Spectrum policy
in a hyperconnected digital mobile world

Dr Bob Horton
Senior ICT Expert

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The views expressed in this presentation are those of the author and do not necessarily reflect the opinions of the ITU or its Membership.
The Forces of Change

- Re-thinking spectrum policy: the catalysts
- Digitalization
- Explosive growth of data
- m2m communications, cloud computing, OTT
- Implications for traditional carriers
- Mobile broadband users: smart phones/ tablets
# Penetration of Smartphones

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>PENETRATION</th>
<th>COUNTRY</th>
<th>PENETRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>44%</td>
<td>JAPAN</td>
<td>20%</td>
</tr>
<tr>
<td>UK</td>
<td>51%</td>
<td>GERMANY</td>
<td>29%</td>
</tr>
<tr>
<td>UAE</td>
<td>61%</td>
<td>EGYPT</td>
<td>26%</td>
</tr>
<tr>
<td>SWEDEN</td>
<td>51%</td>
<td>CANADA</td>
<td>33%</td>
</tr>
<tr>
<td>SAUDI ARABIA</td>
<td>60%</td>
<td>BRAZIL</td>
<td>14%</td>
</tr>
<tr>
<td>NEW ZEALAND</td>
<td>44%</td>
<td>AUSTRALIA</td>
<td>52%</td>
</tr>
<tr>
<td>MEXICO</td>
<td>20%</td>
<td>ARGENTINA</td>
<td>24%</td>
</tr>
</tbody>
</table>

Source: Google IPSOS, May 2012
Best practice comprises 2 levels:

- High level Principles
- Implementation of the Principles
High Level Principles

Mostly from Tunisia (GSR05):
- Facilitate broadband deployment
- Promote transparency
- Technology neutrality
- Flexible use measures
- Ensure affordability
- Timely availability of spectrum
- Efficient management of spectrum
- Level playing field
- Harmonization (International and Regional)
- Broad approach to promoting broadband access
## The Changed Regulatory Model

<table>
<thead>
<tr>
<th>Regulatory phase</th>
<th>Regulation focus</th>
<th>Spectrum management</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Generation</td>
<td>Regulation of a monopoly</td>
<td>Independent regulation, correcting monopolistic behaviour, price regulation (ROR or price caps)</td>
</tr>
<tr>
<td>Second Generation</td>
<td>Infrastructure competition</td>
<td>Resale, pricing, access, call selection, unbundling, bit stream access, cross subsidised universal service</td>
</tr>
<tr>
<td>Third Generation</td>
<td>Service provider competition</td>
<td>Network and spectrum sharing, net neutrality, more focus on regulation of content, and applications, bit stream access, universal access no longer cross subsidy</td>
</tr>
</tbody>
</table>

Source: Author
Elements of National Spectrum Policy

HIGH LEVEL PRINCIPLES

INVENTORY of spectrum needs

INTERNATIONAL/REGIONAL ENGAGEMENT

NATIONAL SPECTRUM PLAN meeting demand, linked to BB Plan

CONSULTATION visibility, Plan evolution, market methods

MARKET based approach Admin assigned, auctions, trading
International / Regional Engagement

World Radiocommunication Conference – prime focus

- Outcomes of WRC 12 and Agenda for WRC 15
- IMT Advanced : Agenda Items 1.1 and 1.2 (R1 only)
- Conference Preparatory Meetings CPM1 and CPM2
- Special Committee on Regulatory/Procedural Matters
- Radiocommunication Assembly
- Study Groups and Joint Task Group JTG 4-5-6-7

Regional Bodies and Programs

- APT, ASMG, ATU, CEPT, CITEL, RCC
- Preparatory meetings
- Inter-regional collaboration

feeds into National Spectrum Plan
Inventory of Spectrum Needs

- Forecasts, scenarios and stocktakes
- Categories of future spectrum needs
- Balancing competing needs
  - commercial vs government vs social
  - “highest value use”
  - technical, economic and social efficiency

feeds into National Spectrum Plan
Visibility: Spectrum information made available

Percentage of country responses, by region, 2011

- Africa: 71%
- Americas: 97%
- Arab States: 78%
- Asia-Pacific: 70%
- CIS: 71%
- Europe: 93%

Number of responses:
- Africa: 41
- Americas: 31
- Arab States: 18
- Asia-Pacific: 30
- CIS: 7
- Europe: 40

Source: ITU World Telecommunication/ICT Regulatory Database.
Assignment of Spectrum

- Increasing market-based and flexible use policies
  - ratios of administrative prescription / market forces
  - voluntary “incentive” auctions, re-purposing
  - mature auction processes and ground rules
  - transparency of government requirements
  - guiding principles under which auctions are appropriate
  - technology neutrality : flexible evolution
  - dynamic spectrum sharing
  - use of “unlicensed bands” and “opportunism”
  - spectrum trading in its infancy
Spectrum (secondary) trading

Percentage of country responses, by region, 2011

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of responses</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>37</td>
<td>3%</td>
</tr>
<tr>
<td>Americas</td>
<td>32</td>
<td>16%</td>
</tr>
<tr>
<td>Arab States</td>
<td>15</td>
<td>0%</td>
</tr>
<tr>
<td>Asia-Pacific</td>
<td>27</td>
<td>11%</td>
</tr>
<tr>
<td>CIS</td>
<td>8</td>
<td>13%</td>
</tr>
<tr>
<td>Europe</td>
<td>41</td>
<td>34%</td>
</tr>
</tbody>
</table>

Source: ITU World Telecommunication/ICT Regulatory Database.
Various techniques used in the Americas

<table>
<thead>
<tr>
<th>SPECTRUM MANAGEMENT TECHNIQUES</th>
<th>COUNTRIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific coverage obligations</td>
<td>Colombia, Chile, Brazil, Costa Rica, Peru</td>
</tr>
<tr>
<td>Use of spectrum caps</td>
<td>Argentina, Brazil, Chile, Colombia, Mexico, Peru</td>
</tr>
<tr>
<td>Spectrum trading rights</td>
<td>USA, Mexico, Chile, Uruguay</td>
</tr>
<tr>
<td>Flexible use spectrum policies</td>
<td>Argentina, Brazil, Chile, Colombia, Peru, Uruguay, USA, Venezuela</td>
</tr>
<tr>
<td>Development of incentive auctions</td>
<td>USA</td>
</tr>
<tr>
<td>Development of “unlicensed” or “license exempt” rules</td>
<td>USA, Canada, Brazil, Argentina, Chile, Colombia, Costa Rica, Panama, Uruguay, Venezuela.</td>
</tr>
</tbody>
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SOURCE: Connect Americas Summit 2012