Asia-Pacific Information Superhighway Master Plan

AP-IS Second Working Group Meeting

ICT and Disaster Risk Reduction Division
ESCAP
Presentation Agenda

1. Asia-Pacific Information Superhighway (AP-IS)
2. Recent ESCAP Findings
3. AP-IS Vision
4. Four Pillars of AP-IS
5. AP-IS Layered Map of Network Structure
6. AP-IS Medium-Term Objectives
7. Proposed AP-IS Network Corridors
8. Regional Partners for AP-IS
9. Proposed Governance Structure
10. AP-IS Strategic Initiatives 2016-2018
11. Activities for AP-IS Strategic Initiatives
12. Implementation Plan 2016-2018
The Asia-Pacific Information Superhighway (AP-IS) is an initiative to improve regional broadband connectivity, through a dense web of open access cross-border network infrastructure, integrating them into a cohesive land and sea-based fibre infrastructure with the ultimate aim to increase the international bandwidth for developing countries in the region, to lower the broadband Internet prices and to bridge the digital divide in the region.
Recent ESCAP Findings

• Despite the substantial gains reaped from broadband Internet across all sectors, progress has been unevenly spread across Asia and the Pacific and it remains to be one of the most digitally-divided regions in world.

• ESCAP’s “State of ICT in Asia and the Pacific 2016” reports that over 52% of the global fixed broadband subscriptions come from the geographic ESCAP member countries.

• High-income ESCAP countries are more digitally inclusive while low-income ESCAP members show sign of digital divide.

• 74% of fixed broadband subscriptions in the ESCAP region are in East and North-East Asia, and more than half of the region’s fixed broadband subscriptions is driven by the China (PR) alone.
Access to international connectivity or transit is largely dominated by submarine cable landings in the Asia-Pacific region. ESCAP’s analysis of the terrestrial network has shown that many countries in the region have backhaul domestic infrastructure poorly meshed and follow a “river system” pattern.

Furthermore, the limited number of fibre interconnections across countries also limits the availability of total and per-capita international bandwidth. This has been affecting the landlocked countries in particular, which do not have direct access to a submarine cable landing station and have to rely on limited terrestrial cross-border connections.
AP-IS Vision

As a pillar of regional connectivity, the Asia-Pacific information superhighway initiative shall be a catalyst to develop seamless regional broadband networks which improve affordability, reliance, resilience and coverage and thereby address the causes of digital divides, develop the Internet ecosystem to support the implementation of the Sustainable Development Goals (SDG) and stimulate digital economy in Asia and the Pacific.
Four Pillars of AP-IS

- To address concerns on Digital Divides, the AP-IS concept was defined at the first meeting of the AP-IS Working Group based on ESCAP Findings, research and analysis that identified gaps, opportunities and need for regional cooperation. The Master Plan elucidates specific activities and milestones with regard to the four pillars:

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

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

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

  - Bridging digital divides
  - Promoting affordable access to underserviced areas
  - Policy and technical support to governments
AP-IS Pillar 1: Connectivity

• AP-IS advocates enhancing seamless regional broadband fibre optic backbone connectivity by **upgrading and increasing the resilience** of, and integrating cross-border, intra and inter regional broadband backbone networks, which will lead to **open access** and more well-balanced undersea and terrestrial networks.

• AP-IS advocates **leveraging existing regional connectivity** opportunities offered by the Asian Highways and Trans-Asian Railway, as well as other trans-border infrastructure.

• AP-IS seeks to **establish operation models** of terrestrial cables, facilitates the formation of trans-border terrestrial cable networks and enhances the quality and efficiency of transition.
AP-IS Pillar 2: Traffic and Network Management

• AP-IS promotes *enhancing the Internet traffic exchange* and management systems and harmonizing related policies in a more effective manner, domestically as well as on sub-regional and regional levels.

• AP-IS promotes *establishing sufficient Internet exchange points* (IXPs) within the region, harmonize the Internet traffic management practices, principles, and related policy and regulatory frameworks towards more *open, neutral and non-discriminatory ways*, and lay out the general principles on the IXPs.
AP-IS Pillar 3: e-Resilience

• AP-IS aims to **enhance the resilience of existing / planned ICT infrastructure** through methods such as enhanced network diversity recognizing the importance of resilient infrastructure to sustainable development, together with the critical role played by ICTs in disaster risk reduction and management.
AP-IS Pillar 4: Broadband for All

- AP-IS supports the necessary environment that will lead to the promotion of **inclusive access for all**, acknowledging the special needs and challenges faced by the least developed and landlocked developing countries.

- AP-IS initiative also drives the **development of domestic ICT infrastructure** in related countries, including domestic backbone and backhaul networks, access network and Internet Data Centers.
AP-IS Layered Map of Network Structure

### Pillars

- **Contents/Contents Delivery System**
- **Open/Neutral IXPs (ITEC)**
- **Policy and Regulation Registry (Open Access & E-resilience)**
- **Broadband Backbone Network (TBBC + Submarine)**

### Image

- **IDC**
- **Content Servers**
- **CDN**
- **Independent CP**

### Goals

- **Neutral IXPs**
- **Policy Portal**
- **Terrestrial Fiber (Land Based)**
- **Submarine Cable (Sea Based)**
Medium-term objectives of AP-IS from 2016 to 2018 (1)

• focus on:
  a) Promoting seamless, affordable and reliable regional broadband connectivity, the well-balanced sea- and land-based connectivity and the Internet traffic exchange management;
  b) Promoting e-resilience;
  c) Promoting inclusive broadband access for the underserved areas and narrowing the digital divide.
Medium-term objectives of AP-IS (2)

- **Addressing regional broadband connectivity:**
  - Identifying missing links
  - Tapping cross-sectoral synergies for fibre-optic deployment
  - Improving regulatory frameworks and promoting open access to critical infrastructure

- **Addressing high transit costs:**
  - Establishing sufficient IXPs and common principles on Internet traffic exchange
  - Improving Internet service quality at regional, cross-border, inter- and intra-regional levels

- **Addressing inclusive broadband access:**
  - Improving regulatory frameworks and market practices
  - Accelerating reforms to foster competition on broadband market
Proposed AP-IS Network Corridors

RUSSIAN & CHINESE TERRESTRIAL FIBER OPTIC CABLE SYSTEM

CENTRAL ASIA

SOUTH ASIA

ASEAN

PACIFIC (SIDS)
Regional Partners for AP-IS

Development Partners:
- ESCAP
- APCICT
- ITU
- ISOC
- LIRNEasia
- ITU

Financial Institution Partners:
- WB
- IFC
- ADB
- AIIB
- Private Sector

Diagram showing the connections between the WG/SG and various regional partners, including SAARC, LMC, SPECA, ASEAN, SCO, USP, and various financial institution partners.
Proposed Governance Structure

*USP – University of South Pacific; USP has been mandated by Council of Regional Organization in the Pacific (CROP) to lead ICT development in the Pacific region.*
AP-IS Strategic Initiatives 2016-2018

1. Identification, coordination, deployment, expansion and integration of the regional backbone networks at cross-border, intra- and inter-regional levels in collaboration with member countries and sub-regional organizations

2. Establishing a sufficient number of IXPs at national and sub-regional levels and setting common principles on Internet traffic exchange to prevent Internet traffic tromboning, to decrease the transit cost and improve service quality

3. Conducting regional social and economic studies

4. Enhancing ICT infrastructure resilience in the Asia-Pacific region

5. Promoting policy and regulations for leveraging existing infrastructure, technology and inclusive broadband initiatives

6. Capacity building

7. AP-IS Project funding mechanism based on Public Private Partnership
## Activities for AP-IS Strategic Initiatives 2016-2018

**Initiative 1: Identification, coordination, deployment, expansion and integration of the regional backbone networks at cross-border, intra- and inter-regional levels in collaboration with member countries and sub-regional organizations**

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<tr>
<th>Areas of focus</th>
<th>Description</th>
<th>Responsible</th>
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<tbody>
<tr>
<td>Integrated regional backbone &amp; interconnectivity</td>
<td>• Identify missing links</td>
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<tr>
<td>• Terrestrial fibre network</td>
<td>• Design hybrid mesh and ring structure of resilient regional terrestrial backbone network</td>
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<tr>
<td>• Coherent mesh network</td>
<td>• Plan center node establishment for low cost and reliable delivery of traffic</td>
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<tr>
<td>Operation models of trans-border terrestrial cables</td>
<td>• Study operating models and standards, and quality standards, etc. of trans-border terrestrial cable networks</td>
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<td>Domestic broadband infrastructure</td>
<td>• Examine domestic backbone network routes in less developed countries (LDCs)</td>
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<td>• Help develop broadband network development strategies in LDCs</td>
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<td>• Develop and plan data centers</td>
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### Supporting activities

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<tr>
<td>1.1 Conduct detailed feasibility studies in some corridors, taking into account the special needs and challenges of LLDC, LDC and SIDs</td>
<td>To determine traffic, revenue, and preliminary costs and affordability&lt;br&gt;To determine special needs and challenges for LLDC, LDC and SIDS&lt;br&gt;To coordinate the infrastructure development planning with the member countries and private sectors among SIDS</td>
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<td>1.2 Update AP-IS transmission maps</td>
<td>Maximize cross-sectoral synergy or utilize existing roads and rail road infrastructure&lt;br&gt;Update the AP-IS transmission map</td>
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| 1.3 Rough order of magnitude (ROM)                                            | Explore cost estimation in collaboration with suppliers where applicable. | ESCAP, private sector
**Initiative 2:** Establishing a sufficient number of IXPs at national and sub-regional levels and setting common principles on Internet traffic exchange to prevent Internet traffic tromboning, to decrease the transit cost and improve service quality

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| Harmonized Internet traffic exchange & management                              | • Promote non-discriminatory direct bilateral peering/transit between neighbouring states' ISPs  
• Establish Intra/Inter-regional, neutral IXPs  
• Establish national IXPs for the domestic traffic to be exchanged inside the state |                                                                                                           |
| Supporting Activities                                                           |                                                                                                                                               |                                                                                                           |
| 2.1 Regional diagnostic study                                                    | • Conduct diagnostic study, analyze best-practices in Internet traffic exchange/management in the region                                                                                                  | ESCAP, ITU, APT, member countries and private sectors                                                    |
| 2.2 In-depth study on traffic production volume                                 | • Carry out studies on traffic volume, destination and distribution, routing and distance including overall Internet service quality both national and regional levels | ESCAP in consultation with private sector and member countries                                             |
| 2.3 IXP system & operation model                                                | • Recommend set up of IXPs, including operating principle and governance model  
• Estimating cost in collaboration with device vendors or partner entities | ESCAP, research institutes and private sector  
ESCAP in consultations with the private sector                                                               |
| 2.4 Rough order of magnitude (ROM)                                              |                                                                                                                                               |                                                                                                           |
### Initiative 3: Regional social and economic studies

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<tr>
<td>3 Analysis of the economic and social impacts of future and near-future ICT trends</td>
<td>• Review technological advancements and discern their impacts on economy and society for the inclusive development of ICT that allows policymakers to make informed decisions</td>
<td>ESCAP, private sector, other UN agencies and financial institutions</td>
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### Initiative 4: Enhancing ICT infrastructure resilience in the Asia-Pacific region

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<tr>
<td>4.1 Terrestrial fibre links to international connectivity</td>
<td>• Explore ways to strengthen e-resilience in fibre link to Europe • Exploring to provide additional bandwidth for landlocked Central Asian countries</td>
<td>ESCAP, member countries, private sector and financial institutions</td>
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<td>4.2 Diversified routes including co-deployment of fibre optic cables embedded on the Asian Highway and the Trans-Asian Railway</td>
<td>• Explore fibre optic route diversification capitalizing on the Asian Highway and Trans-Asian railway infrastructure</td>
<td>ESCAP and member countries</td>
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<td>4.3 Protecting critical infrastructure with disaster risk reduction</td>
<td>• Integrate approach to plan infrastructure development incorporating disaster management from design stage</td>
<td>ESCAP, research institutes, UN agencies and private sectors</td>
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### Initiative 5: Policy and regulations for leveraging existing infrastructure, technology and inclusive broadband initiatives

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<tr>
<td>5.1 Submarine cable backhaul &amp; cross-border affordability and infrastructure sharing</td>
<td>• Develop cross-border infrastructure sharing policy based on the above studies, consultations and partnerships</td>
<td>Member countries and sub-regional organizations</td>
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<tr>
<td>5.2 Local/National government networks accessibility to IXP and peering/transit at IXP</td>
<td>• Develop policy on infrastructure sharing, accessibility to IXP</td>
<td>Member countries and sub-regional organizations</td>
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</table>
| 5.3 National ICT policy and regulatory frameworks   | • Update national polices and regulations to enable the infrastructure development and inclusive broadband  
• Enable policies that lead to open access, non-discriminatory pricings, competition and innovations.  
• Regulatory reforms pertaining to telecom, taxes & customs duties | ESCAP, other UN agencies, sub-regional organizations and member countries |
### Initiative 6: Capacity Building

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<td>6.1 Institutional and individual capacity building</td>
<td>• Capacity building, sharing of good practices and lessons learned in regional level pertaining to network traffic management and monitoring, deploying of fibre terrestrial/submarine.</td>
<td>ESCAP, all member countries, research institutes, private sector and other UN agencies.</td>
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### Initiative 7: AP-IS Project funding mechanism based on Public Private Partnership (PPP)

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| 7.1 Formulation of AP-IS funding platform | • Explore and formulate mechanism to fund AP-IS project in partnership with WB, ADB, AIIB and other financial institutes  
• Explore public funding arrangements and public-private partnerships (PPP), special purpose vehicle (SPV) for the promotion of infrastructure development  
• Explore respective government funding options on IXP construction and operations | ESCAP, UN agencies, sub-regional organizations, private sectors, financial institutions and member countries |
# Implementation Plan 2016-2018

(Activities not exhaustive)

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<tr>
<th>Action Items</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
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<tr>
<td>Advisory Group to be established and operational</td>
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<tr>
<td>1.1 Conduct feasibility studies</td>
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<tr>
<td>2.3 Internt exchange point system &amp; operation model</td>
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<tr>
<td>3. Regional social and economic studies</td>
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<tr>
<td>4.1 Study route diversification as part of e-resilience</td>
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<tr>
<td>5.1 Undertake policy initiatives for cross-border connectivity</td>
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<tr>
<td>6.1 Capacity development</td>
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<tr>
<td>7.1 Formulation of Asia-Pacific information superhighway Funding Platform</td>
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<tr>
<td>Present Master Plan for adoption</td>
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<td>Evaluation and Progress Report</td>
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**Notes:**
- **1st CICTSTI meeting**
- **73rd Commission**
- **74th Commission**
Steering Group and Working Group of Asia-Pacific Information Superhighway

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