Broadband in Lebanon:
From an Infrastructure Perspective

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Outline

- The infrastructure: a booster for a healthy economy

- Broadband market overview

- Infrastructure needs for Broadband in Lebanon

- Tools to ease new investments

The infrastructure:
a Booster for a Healthy Economy

Enhance Telecom Industry Performance:
- Deploy **new technologies** to cope with customers demand sophistication
- Increase overall **revenues** of the sector as % of GDP
- Increase **investments**

Increase Customer Benefits:
- Increase **availability and penetration** of services among all segments
- Reduce **prices** for end users
- Improve **quality of service**
- encourage innovation and emergence of **advanced services**

GLOBAL ECONOMY

INDUSTRY

RELIABLE INFRASTRUCTURE

CONSUMERS
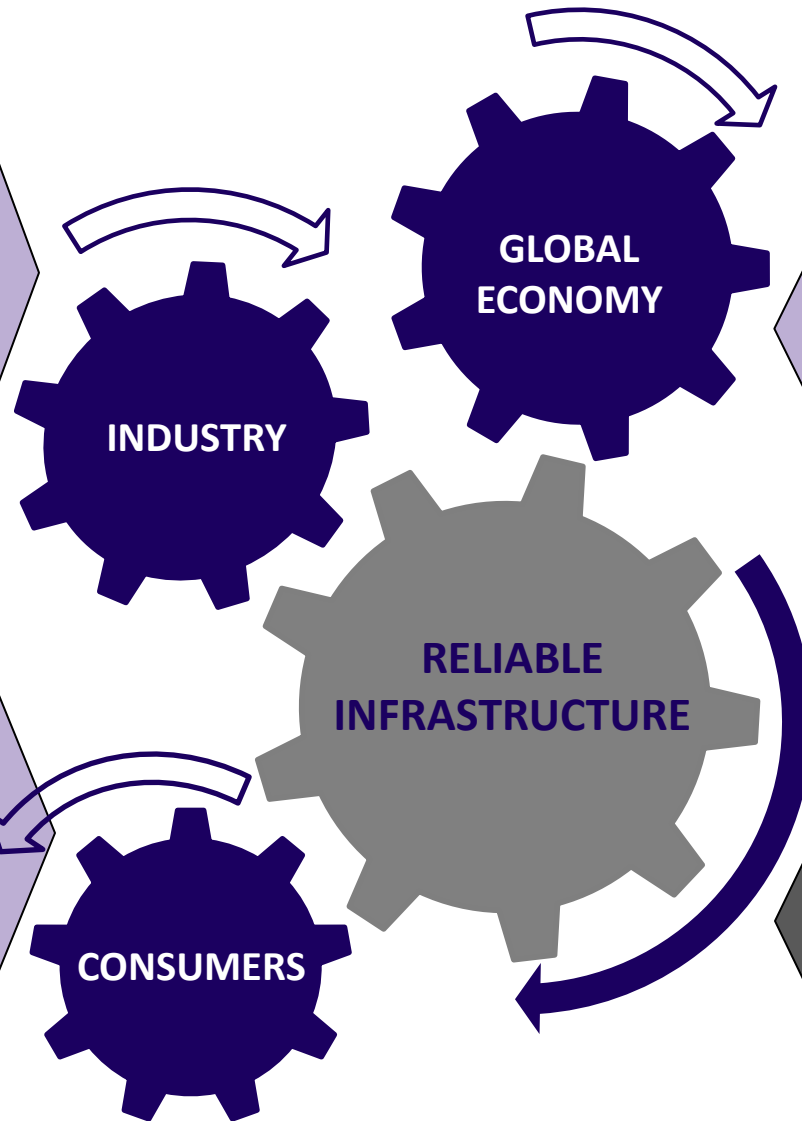
Improve the Overall Economy:
- Improve **productivity and efficiency** of the various sectors
- Increase **profitability**
- Create **new job opportunities**
- Catalyze growth of **information economy and e-services**
- Sustain **country wide ICT** efforts
- Improve **integration** of the economy with the rest of the world

- **Investments** in high speed and NGN with open interfaces
- Reduce **costs of infrastructure** deployment through **Infrastructure Sharing and Rights of Way**
- Ensure **fair market competition** and a healthy regulatory environment

GDP GROWTH:
1.38% increase per year for every 10% point increase of Broadband Penetration

JOB GROWTH:
0.25% increase in jobs for every 1 point increase in Broadband penetration

Social Inclusion:
- Boost human capital
- Improve healthcare
- Create new income opportunities in the poor and remote areas

Business Productivity:
Lebanese SMEs waste thousands of hours a year due to poor connection – to illustrate: 5000 hours a year represent a loss of US$ 250,000-US$ 500,000

**Broadband -
an economic
Booster**
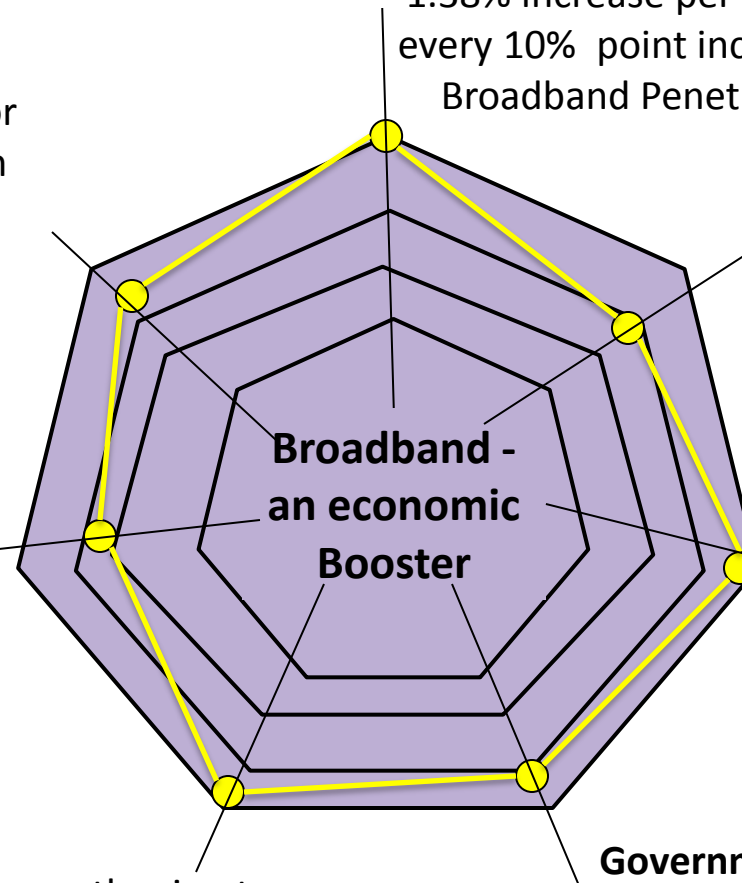
Fiscal Returns: 90 million USD per year for every 10% point increase of Broadband Penetration

Brain Drain: less youth migrate overseas with Lebanon as a hub for communication

Government Revenues: new sources of revenues to the GoL will be generated (auction proceeds, RTU fees, RoW fees, revenue sharing …)

Sources: Economic & Fiscal Impact of Introducing Broadband Networks and Services in Lebanon – World Bank 2009

Broadband market overview

Broadband Household Penetration OECD 2009

Country	Penetration
South Korea	94%
The Netherlands	74%
Denmark	70%
Japan	68%
Sweden	67%
Finland	65%
Canada	64%
UK	57%
Switzerland	53%
Australia	52%
Germany	50%
France	43%
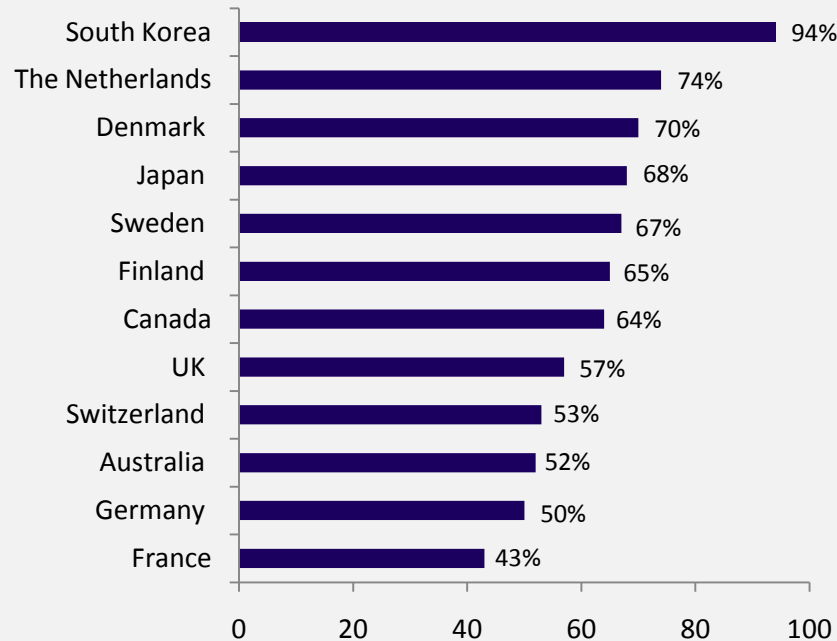
Note: including ADSL, Cable, and FTTH (Not including 3G subscriptions)

DSL Household Penetration Arab Countries 2010

Country	Penetration
UAE	64%
Qatar	40%
KSA	30%
Tunisia	21%
Lebanon	**18%**
Jordan	17%
Egypt	8%
Morocco	7%
Oman	6%
Yemen	1%
Syria	0.5%
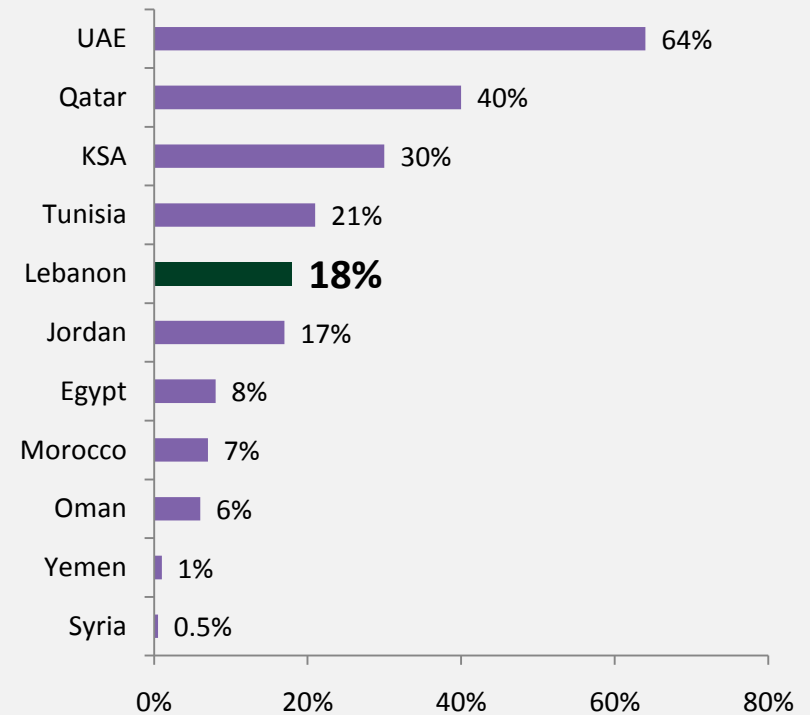
Note: Broadband refers to ADSL subscriptions, since it constitutes on average more than 95% of Broadband services

Broadband Offers in developed countries, 2009
(Speeds in Mbps and Prices incl. VAT)

Av. Downlink speed in Mbits/s

Monthly subscription in USD

Average observed monthly subscription price, USD PPP

Average advertised broadband download speed, Mbit/s
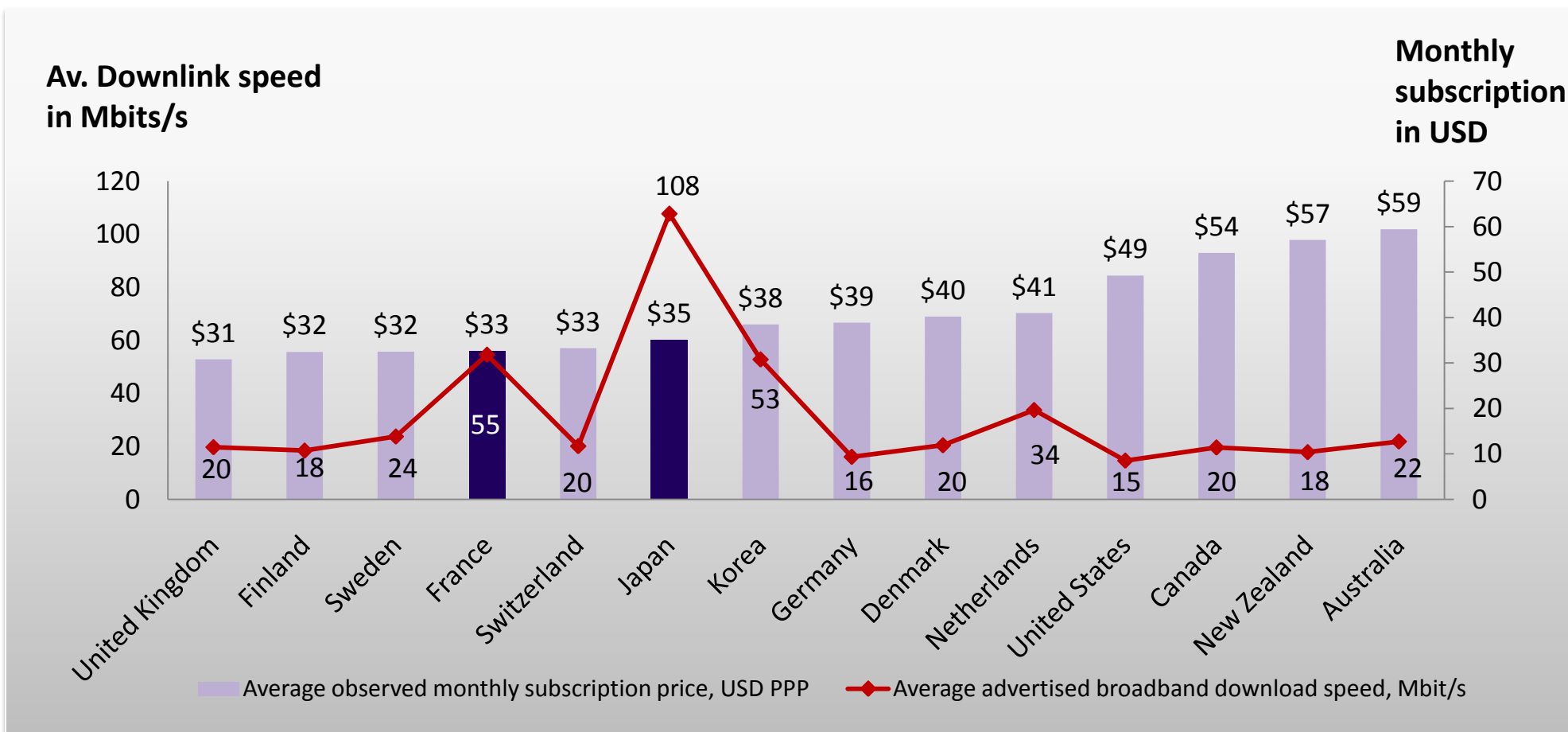
Source: OECD Broadband Portal

International benchmarks show that Lebanon DSL services are priced well above the regional prices

Effective total monthly cost of 512 Kbps residential ADSL, September 2010
(in USD, VAT inclusive)

Average=35.6

KSA	UAE	Lebanon	Sudan	Bahrain	Syria	Mauritania	Oman	Palestine	Yemen	Kuwait	Jordan	Algeria	Tunisia	Egypt
60	56	54	47	45	39	33	33	33	29	25	23	21	18	17
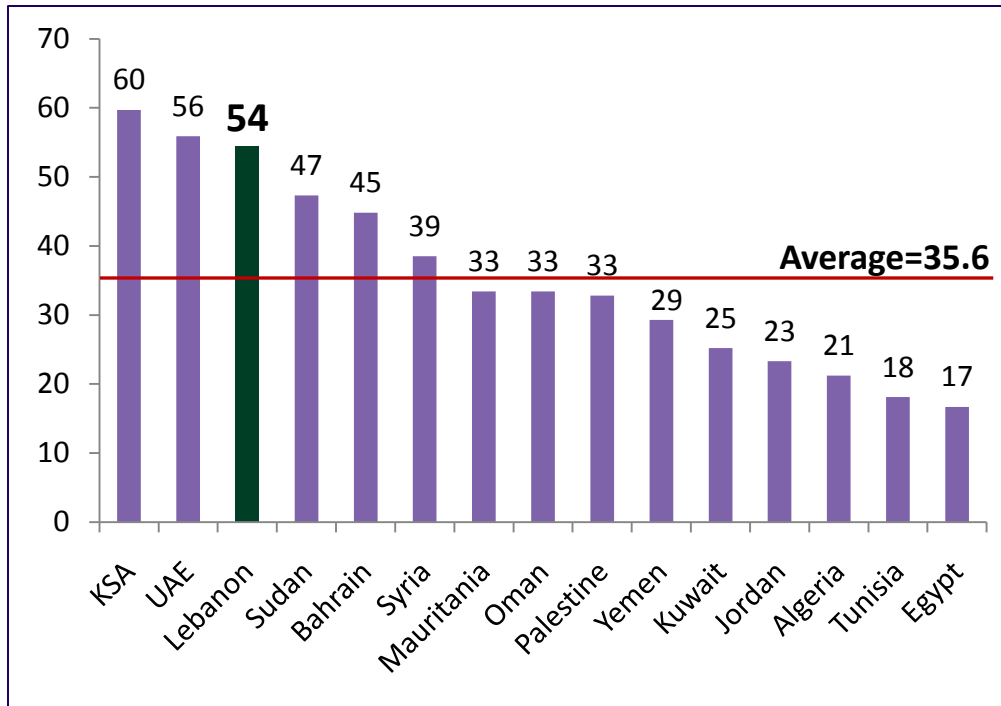
Effective total monthly cost of 1MB residential ADSL, September 2010
(in USD, VAT inclusive)
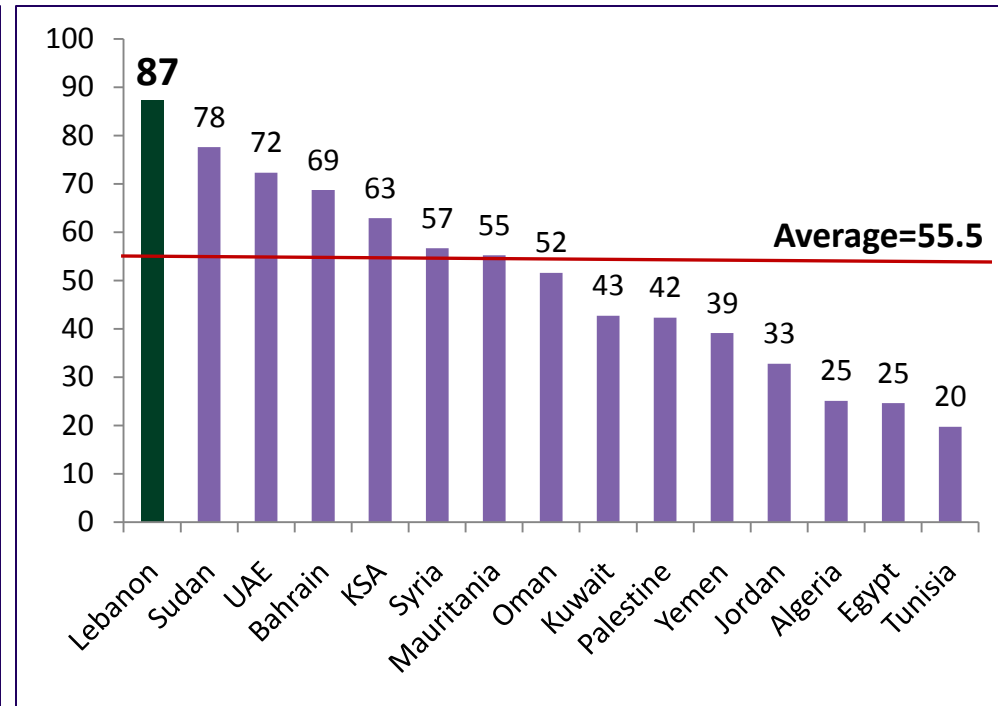
Average=55.5

Lebanon	Sudan	UAE	Bahrain	KSA	Syria	Mauritania	Oman	Kuwait	Palestine	Yemen	Jordan	Algeria	Egypt	Tunisia
87	78	72	69	63	57	55	52	43	42	39	33	25	25	20

Source: Arab Advisors Group, TRA Analysis

Service Packages Available in Lebanon

Typical Triple-Play Service Packages

RESIDENTIAL

- **For around $55/month individual subscription to:**
  - ➢ $25 for a **256 Kbps** downlink and 64 kbps uplink with a cap of **3 GB (most used DSL plan)**
  - ➢ $15 for very poor quality **cable TV** subscriptions
  - ➢ $15 for very low usage of Fixed Voice services

RESIDENTIAL

- **For around $40/month :**
  - ➢ on average 8 Mbps downlink and 4 Mbps uplink with virtually no cap on usage
  - ➢ **High speed Internet Access** + 100 video Channels (including HD) + unlimited VoIP calls

BUSINESS

- **For around US$ 4000/month:**
  - ➢ **2 Mbps** downlink and **2 Mbps** uplink Internet access
  - ➢ With Service Level Agreement (SLA)

BUSINESS

- **For around US$ 500/month:**
  - ➢ Up to **10Mbps** for business located in remote areas
  - ➢ **High speed Internet Access** viable for video conference, e-commerce, etc…+ 100 video Channels (including HD) + unlimited VoIP calls

Infrastructure needs for Broadband in Lebanon

On the mobile networks, investments in infrastructure are necessary in order to introduce advanced Mobile Broadband services at higher speeds

CONSUMER AND MARKET NEEDS

- Better **Quality of Services** (QoS)

- Lower **Prices** for end users

- Wider range of **Advanced Mobile Services**

- Broader range of **Offers**

- Wider choice in **Service Packages**

- Implementation of **Innovative Services**

INVESTMENTS NEEDS

- Investing in the mobile networks to **Deploy Advanced Technologies** (3G, LTE, …) and offer High speed data services

- Investing in N**ew Intelligent Services** (IMS, etc…)

- Opening up **Network Infrastructure for developers' communities** to introduce innovative services

- Creating a fully **Competitive Environment** at the **service level**

Investments in a national NGN backbone network and International Gateway expansion are mandatory to ensure true BB services at affordable prices and to guarantee optimal economic benefits to Lebanon

CONSUMER AND MARKET NEEDS

- **Availability of true broadband services:**

  BB services are currently delivered via
  - **ADSL**
  - **pre-WIMAX**
  - **wireless technologies**

  and have limited penetration rates and coverage with low speeds

- **Increased competition:**

  Access-level competition will push prices down and will incentivize providers to offer **better quality of services**

- **Reduced network cost:**

  Lower investments cost through the adoption of infrastructure sharing policy and Rights of Way

INVESTMENTS NEEDS

- **Investing in the Broadband infrastructure** and completing the full local loop unbundling

- Investing in advanced **wireless Technologies, Content and Services and convergent platforms**

- **Opening up the competition at least at the access and service levels**

SATURATED TRANSMISSION NETWORK

- The PSTN **transmission network topology has limited fiber optic coverage**; many suburban and rural areas Central Offices are still lacking fiber optic connectivity and rely on microwave links

- It **does not support high speed internet access, digital media services such as IPTV/ VoD, online gaming, e-commerce, teleconference,** etc..

- MoT Metro Ethernet network used for ADSL services **is getting saturated by the increased needs of ADSL subscribers and therefore** MoT started the **expansion and modernization** of its national transmission network to lay-down a fully meshed fiber optic network of 4400 km of backbone along with versatile Active switching and cross-connect components.

- There are **no wholesale backhaul bundled offers**; DSPs and ISPs are still connected by network links of 100 Mbits/s

To cater for growing demand in High Speed Internet services, major investments are currently undertaken by the MoT to increase the existing international bandwidth capacity

INTERNATIONAL CAPACITY (*)

- As of October 2010 total international capacity (for voice and data) is 2.5 Gbits/s witnessing a double increase from initial capacity of 1.25Gbits/s

- **Participation in the ownership of the new high capacity submarine cable system** (I-ME-WE) that will provide Lebanon, upon its Service Commissioning, with 120 Gbits/s of international bandwidth capacity.

- Expanding existing Submarine Fiber Optical Cable (Cadmus) by adding a capacity of around 210 Gbits/s (20 Lambdas) between November and December 2010, and thus increasing the current capacity by 168 times.

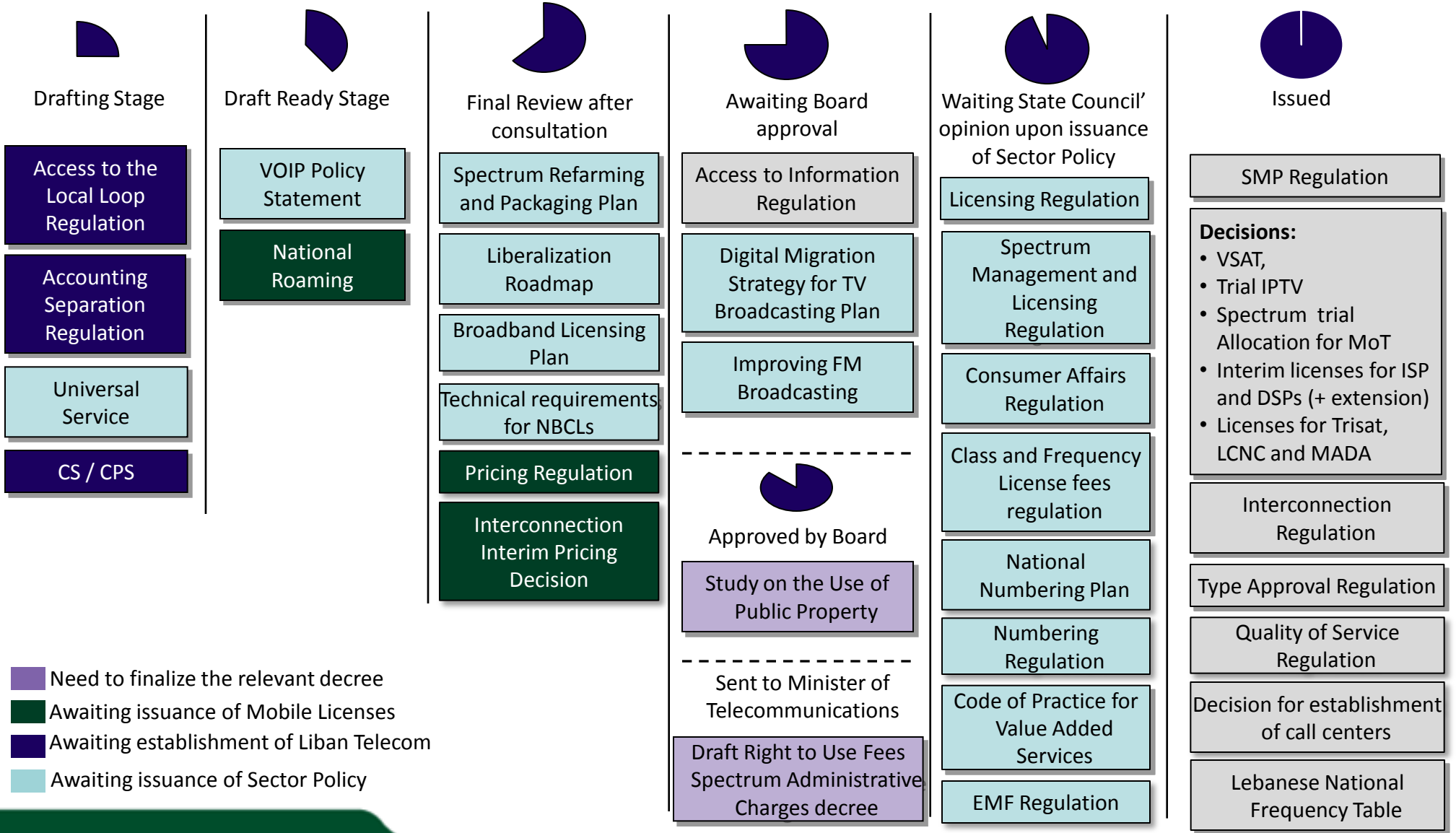*(*) Minister's Press Conference of September 28th, 2010*

Tools to ease investments

Since its establishment, the TRA has been working extensively on setting a regulatory framework that would ensure the success of telecommunications liberalization and development

Drafting Stage

- Access to the Local Loop Regulation
- Accounting Separation Regulation
- Universal Service
- CS / CPS

Draft Ready Stage

- VOIP Policy Statement
- National Roaming

Final Review after consultation

- Spectrum Refarming and Packaging Plan
- Liberalization Roadmap
- Broadband Licensing Plan
- Technical requirements for NBCLs
- Pricing Regulation
- Interconnection Interim Pricing Decision

Awaiting Board approval

- Access to Information Regulation
- Digital Migration Strategy for TV Broadcasting Plan
- Improving FM Broadcasting

Approved by Board

- Study on the Use of Public Property

Sent to Minister of Telecommunications

- Draft Right to Use Fees Spectrum Administrative Charges decree

Waiting State Council' opinion upon issuance of Sector Policy

- Licensing Regulation
- Spectrum Management and Licensing Regulation
- Consumer Affairs Regulation
- Class and Frequency License fees regulation
- National Numbering Plan
- Numbering Regulation
- Code of Practice for Value Added Services
- EMF Regulation

Issued

- SMP Regulation
- **Decisions:**
  - VSAT,
  - Trial IPTV
  - Spectrum trial Allocation for MoT
  - Interim licenses for ISP and DSPs (+ extension)
  - Licenses for Trisat, LCNC and MADA
- Interconnection Regulation
- Type Approval Regulation
- Quality of Service Regulation
- Decision for establishment of call centers
- Lebanese National Frequency Table

Legend:
- Need to finalize the relevant decree
- Awaiting issuance of Mobile Licenses
- Awaiting establishment of Liban Telecom
- Awaiting issuance of Sector Policy

To encourage new investments and ensure a wider coverage of telecom services, Rights of Way and Infrastructure Sharing should be introduced as efficient regulatory tools

RIGHTS OF WAY (ROW)	▪ Based on Article 35 of Law 431 and following a closed consultation with various governmental entities, TRA has prepared a **draft decree for the "RoW" including the proposed procedure and charges** to be submitted to the Minister for approval and recommendation to the CoM ▪ Ensuring "**RoW" will incentivize new entrants by reducing sunk cost significantly** ▪ **RoW will represent important proceeds** to the Government and will ensure an optimal and efficient use of existing unused resources
INFRASTRUCTURE SHARING (IS)	Benefits from the implementation of Infrastructure Sharing: ▪ **Reduces CAPEX** related to infrastructure deployment ▪ **Reduces barriers to entry**, increases competition and lowers prices to end-users ▪ **Reduces waste** caused by infrastructure redundancy and duplication (power, antennas, urbanism…)

To ensure a wider range of services and to optimize economical benefits from telecom development, the TRA has been working on a spectrum re-farming plan and a pricing approach for an efficient and optimized use of spectrum

SPECTRUM RIGHT TO USE (RTU) FEES and SPECTRUM ADMINISTRATIVE CHARGES (SAC)

- Based on Articles 11(2) & 17 of Law 431 and following a public consultation with industry stakeholders, the TRA has prepared a draft decree for **setting up the spectrum RTU fees based on AIP** and the **spectrum administrative charges SAC based on actual costs**

- Imposing RTU fees and SAC will drive SPs to **use the spectrum efficiently** and will ensure **recurrent governmental proceeds**

- The current allocation scheme and charging of a fixed revenue share for an **"all you can eat"** formula does not reflect the true value of the spectrum

SPECTRUM RE-FARMING

- Charge new entrant the **true value of the spectrum**
- Ensure spectrum allocation is optimized and used in an efficient manner
- Promote broadband growth

How to increase affordability?

How to increase demand/ usage?

Distributing and subsidizing of low cost terminals in rural areas	Development of e-government, e-commerce, e-education, e-health, …
Promotion of digital literacy programs via local municipalities	Development of new content and media: support content and media development in local languages
Incentivizing SMEs by decreasing taxes on businesses in ICT industry	Deployment of innovative services: interactive IP-TV, tele-learning, tele-presence, …

Thank you