ASIA PACIFIC INFORMATION SUPERHIGHWAY (AP-IS)

Ms. Atsuko Okuda, Chief
ICT and Development Section
ICT and Disaster Risk Reduction Division
ESCAP
(b) To promote the exchange of best practices and experiences and knowledge related to the development of ICT infrastructure, including in-depth analysis of the policy and regulatory barriers that may impede efforts to synchronize the deployment of infrastructure across the region in a seamless manner;

(c) To assist member States, through the provision of policy studies and capacity-building activities, in their efforts to integrate ICT into national development processes;

(d) To pursue the facilitation and coordination of the regional review of progress in implementation of the targets set out in the outcome documents of the WSIS

(f) To work towards a regional framework for action, guided by the outcome of the United Nations Conference on Sustainable Development, that strengthens regional policymaking processes related to ICT for inclusive and sustainable development.
ESCAP Resolution 71/10 – formation of AP-IS Working Group

- (a) To promote the sharing of experiences, good practices and lessons learned in ICT for DRR, management and response, and building e-resilience;
- (b) To provide the necessary support to facilitate the work of the open-ended working group on the Asia-Pacific information superhighway;
- (c) To continue the fact-finding initiatives and analysis on the Asia-Pacific information superhighway, including by enhancing its maps, through partnerships with ITU and regional policy research institutions;
- (d) To continue working on the Asia-Pacific information superhighway in collaboration with international and regional partners
- (e) To promote, in collaboration with national, regional and international development partners, civil society and the private sector, the exchange of best practices and experiences and knowledge related to the development of ICT infrastructure, including in-depth analysis of the policy and regulatory barriers that may impede efforts to synchronize the deployment of infrastructure across the region in a seamless manner;
- (f) To explore further ways to harness cross-sectoral synergies, including through the review of best practices to recommend solutions to leverage synergies among ICT, energy and transport infrastructures across the region
Sustainable Development Goals
What is AP-IS? : Four Pillars of AP-IS

- Physical network design, development, management at regional level
- Inter-governmental negotiation
- Improving regulations based on open access

- Ensuring efficient and effective Internet traffic and network management at regional, sub-regional and national levels

- Resilient ICT Networks
- Support to disaster management systems
- Ensuring last mile disaster communication

- Bridging digital divides
- Promoting affordable access to underserviced areas
- Policy and technical support to governments
Progress on AP-IS (August 2016)

• ESCAP Resolution 71/10 mandated ESCAP secretariat to embark upon the AP-IS through conducting feasibility studies to improve regional broadband connectivity and creation of a Working Group (WG) on AP-IS.

• The first meeting of the WG was held in September, 2015 in Incheon, Republic of Korea. The WG decided that a Steering Group draft (1) a Master plan encompassing the long-term vision, targeted goals, specific activities and milestones with regard to the four pillars of the Asia Pacific Information Superhighway; (2) and a draft regional cooperation framework guiding the implementation of AP-IS.
Challenges– ESCAP feasibility studies

• What do we know? The ESCAP-ITU transmission interactive map highlight missing links (terrestrial/submarine connections between country)

(1). Missing Links (August 2016):

<table>
<thead>
<tr>
<th>Country pairs</th>
<th>Status of fibre connectivity</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>South-East Asia</strong></td>
<td></td>
<td></td>
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<tr>
<td>Indonesia/Malaysia</td>
<td>Although undersea connectivity exists between Indonesia and Malaysia, no direct connectivity is present between the countries’ states on the island of Borneo.</td>
<td></td>
</tr>
<tr>
<td>Lao People’s Democratic Republic to Yunnan, Province of China</td>
<td>Enterprise of Telecommunications Lao operates a fibre link to Yunnan Province, China via Boten, linking to China Telecom at 2 Gbps.</td>
<td>The Lao People’s Democratic Republic-China route would benefit from greater competition and redundancy in this key North-South axis.</td>
</tr>
</tbody>
</table>
# Challenges: Missing Links

## South and South-West Asia

<table>
<thead>
<tr>
<th>Country Pair</th>
<th>Description</th>
<th>Additional Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh/Myanmar</td>
<td>A terrestrial fibre link between the two countries is in the process of being implemented.</td>
<td>Additional fibre links are needed in order to ensure that Bangladesh has redundant bilateral connectivity with more than one country. Myanmar to also benefit from additional routes.</td>
</tr>
<tr>
<td>Bhutan/India</td>
<td>Although Bhutan has two terrestrial links to India, both fibre paths converge in Siliguri, raising concerns about the vulnerability of Bhutan’s international connectivity.</td>
<td>Diversification of Bhutan’s fibre links to India is urgently needed in order to ensure the robustness of the country’s international connectivity.</td>
</tr>
<tr>
<td>India/Myanmar</td>
<td>A 640-km terrestrial fibre link was completed in 2010 and is operated by BSNL and Myanmar Post and Telecommunications.</td>
<td>The India-Myanmar border is a critical corridor for connectivity between India and Southeast Asia and further afield, requiring multiple fibre links.</td>
</tr>
<tr>
<td>India/Pakistan</td>
<td>A terrestrial fibre link has been constructed between India and Pakistan, but remains dormant as of mid-2014.</td>
<td>Deploying more robust connectivity between India and Pakistan could be an important step towards closer economic partnerships.</td>
</tr>
<tr>
<td>Nepal/China</td>
<td>A link between China and Nepal via Tatopani was proposed in 2010, but as of 2014 the status of its development could not be confirmed. Linked established but damaged during the recent earthquake and currently Nepal telecom is in the process of establishing another link with China via Kerunang.</td>
<td>Given Nepal’s almost exclusive reliance upon terrestrial connectivity with India, this could enhance diversification connectivity via China.</td>
</tr>
<tr>
<td>Pakistan/China</td>
<td>A fibre link between Pakistan and China is currently under construction.</td>
<td>Both Pakistan and China would benefit from improved fibre connectivity, as the single fibre link under implementation is not considered to be a definitive, long-term solution for linking the two countries with robust connectivity.</td>
</tr>
</tbody>
</table>
# Missing Links

## North and Central Asia

<table>
<thead>
<tr>
<th>Country Pair</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kazakhstan/ Turkmenistan</td>
<td>One fibre link of STM-64 at 10 Gbps using SDH network technology.</td>
<td>Connectivity between the two countries is considered to be vulnerable due to the presence of only one link; Turkmenistan would gain significantly from additional transit paths via Kazakhstan onward to Russian Federation.</td>
</tr>
<tr>
<td>Kyrgyzstan/ Uzbekistan</td>
<td>One fibre connection using SDH network technology.</td>
<td></td>
</tr>
<tr>
<td>Tajikistan/ Uzbekistan</td>
<td>Connected by only one link capacity STM-1 at 155.52 Mbps.</td>
<td></td>
</tr>
<tr>
<td>Turkmenistan/ Uzbekistan</td>
<td>Relatively antiquated Trans Asia Europe Line.</td>
<td>Given the age of the only link between the two countries, additional fibre is urgently needed between Turkmenistan and Uzbekistan.</td>
</tr>
</tbody>
</table>

## Pacific

<table>
<thead>
<tr>
<th>Country Pair</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuvalu</td>
<td>Not connected to submarine fibre optic cable</td>
<td>International communications via satellite</td>
</tr>
<tr>
<td>Nauru</td>
<td>Not connected to submarine fibre optic cable</td>
<td>International communications via satellite</td>
</tr>
<tr>
<td>Niue</td>
<td>Not connected to submarine fibre optic cable</td>
<td>International communications via satellite</td>
</tr>
<tr>
<td>Palau/Guam</td>
<td>Not connected to submarine fibre optic cable</td>
<td>INDONESIA - USA (CALIFORNIA) VIA GUAM AND HAWAII, PLANNED CONNECTION FOR PALAU AND FSM</td>
</tr>
<tr>
<td>Cooks Islands/Fiji</td>
<td>Not connected by submarine fibre optic cable</td>
<td>Planned to connect between Cook Islands and Fiji.</td>
</tr>
</tbody>
</table>
Asia-Pacific Information Superhighway

Interactive Map, visit <http://www.itu.int/itu-d/tnd-map-public/>
Regional Broadband Backbone Connectivity

- Well-developed and market-driven submarine backbone connectivity
- Underdeveloped cross-border/sub-regional terrestrial connectivity: Missing, Insufficient, not-integrated links
- Poor network redundancy, poor resilience

Well-balanced terrestrial & submarine
ICT infrastructure risk map: Designing for resilience

Regional Internet Exchange Connectivity

- Insufficient, inefficient Internet traffic exchange & management systems

Source: “Telegraphy Internet Exchange Map” www.internetexchangelocation.com
Without effective supply and competitive transit, prices remain high and take up remains low.

**International bandwidth vs. IP transit costs**

**Internet penetration vs. IP transit costs**

Note: Tajikistan, Turkmenistan and Uzbekistan: outlier status (largely due to dominance of incumbent)
Summary of Regional Status and Results

- High dependency on submarine
- Missing, insufficient, not-integrated terrestrial regional backbone
- Weak domestic backbone/access

Physical Backbone Connectivity

Internet Traffic Management System

Vicious Cycle

- Low Internet Penetration
- Low demand

- High Cost
- High Quality

- Severe Tromboning
- High transit cost
- Low traffic speed & high latency between Int’l backbone links

- Lack of IXPs and Operational workforce
- Lack of policy awareness
- Lack of open, neutral principles/practice

- Fixed BB subscription * ITU 2014 (per 100 inhabitants)
- Individual using the Internet
Challenges: Digital Divide in Asia and the Pacific

Figure 3: Fixed broadband subscriptions by subregion in 2015

Source: Produced by ESCAP, based on data sourced from ITU World Telecommunications/ICT Indicators Database (accessed July 2016).
Challenges: Digital Divide in Asia and the Pacific

Figure 9: Fixed broadband subscriptions per 100 inhabitants by income group, 2000-2015

Source: Produced by ESCAP, based on data sourced from ITU World Telecommunications/ICT Indicators Database (accessed July 2016).
Challenges: Regulations and Broadband Access

- There is a strong correlation between the perceptions on quality of regulations (World Bank – World Governance Indicators) and fixed-broadband subscriptions.

Better quality of regulation instill certainty in investment environment, which encourages private operators to invest more.
Challenges: E-commerce and ICT Access

- Strong positive correlation between E-commerce and broadband access.
- Hence, if broadband infrastructure is not in place, it limits access and therefore e-commerce.

**Figure 15: E-commerce versus fixed broadband access, 2015**

*Sources: ESCAP estimates; UNCTAD B2C E-Commerce Index 2016; and fixed broadband per 100 sourced from ITU.*
The way forward

• The finalized Master Plan and Regional Cooperation Framework will be submitted to the Committee meeting on Information, Communications and Technology, Science, Innovations for endorsement (CICTSTI).

• Endorsed Master Plan and Regional Cooperation Framework will be recommended by CICTSTI to the 73rd ESCAP Commission Session (2017).

• ESCAP Commission Resolution mandating the full implementation of the AP-IS Master Plan and Regional cooperation framework (2017).
What is our mandate? : Asia Pacific Information Superhighway

ESCAP Commission

ESCAP Committee on ICT & STI

AP-IS Steering Group

AP-IS Working Group
THANK YOU