Report of the Trade Policy Dialogue on the Trade Benefits from Submarine Cable Protection

APEC Committee on Trade and Investment

April 2012

Self-funded APEC CTI project
(APEC Meeting document: 2011/CSOM/019)

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APEC#212-CT-01.7

Executive Summary

Australia and New Zealand hosted a trade policy dialogue (TPD) on 18 September in San Francisco on the trade benefits from submarine cable protection. The TPD was held in response to one of the agreed proposed actions in the Supply-Chain Connectivity action plan to address Chokepoint #7: *Variations in cross-border standards and regulations for movements of goods, services and business travelers*.

The objectives of the dialogue were to:

- Raise awareness of the importance of submarine cables to APEC economies and the risk to trade in goods and services and international financial markets posed by submarine cable disruption.
- Share information and best practice examples of submarine cable protection and resilience regimes and regulations in APEC economies.
- Engage with submarine cable owners and operators to raise awareness of cable networks and provide an industry perspective on submarine cable protection regimes.

Required Action/Decision Points

It is recommended that the Senior Officials or Ministers **note**:

- the outcomes of the TPD and its key recommendation to establish a tri-partite working arrangement between CTI, TEL and International Cable Protection Committee (ICPC) as the basis for a regional business-government partnership approach.

THE TRADE BENEFITS FROM SUBMARINE CABLE PROTECTION

APEC Trade Policy Dialogue

Co-sponsors: Australia and New Zealand

18 September 2011
Hyatt Regency
San Francisco

Report on Outcomes

Asia-Pacific
Economic Cooperation

Introduction

On 18 September 2011, at the APEC SOM meetings in San Francisco, Australia and New Zealand hosted a trade policy dialogue which served as a forum for APEC government regulators, trade officials and industry to exchange perspectives on the importance of submarine cables to trade and financial flows in the Asia-Pacific.

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- Share information and best practice examples of submarine cable protection and resilience regimes and regulations in APEC economies.
- Engage with submarine cable owners and operators to raise awareness of cable networks and provide an industry perspective on submarine cable protection regimes.

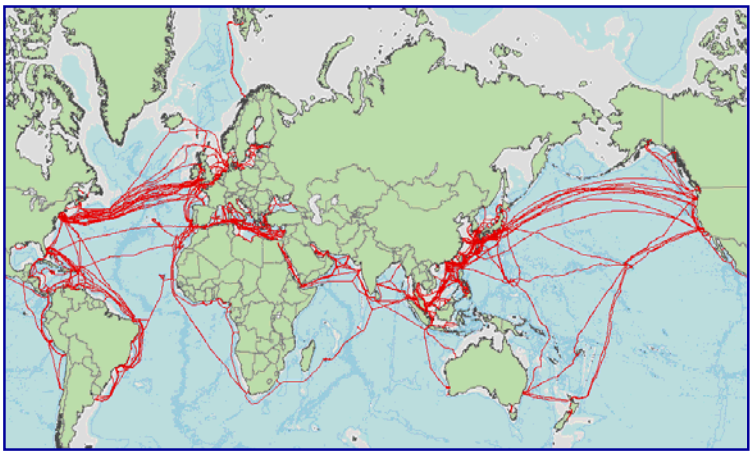
The dialogue explored the following areas of focus:

- The economic importance of submarine cable resilience and the links to trade and investment in the APEC region.
- How industry and governments can collaborate to rectify cable and reduce disruptions, including the use of cable repair ships.
- How business and governments approach submarine cable protection and resilience.

This report provides further background, a summary of the key learnings to emerge from the proceedings, and proposed recommendations for further action that were identified at the dialogue.

Background

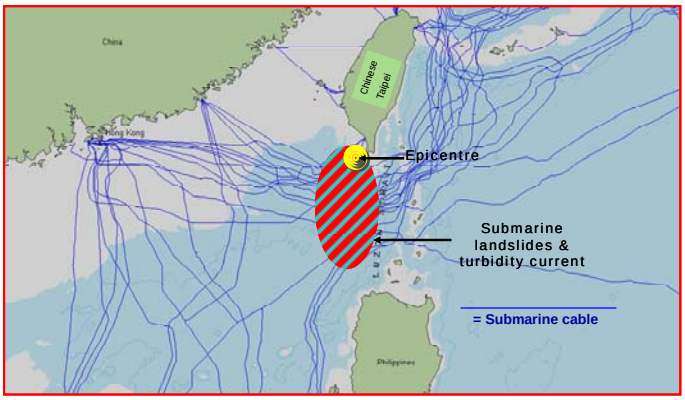
In many APEC economies international telecommunications submarine cables are the principle means for carrying international communications and are responsible for the carriage of approximately 95 per cent of international communications worldwide. In this context they make a critical contribution to intra-regional trade and investment.



Recent years have seen exponential growth in the use of the internet for commerce, finance, education and entertainment. The growing importance of cross border communication to the economic and social well being of all economies has accordingly increased both the benefit and vulnerabilities associated with submarine cables.

The global reliance on submarine cables to facilitate the majority of these exchanges increases the vulnerability of widespread adverse impacts to global economies. Submarine cables are vulnerable to damage and breakage. In the event of a severe disruption to submarine cable operations there would be significant consequences especially to communications, banking & finance, transport, trade and international security activities.

In an increasingly interconnected world, submarine cable damage can pose a significant threat to regional economic wellbeing. Protecting submarine cables from disruption and implementing measures to expedite their repair are key measures for improving trade and business within the APEC region. Submarine cable protection is a key element of APEC's Supply-chain Connectivity Framework Action Plan Seven on harmonisation of regulatory networks.

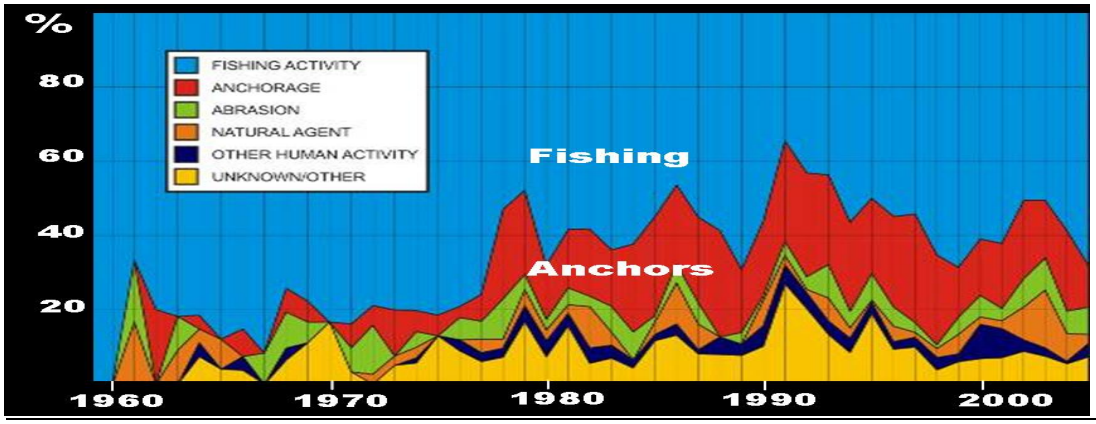


The 2006 Hengchun earthquake in the vicinity of Chinese Taipei exemplifies the damage natural disasters can cause to submarine cables. Reliable communications vital to the efficient trade in goods and services were disrupted during the earthquake and this negatively impacted business in the region. APEC economies including Hong Kong, China; the Republic of Korea; Singapore; Thailand; the People's Republic of China; Japan and Philippines all experienced significant disruptions to communication services, including to international telecommunications services, including the internet and telephony.

Major financial institutions, including banks, in several economies lost dedicated business lines necessary for business and trade. The importance of network resilience was further demonstrated by the response of Japanese telecommunication operators following the 2011 earthquake off the coast of Sendai where it was possible to minimize disruption because of the availability and utilization of redundant pathways.

Whilst natural hazards present a significant threat to submarine cable infrastructure there is an even greater threat from maritime activity. The graph below from the IEEE Journal of Oceanic Engineering (Wood & Carter, 2008) shows that fishing and anchors are the most common causes of cable faults.

As noted above there is a high degree of resilience in the design, diversity and implementation of submarine cable infrastructure which contribute to reducing the impact resulting from cable disruptions, however there is also a real need to implement measures that help protect submarine cable from disruptive human activity and to streamline cable repair processes so as to further reduce impact. This will be examined further in the recommendations presented in this report.



Dialogue Program

Presentations were made by industry, government and academic experts from several APEC economies, as follows:

Welcome & Chair of Proceedings

Mr Heath McMichael, APEC Branch, Department of Foreign Affairs and Trade, Australia.

Keynote Address - "The Importance of Submarine Cables to the Global Economy"

- Mr Bob Wargo, Director, International Cable Protection Committee (ICPC).

Session 1 - Industry Perspectives - "Submarine Cables and the Risk to Trade and Investment"

- Mr Peter Brouggy – Australian Banking & Finance Sector, Trusted Information Sharing Network (TISN) for Critical Infrastructure Resilience.
- Mr Jake Jennings - AT&T, United States.
- Mr Tian-Tsair Su – Chunghwa Telecom, Chinese Taipei.
- Mr Masakuni Kuwazuru, KDDI Corporation, Japan.
- Mr Garry Bowditch, Smart Infrastructure Facility, University of Wollongong, Australia.
- Mr John Ballingall – New Zealand Institute of Economic Research.

Session 2 – "A Government Perspective on Submarine Cable Resilience Programs and Regulation"

- Mr Kris Garred, Attorney-General's Department, Australia.

Closing Comments

- Ms Monica Contreras, Chair of the APEC Committee on Trade and Investment (CTI).

Summary of Key Learnings

Presenters were asked to comment on two questions:

1. What do you think are the key issues in relation to submarine cables that could have an impact on trade in the Asia-Pacific region?

2. What initiatives do you think APEC could undertake to assist in addressing these issues?

The following is a summary of the key points made by each of the presenters in relation to these two questions.

In his keynote address, Mr Wargo identified six key threats and suggested an outline of best industry practice to address these threats. He also considered possible ways for government to assist with each of these threats. These are summarised below:

Threat 1: Fishing Activity	
Industry Best Practice	**How Governments can help**
▪ Conduct surveys to identify the safest cable route. ▪ Select the best cable type for each part of the route. ▪ Bury the cable into the seabed wherever possible. ▪ Maintain cable awareness programmes. ▪ Provide 24x7 telephone support so that a ship's crew can easily seek guidance if their gear is believed to be caught on a cable. ▪ Make Governments aware of the problem and encourage formation of cable protection zones.	▪ Educate fishermen about the importance of submarine cables. ▪ Implement tougher cable protection regimes. ▪ Consider creation of Cable Protection Zones. ▪ Ensure that the law is enforced.

Threat 2: Ships Anchors	
Industry Best Practice	**How Governments can help**
▪ Route cables outside designated anchorage areas and port approaches. ▪ Provide cable overlays for port radars. ▪ Use Automated Identification Systems (AIS) to provide early warning systems. ▪ Liaise with port authorities and shipping industry. ▪ Maximise diversity between cables to minimise risk of multiple failures. ▪ Bury cables to sufficient depth where feasible. ▪ Make Governments aware of the problem.	▪ Facilitating the application of AIS and closer liaison with submarine cable industry. ▪ Help the shipping industry to be aware of the risk of dragging anchors whilst underway. ▪ Consider creation of Cable Protection Zones. ▪ Ensure that the law is enforced.

Threat 3: Piracy	
Industry Best Practice	**How Governments can help**
	▪ Develop a protocol among relevant Government agencies to provide a fast and coordinated response in the event of pirate attacks. ▪ As part of the protocol, provide a single point of contact for cable owners to call in an emergency. ▪ Deploy naval forces to help protect submarine cables. ▪ Undertake naval exercises & war games involving the submarine cable industry to test protocols in an international setting.

	▪ Extend international law to protect international cable systems and cable ships from hostile acts, e.g. those committed by pirates or terrorists.

Threat 4: Natural Hazards	
Industry Best Practice	**How Governments can help**
▪ Cable owners maintain guaranteed access to strategically located specialist ships that can mobilise for a cable repair within 24 hours.	

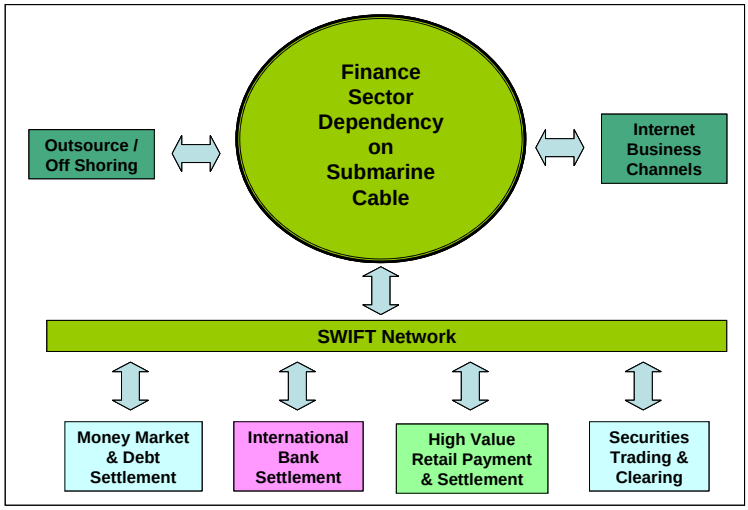
Threat 5: Permit Delays	
Industry Best Practice	**How Governments can help**
	▪ Facilitate repair of international cables by reinforcing duty of all Nations to cooperate in repairs. ▪ Eliminate all repair permits/licenses/fees/guard boat requirements for all repairs to international cables beyond territorial seas. ▪ Accord cable repair ships innocent passage status for the purpose of undertaking repairs in territorial seas. ▪ Ensure that the law is enforced.

Threat 6: Failure to Enforce the Law	
Industry Best Practice	**How Governments can help**
	▪ Suspend and/or remove requirements for permits, fees, guard boats, etc for repairs of international cables outside territorial seas. ▪ If not already done, enact or update national law to comply with UNCLOS cable protection provisions. ▪ Ensure that international & national law is enforced.

In his presentation, Mr Brouggy discussed examples of initiatives implemented in Australia to address the resilience of submarine cables. One example outlined was the conduct of a submarine cable exercise, run by the Communication Sector Group within the Australian Government's Trusted Information Sharing Network. Participants in the exercise included representatives from the communications, finance and transport sectors and relevant government agencies. The exercise provided valuable insights to each sector's understanding of their use of submarine cable infrastructure and a valuable set of facts for organisations to assess their risk assumptions about cable disruption and recovery.

The exercise also highlighted the impact to the economy resulting from multiple cable loss.

The accompanying diagram illustrates how the Australian finance system has a critical reliance on submarine cable to affect Australia's finance systems critical business functions. In order of magnitude terms A$220 billion per day is processed through the high value payments system.



This is equivalent to approximately 20 per cent of GDP of the Australian economy. In addition to this many organisations rely on submarine cable for offshore business processing, also a recent study by access economics identified that the internet was worth A$50 billion to the Australian economy in 2010.

According to Mr Brouggy, APEC could assist by:

1. Raising awareness of impacts resulting from submarine cable disruptions

2. Encouraging governments to establish and enforce cable protection zones to reduce impact from trawling & dragging anchors over cable

3. Encouraging governments to invest in increasing security of undersea cable infrastructure – offshore and onshore

4. Encouraging governments to expedite processing of permits for cable repairs in territorial waters

5. Encouraging governments to eliminate approval permits for cable repairs in international waters

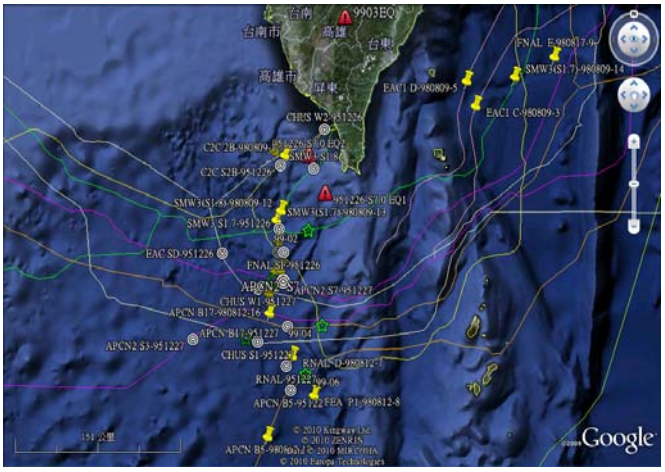
In his presentation, Mr Jennings put forward two ideas for consideration by industry and government.

1. Move from a permit based authorisation for access by repair ships to territorial waters to a license arrangement whereby access is pre-approved based on attainment of an internationally-recognised license. Such an arrangement would remove the delays that are experienced in some cable repair situations and would significantly help to streamline the entire process.

2. Based on the recommendations presented by Mr Bob Wargo, develop a set of best practice guidelines that could be adopted by APEC economies to improve the resilience, protection and repair arrangements for submarine cables.

In his presentation, Mr Su provided some valuable insights to the impacts and resilience of submarine cable infrastructure in relation to natural disasters in the Chinese Taipei region.

Mr Su profiled the impact and recovery for three major events. The following statistics provides insights to the extent of damage that can occur from earthquakes and typhoons and the time it took to affect repair.



In the 26 December 2006 Hengchun Earthquake in the region there were 19 breakpoints in 7 cable systems. Chunghwa Telecom had 9 break points in 4 cable systems and services were restored within 11 days.

On 8 August 2009, Typhoon Morakot caused strong currents which broke 8 cables systems at 16 points within the region. Chunghwa Telecom had 7 breakpoints in 4 cable systems and services were restored within 9 days. In the 4 March 2010 Jiaxian Earthquake (magnitude 6.4), 12 breakpoints occurred in 6 cable systems. Chunghwa Telecom had 6 breakpoints in 4 cable systems and services were restored within 2 days. Whilst there are many variables in each cable disruption situation, the foregoing illustrates the extent of damage that can occur and also how quickly repairs can be achieved if repair resources are available and located nearby and sea conditions permit cable repair operations to take place.

Mr Kuwazuru provided an interesting presentation on protection of submarine cables.

He outlined the use of various methods to create trenches to bury cables such as plowing, use of remote operated submersible vehicles, rock saws and high pressure water blasting. Whilst the new generation satellite technology has introduced vast improvements in speed and capacity there are only limited applications for this technology on an international scale due to the need for minimum delay and high capacity which can only be achieved by fibre optic technology used in submarine cables

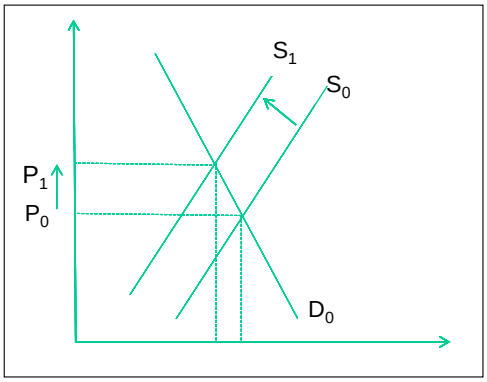
To help improve the resilience of submarine cables, Mr Kuwazuru suggested that government and cable companies should collaborate, where economically feasible, to identify route diversity opportunities when planning for new cables.

Mr Bowditch highlighted the importance of joined-up government and the dangers of silo-based thinking. Mr Bowditch also highlighted the importance of understanding the interdependencies between users of submarine and provided insights about how to build resilience.

Mr Bowditch identified the issues related to submarine cable protection as a "wicked problem". He defined wicked problems as those that are difficult or impossible to solve because of incomplete, contradictory and challenging requirements which are often difficult to recognise. The effort to solve one aspect of a wicked problem may reveal or create other problems. A recognised strategy to address wicked problems was to explain the benefits of effective collaboration-building arrangements between key stakeholders and investing in sharing information to raise awareness.

In his presentation, Mr Ballingall identified the need to develop a better understanding of the economic impact resulting from submarine cable disruptions. He provided a basic economic model to illustrate how a reduction in supply would increase the price of communications services.

MARKET FOR COMMUNICATIONS SERVICES

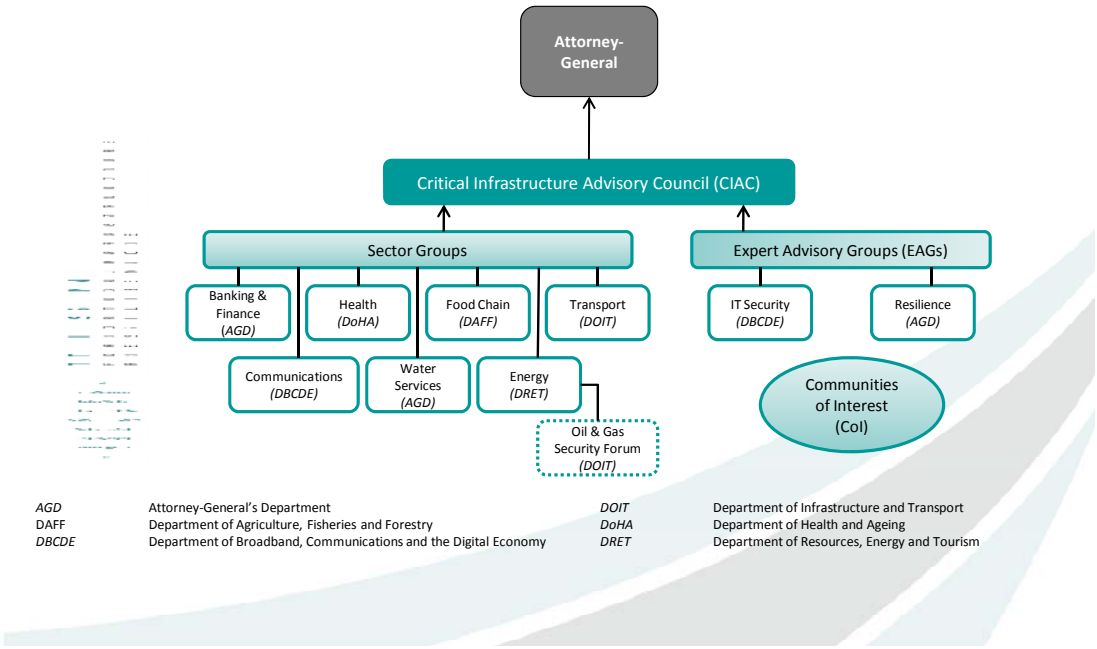


An economic impact analysis of illustrative examples of submarine cable disruptions would help build the case for stronger investment in protection measures and streamlining of cable repair processes.

The final presentation was delivered by Mr Garred who provided an overview of the Australian Government's approach to enhancing resilience in the submarine cable sector which is based on both non-regulatory and regulatory measures.

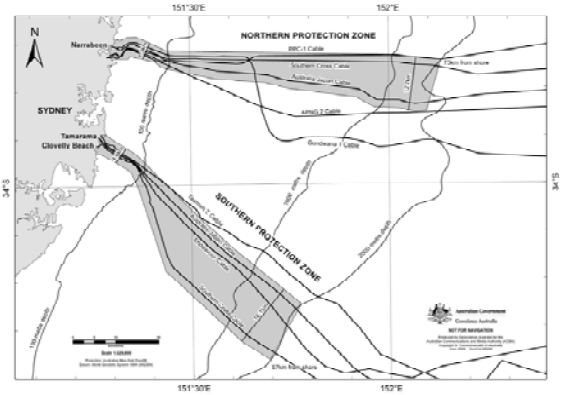
Mr Garred noted that a key component of the Australian Government's Critical Infrastructure Strategy is the operation of an effective business-government partnership with critical infrastructure owners and operators, including key submarine cable owners and operators in Australia. The Trusted Information Sharing Network (TISN) for Critical Infrastructure Resilience, the most visible component of this partnership, allows owners and operators of critical infrastructure and government to work together and share information on threats, vulnerabilities and cross-sector dependencies and develop strategies and solutions to mitigate risk.

The Australian Government's Trusted Information Sharing Network (TISN) for Critical Infrastructure Resilience



Mr Garred also outlined the range of regulatory measures that have been put in place to protect submarine cables such as the establishment of cable protection zones on the east and west coasts of Australia. Within these protection zones activities which may potentially damage submarine cables such as trawling, anchoring, mining or dredging are restricted or prohibited. Other measures taken by the Australian Government include active dialogue and engagement on a bilateral and multilateral basis with key international partners and organisations and engagement with the submarine cable industry internationally through membership of the International Cable Protection Committee (ICPC).

Perth protection zone



Sydney protection zones

Proposed Recommendations and Next Steps

Recognising the importance that dialogue participants placed on increased collaboration between industry and government on submarine cable matters, the key recommendation is to establish a tripartite working arrangement between CTI, TEL and ICPC as the basis for a regional business-government partnership approach. This arrangement would support a number of activities which are presented below for further consideration by stakeholders.

1. APEC CTI to develop a partnership with APEC TEL.

- TEL's work program in relation to submarine cable needs to be more widely understood and highlighted in terms of CTI's work on supply-chain connectivity. It will be important for CTI to avoid duplicating work already underway in TEL on submarine cables.

2. Develop a partnership with ICPC. Identify how APEC can assist ICPC in their initiatives.

Possible joint initiatives include:

- information-sharing and awareness raising between stakeholders.
- develop recommendations in Mr Wargo's presentation into a set of good practice guidelines for adoption by APEC economies. The good practice should focus on protection as well as recovery and repair. Invite APEC Trade Ministers to make a public statement of support for the guidelines.
- working with economies to streamline processes to allow cable repair ships access to territorial waters, for example, implementing licensing or other arrangements which allow repair ships to commence their repair work in territorial waters without delay.
- consolidate work in the Telecommunications Working Group to identify each economy's arrangements with respect to submarine cables i.e. permits, exclusion zones, penalties, etc. Establish a single point of contact in each economy responsible for handling cable disruptions.
- governments and cable companies collaborate to identify route diversity opportunities for new cables where economically feasible.

3. Build awareness and capacity within APEC.

Possible initiatives include:

- develop a problem statement, defining the dependency of various types of trade on submarine cable and selected case studies.
- prepare an economic impact analysis of submarine cables disruption and identify the opportunity cost to build the case for protection.
- conduct a cable repair workshop to increase awareness of logistics constraints, challenges and opportunities with respect to cable repair and protection.
- produce a desktop discussion exercise planning guide so that APEC economies can conduct their own desktop exercises to raise awareness with their stakeholders.

4. Proposed next steps are:

1. Recommend CTI Chair invite TEL and EPWG Conveners to brief CTI I 2012 on work underway on sub cables in these sub-forums.

2. CTI/TEL to jointly approach ICPC to explore partnership ideas as outlined above.

3. CTI to ask APEC's Policy Support Unit (PSU) to prepare an economic impact analysis on the trade and investment impacts of submarine cable disruptions.