Shared information	Reversibility and contractual implementation
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CP1: technical specifications for providing relevant and comparable information on mobile coverage to European consumers

BEREC recommends that, when providing coverage maps to consumers, NRAs use a coverage definition based on service (e.g. voice or data) availability

Service availability depends on many parameters :
Signal strength (RxLev for 2G, RSCP for 3G, RSRP for 4G), cell loading, capacity, backhaul, etc.

BEREC encourages NRAs to provide consumers with a multi-level coverage information

CP2: the use of signal predictions for mobile coverage estimation

NRAs should base coverage estimation (numerical data or maps) on coverage calculations/predictions, whenever it is not economically or technically possible to carry out field measurements of the whole country

CP3: Ensuring the accuracy of coverage information provided to the public

NRAs should verify the reliability of mobile coverage information using, where appropriate, field measurements

CP4: 5. Availability and presentation of mobile coverage information

NRAs should strive to provide easy-to-access accurate mobile coverage information to the widest possible range of consumers

When NRAs publish coverage maps, they should consider the following:

Provide for consumer confidence in the maps by:

- stating if the data used to create the maps were provided by the MNOs or by the NRA itself
- stating if the data used for the creation of the maps were tested for accuracy
- describing the method used to test the data for accuracy (theoretical calculation and/or drive tests etc.), as well as the extent to which the data were tested for accuracy

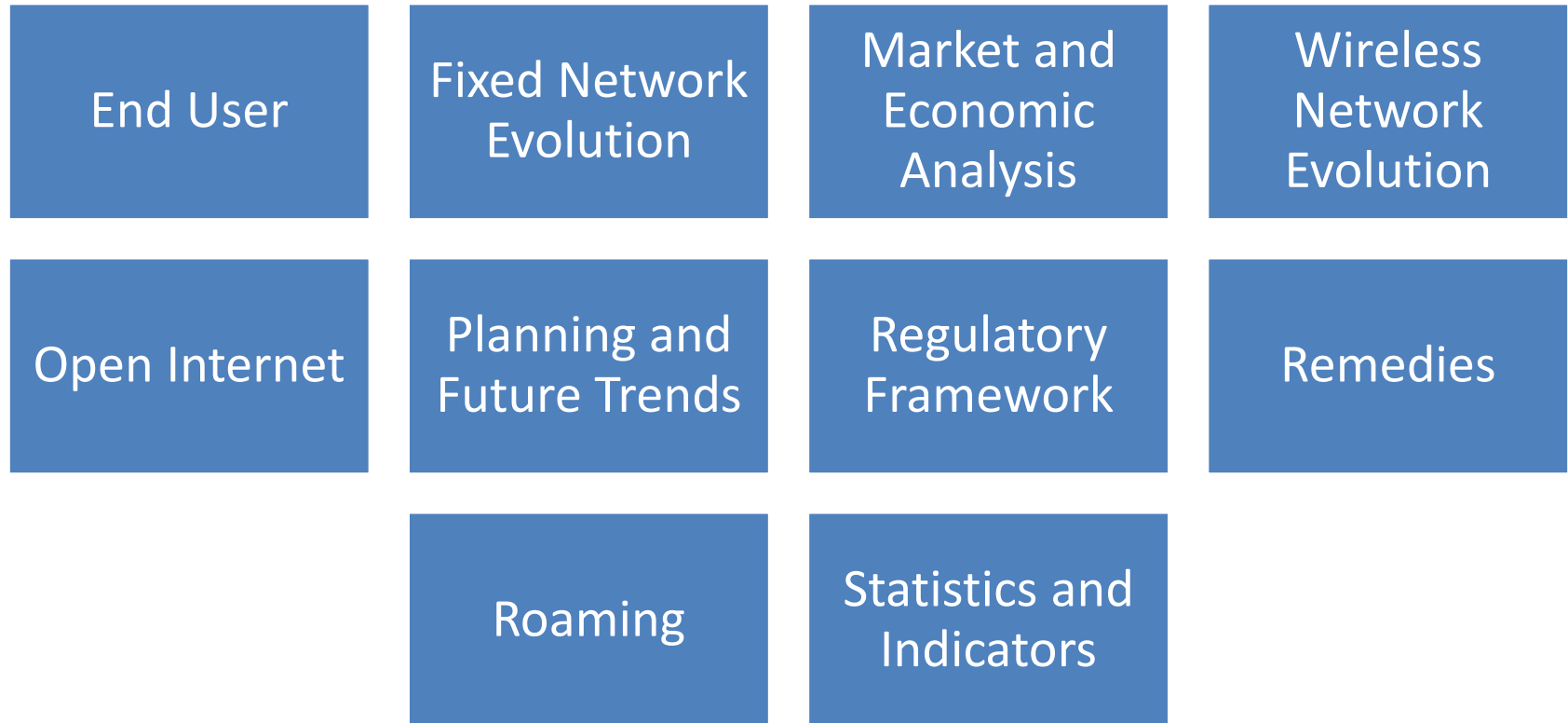
Increase the effectiveness of information conveyed by the maps by:

- providing consumers with the choice to select/unselect the available services and/or technology
- displaying layers for different levels of coverage by exploiting the notion of multi-thresholding
- providing a coverage map resolution of 100m or lower

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- Feasibility study on provision of consistent information on pan-European 5G coverage and capability
 - Extra deliverable which will also input to Report on the impact of 5G on regulation and the role of regulation in enabling the 5G ecosystem
- Participation in Peer Review on spectrum awards

BEREC Expert working group Structure



- **Contact for Press and Media**

- [press\(at\)berec.europa.eu](mailto:press@berec.europa.eu)

- **Social networks**

- Official [Twitter](#) account



- Official [LinkedIn](#) corporate page

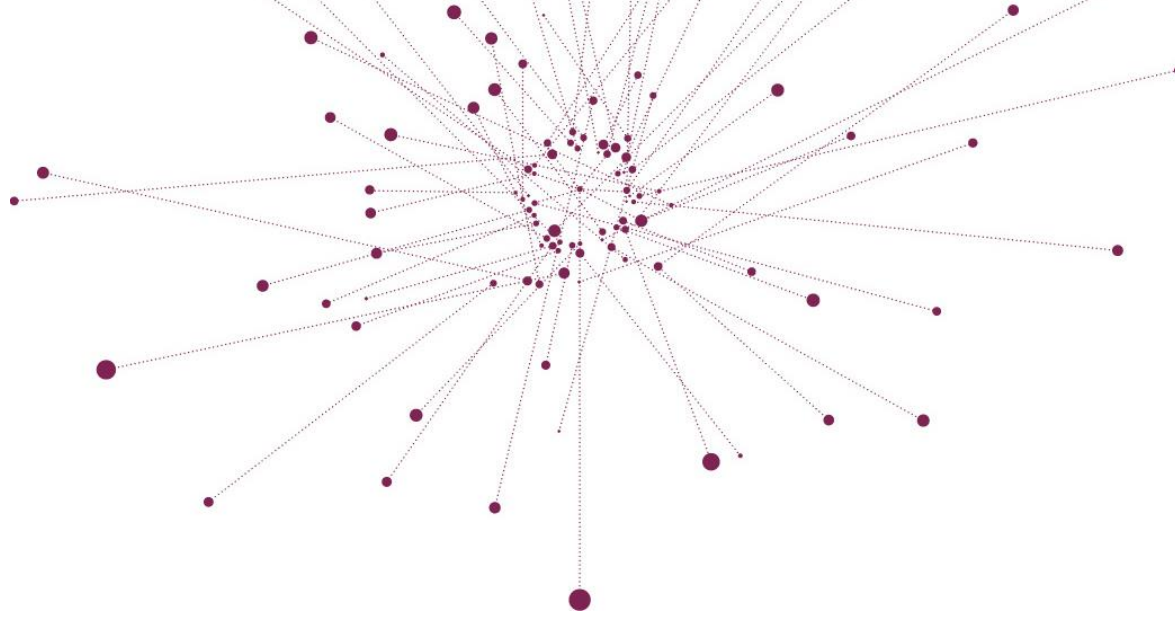


- Official [YouTube](#) account



- **Information Sharing Portal**

- <https://isportal.berec.europa.eu/>



Thank you!

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