Considerations in Improving the International Connectivity in Asia-Pacific Region

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International Connectivity is the Need for ICT Development

- Shortage of international Internet connections is an important factor restraining the development of Internet, and social and economic development.

- Currently, submarine cables are the main means for connecting to international Internet, however, many countries have no landing sites of submarine cables.

Among 64 countries in the Asia and Pacific regions, only 29 countries have access to submarine cables. For the other 35 countries, either they are landlocked countries or can not afford the cost of submarine cables.

- ESCAP reported that, countries with submarine cable sites usually enjoy a cheaper, more rapid high-quality Internet connections, but the landlocked countries didn’t fully benefit from the Internet broadband.

- Terabit Consulting research found that, the lack of Internet connectivity is causing great digital divide between ASEAN member states.
Most International Internet Traffic Are Carried By Submarine Cables while Terrestrial Tables Are Not Fully Utilized

1. 95% of international Internet traffic is carried by submarine cables
2. Only 5% of international Internet traffic is carried by terrestrial cables

Challenge of International connectivity using submarine cables

1. High construction cost
2. Difficult to operate and maintain
3. Single route
4. Long Detours

Advantage of submarine cables

1. Some countries can only be connected by submarine cables
2. Avoid the lower connectivity among countries caused by uneven development of ICT.

Source: TeleGeography
http://blog.telegeography.com/the-era-of-the-undersea-cable
The Status Quo in the Utilization of Terrestrial Cable

- Terrestrial cables is not fully utilized because different countries have different standards for charging international circuits’ transit
- Land-locked countries have difficulty in accessing to international communications
- Many countries can not access to the Internet in an affordable price
Advantages for Terrestrial Cable

The advantages of terrestrial cables in contrast with submarine cables:

- Construction costs: over 50% lower
- Costs of recovery: 50,000–80,000 USD
- Time of recovery: 4–8 hours
- Diverse routes: usually more than two routes

Source: Operators of Fortune 500 companies
The Advantages of Trans-multi-country Terrestrial Cable (1)

By connecting the domestic backbones with dispersed trans-border terrestrial cables, we can establish large-capacity international terrestrial cable networks that can cover each region, continent and even the whole world.
The Advantages of Trans-multi-country Terrestrial Cable (2)

- **Increase the capacity of the existing transmission channels between countries, especially for those land-locked ones.**
- **Increase the traffic flowing on the submarine cable** because more inland countries can reach submarine cables in an affordable price and get connected to other countries through submarine cable.
- **Reduce the cost of international connectivity,** it fully utilizes the existing domestic backbone transmission networks of each country.
Problems Facing the Use of Existing Terrestrial Cables

The existing terrestrial cable resources are effectively utilized only between two neighboring countries.

When a third or more countries are involved, these resources cannot be fully used due to over-charging for the transit services by the intermediate countries.

Large quantities of existing domestic terrestrial cables fail to be utilized in carrying the traffic of international trans-border service.
The High Cost of Landlocked Countries Access to the Internet

- International connectivity route of Country A to UK:
  - Capital of Country A: **City A**
  - VS **City A**: International Internet Hub

- Distance: 1/6
- Price: 10 times

Note: Country A and Country B are landlocked countries; Country C is coastal country
Readiness for Increasing the International Connectivity by Terrestrial Cable

- Most countries in the world have built their own domestic backbone optical networks.
- Cross-border terrestrial optical cable systems are already established between neighboring countries and can be utilized to improve the international connectivity among different countries in the world.

Source: ITU

Global Terrestrial Optical Cable Map
Need for Exploring New Charging and Operational Model for International Terrestrial Cable Systems

- Lack of feasible charging and operation models for trans-multi-country terrestrial cables.

- Interconnection needs the cooperation of countries and carriers along the lines: the operation models of international submarine cables, International Through Railway Transport, international crude oil transport, and international electric transmission can be used as reference.
Useful References in other Sectors

<table>
<thead>
<tr>
<th>The International Air Services Transit Agreement Successfully Solved the Cross-border Charging Problems of International Aviation Industry.</th>
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<td>more than 40 Asian &amp; Pacific countries signed the Inter-Governmental Agreement on Trans-Asia Railway Network and Inter-Governmental Agreement on Trans-Asia Road Network recently, which successfully solved the problem in settlement of railway and road transportation crossing multiple countries in the Asia and Pacific region.</td>
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<td>Agreement on International Railroad Through Transport of Goods has 25 member states and the applicable scope of the agreement is over 270,000 kilometers. Regulations and rules on international through railway transport have been established, including Rules for Unified Transborder Rate of International Through Railway Transport, which provides the methods for calculating and checking transborder rates.</td>
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Work that Needs to be done

Develop "Standards and rules regarding the transit charges on trans-multi-country terrestrial cables""}

- Connecting the existing domestic backbone networks in each country via trans-border terrestrial cables to form an international terrestrial cable network that reduces the cost and increases the efficiency.
- The traffic carried by the submarine cables is increased with more and more inland countries connected to the submarine cables.
- Large quantities of spare domestic terrestrial cables can be used in carrying the International Internet traffic and maximize the utilization of spare domestic backbone networks of many countries.
Study undertaken by ITU-T SG3 Q.13

Name of the Newly Established Study Question 13 of ITU-T SG3

Study of Tariff, Charging Issues of Settlements Agreement of Trans-multi-country Terrestrial Telecommunication Cables

Link of the Newly Established Study Question 13 of ITU-T SG3

https://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/questions.aspx

Tasks of Q.13 of ITU-T SG3

To study and develop Recommendations and guidelines, as appropriate, regarding the policy, tariffs, charging and economic aspects of trans-multi-country terrestrial telecommunication cables.
Study of Q.13 of ITU-T SG3 is Crucial for Promoting Pillar1 of APIS

Study Items of Q.13 of ITU-T SG3

1. Identify difficulties facing the deployment of trans-multi-country terrestrial telecommunication cables and demands of all parties concerned;
2. Identify various issues/aspects related to the policy, tariffs, charging and economic aspects of trans-multi-country terrestrial telecommunication cables;
3. Study and develop Recommendations and guidelines, as appropriate, regarding the settlement agreements of trans-multi-country terrestrial telecommunication cables.

1. I am the Rapporteur of Question 13;
2. Contribution is Welcomed and Can now be Submitted to This New Study Question 13
Study of Q.13 of ITU-T SG3 is Crucial for Promoting Pillar 1 of APIS

Government ICT authorities of the three countries are negotiating to make an agreement in which the three countries provide free alternative route for each other, in the hope of realizing dual alternative routes of cross-border inland cable connectivity between them. A new Ring network will be built across the border of the three countries.

Note: Country A and Country B are landlocked countries; Country C is coastal country.
About ITU-T Study Group 3

- The new mandate of SG3 for the 2017-2020 study period was confirmed by WTSA-16 in Hammamet.

- Study Group 3 is responsible for, *inter alia:*
  - for studying international telecommunication/ICT *policy and economic issues* and *tariff and accounting matters* (including costing principles and methodologies),
  - with a view to informing the development of *enabling regulatory models and framework*

- WTSA-16 Resolution 2 goes on to say that SG3:
  - “...” will study *the economic and regulatory impact of the Internet,* convergence (services or infrastructure) and new services, such as OTT, on international telecommunication services and networks.”

- SG3 is Lead Study Group:
  - on *tariff and accounting principles* relating to international telecommunication/ICT
  - for *economic issues* relating to international telecommunication/ICT
  - for *policy issues* relating to international telecommunication/ICT
ITU’s long history and solid mandate in this area

- ITU’s work on tariffs and interconnection dates back to the origins of the ITU and as such, it can be said that it is part of the very DNA of the organization.

- On tariff issues, **ITU-T Study Group 3** is the successor of Committees of Rapporteurs (later renamed study groups) dating back to **1928**, and has a long-standing mandate on economic and policy issues:

<table>
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<th>Assembly</th>
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<tr>
<td>1926</td>
<td>6e Commission de Rapporteurs</td>
<td>Exploitation</td>
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<td>7e Commission de Rapporteurs</td>
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<tr>
<td>1928-1954</td>
<td>7e Commission de Rapporteurs</td>
<td>Tarification / Tarification téléphonique</td>
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“ITU’s technical standardization work is predominantly industry-driven, with business requirements forming the main fuel to standardization. ITU-T Study Group 3 is taking action in response to the perception among ITU members that the alignment of technology, business and policy will see significant improvement if technical standardization grants equal weight to technical innovation, business needs and policy requirements.

Chaesub Lee, TSB Director

ITU-T SG3 is strengthening ties between technology, business and policy for a new era in international standardization
Proposals for Promoting the Work of AP-IS Pillar 1

1. Encourage all parties involved in APIS to participate in the study of ITU-T SG3 Q.13 in order to explore the solution for reducing trans-multi-countries transit charge to promote the progress of APIS;

2. Encourage ESCAP member countries to enhance the support for innovation in technology and business models from policy-setting perspective;

3. Encourage operators and relevant stakeholder in ESCAP member countries to participate actively in the development of APIS initiative and provide successful case for implementing APIS Pillar 1;

4. Support the principle of co-deployment and sharing in the development of trans-multi-country terrestrial cable and promotion of international connectivity within the Asia-Pacific region;

5. Support coordination, cooperation and interaction among various sectors (such as railway, highway, energy) in the joint effort to facilitate international connectivity;

6. Facilitate information sharing and detailed discussions on the above-mentioned proposals at the upcoming SG meeting in relevant sub-regions and report the results to the next SC meeting as appropriate.
Thank You!
Thank You!