



**Asia-Pacific  
Economic Cooperation**

---

**2013/PPFS/MC2/004**  
Agenda Item : 2

## **APEC Food Security Road Map Toward 2020**

Purpose: Consideration  
Submitted by: PPFS Chair



**Second Policy Partnership on Food  
Security Management Council Meeting  
Kyoto, Japan  
11 July 2013**

**Policy Partnership on Food Security (PPFS)**

**APEC FOOD SECURITY ROAD MAP TOWARDS 2020  
(Version 2013)**

**24<sup>th</sup> June 2013  
Medan, Indonesia**

## **THE CHALLENGES**

1. Food security has become an increasing concern among many APEC economies due to rising food prices and periods of price volatility. Food security is a multi-dimensional and complex issue consisting of many social, economic, environmental, physical and political factors. The commonly accepted definition of food security is: *"Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life"*.
2. However, APEC economies are faced with both demand and supply of food security challenges. On the demand side, APEC economies must deal with global population that will reach an estimated 9.3 billion in 2050. Income growth and urbanization resulting in the change in food consumption pattern, in term of variety and quality, and safety, and nutritional issues. Increased demand for food as energy feedstock and for other industrial uses will also become more prominent drivers of increasing demand for food.
3. On the supply side, natural resources constraints will become more stringent in the coming years, adversely impacting crops, fisheries, and aquaculture yields as well as the capacity to expand food production, including capture fishing. Agricultural land per capita is projected to decline from its 2012 level of 0.22 hectares in use per person to 0.18 in 2050, while the proportion of the population living in urban areas is forecasted to rise from 50% to 70%. In addition, increased cycle of adverse weather condition associated with climate change will cause yield declines from some important staple food crops, especially rice, wheat and fish products. Hence, in the absence of any policy intervention, the cost of food could rise substantially as a result of increasing demand and reduced production. Producers will also pass on the higher costs of climate adaptation measures to consumers [APEC PSU, 2012].
4. APEC economies are faced with different food security issues in their agricultural and fisheries sectors as well as in their approaches to address food insecurity due to different characteristics in each member economy. Another important challenge, especially in developing economies how to improve the involvement of the private sector and business entities in strengthening national and global food security.
5. Considering that establishing a comprehensive food system-based food security environment in APEC is a complex and long term effort, APEC created the Policy Partnership on Food Security [PPFS].

## **THE VISION AND GOAL**

6. The PPFS vision is "APEC economies that are free from hunger and malnutrition, and contribute to the efforts of improving the living standard of all, especially the poorest and small holder, in an economically, socially and environmentally sustainable manners".
7. The long term goal of the PPFS, as mentioned in its Term of Reference, is the attainment of a food system structure by 2020, sufficient to provide lasting food security to APEC member economies.

## **THE MISSIONS**

8. The PPFS is the primary mechanism for APEC economies to address food security policy concerns and should oversee all issues related to, and affecting food security. The first mission of the PPFS is the development of a food sector that is economically efficient and profitable, socially acceptable, and environmentally sound. The important role of the private sector in achieving food security is fully recognized as a necessity. Hence, public-private partnerships will become the main approach in any APEC PPFS activity.
9. In line with the awareness of the important role of trade in achieving food security, the second PPFS mission, using the spirit of partnership as mentioned in the Niigata Declaration, is to enhance food production and trade, as well as to improve food stocks and safety nets for the poor; considering the level of development and resource endowment in each economy, and the role of trade in stabilizing food prices.
10. With full awareness that most APEC economies are dominated by small scale farmers and small scale fisheries and that poverty and food insecurity are highly correlated, the third mission of the PPFS is to consider how to improve small holders' income and welfare as well as their competitiveness in producing food, in accordance with the PPFS 2013 theme "Aligning Farmers into the Achievement of Global Food Security", which was designated by Indonesia as the APEC host economy, is in line with this mission.

## **THE STRATEGIES**

11. Several APEC sub-fora are already working directly on topics relating to food security, including the Committee on Trade and Investment [CTI] and its subgroup the Food Safety Cooperation Forum [FSCF], the Agricultural Technical Cooperation Working Group [ATCWG], the Ocean and Fisheries Working Group [OFWG], and the High Level Policy Dialogue on Agricultural Biotechnology [HPLDAB].
12. Closely linked to other APEC fora, APEC PPFS has three paths or strategies to achieve its goals. They are:
  - a. Sustainable Development of the Agricultural and Fishery Sectors,
  - b. Facilitation of Investment and Infrastructure Development, and
  - c. Enhancing Trade and Markets.The spirit of mutually beneficial partnership between public and private entities, including farmers, as well as between developed and developing countries will always be firmly held in implementing PPFS activities.
13. The Road Map to achieving the goals of the PPFS should be strategic, result-oriented and comprehensive to achieve the long term goal of setting up a food system structure by 2020 sufficient to provide lasting food security to APEC economies, as instructed by ministers. The Road Map provides guidance for the three PPFS Working Groups [WGs], that were established in line with the three strategic issues mentioned above, to take appropriate measures to strengthen food security. The three WGs are WG on Sustainable Development of the Agriculture and Fishery Sectors, WG on Facilitation of Investment and Infrastructure Development, and WG on Enhancing Trade and Markets.

14. Members of each WG are encouraged to set up an implementation plan which details, in the style of a multiyear business plan, integrating the private sector in very specific ways, including who exactly will do what, when, where and how, and how those actions will be funded.
15. In **Developing Sustainable Agricultural and Fishery Sectors**, the APEC PPFS will hold the principle of development that “meets the needs of the present without compromising the ability of future generations to meet their own needs”. Research and development, technology dissemination, management of marine ecosystem and aquaculture, farmer organization empowerment, and sustainable management of natural resources will become the core issues to address.
16. In **Facilitating Investment and Infrastructure Development**, APEC PPFS will refer to the Principles for Responsible Agricultural Investment, which is being discussed by international fora. This will also include infrastructure development and analyzing impact of Foreign Direct Investment [FDI].
17. In **Enhancing Trade and Markets**, APEC economies believe that trade can support food security when it improves incomes, improves availability or access to nutritious food, and improve price stability. Therefore, APEC PPFS shall support international trade that increases incomes where the gains from trade can be distributed among players in a more equitable manner and, in such a way that can improve small holders’ income. This is in line with the sub-theme of APEC 2013 “Achieving Sustainable Growth with Equity”. The priority toward 2020 will include trade facilitation in food and agricultural products, and improving governance frameworks.
18. In improving food supply, APEC economies should focus on promoting effective management of the food supply chains, reducing food losses and waste; sharing experience and information on reducing food losses and sharing effective models of food supply chains.

## **PLAN OF ACTIVITIES TOWARDS 2020**

The following are priority activities of each WG agreed to in the APEC PPFS Plenary meeting in January 2013, in Jakarta, Indonesia. Details are presented in the appendix.

19. Priority activities of WG on Sustainable Development of the Agricultural and Fishery Sectors
  - a. Promoting research and development and technology dissemination.
  - b. Promoting effective management of marine ecosystems, fisheries, and aquaculture.
  - c. Strengthening farmer’s organizations and cooperation, strengthening resilience of smallholders, promoting the welfare of women in farming, empowering smallholder farmers into the food supply and value chain, and enhancing services and training for small holders.
  - d. Ensuring sustainable management of natural resources such as land and water, enhancing positive externalities and minimizing negative social and environmental externalities of agriculture and fisheries, increasing resilience to natural disasters and global climate change, and providing food safety net, including proper nutrition for vulnerable communities.

20. Priority Activities of WG on Facilitation of Investment and Infrastructure Development
  - a. Promoting investment in agriculture including through promoting the Principles for Responsible Agricultural Investment (PRAI).
  - b. Infrastructure development and analyzing the impacts of Foreign Direct Investment (FDI).
  
21. Priority activities of WG on Enhancing Trade and Markets
  - a. Facilitating trade in food and agricultural products.
  - b. Reducing food losses and waste.
  - c. Improving governance frameworks.
  - d. Promoting, studying and sharing of best practices of risk management methods among stakeholders in order to strengthen food security.

## **Appendix. DETAILED ACTIVITIES AND GOALS 2020**

### **WORKING GROUP ON SUSTAINABLE DEVELOPMENT OF THE AGRICULTURAL AND FISHERY SECTORS**

#### **a. Promoting Research and Development and Technology Dissemination**

Promotion of scientific research and development (R&D) and dissemination of technologies is of crucial importance. There is considerable potential for further advances in R&D in the fields of agriculture and aquaculture by means of public and private investment in developing countries.

##### **Goals 2020:**

1. Promoting private and public R&D spending in agriculture and fishery.
2. Creating an attractive investment climate to encourage more private sector R&D investment in agriculture and fishery.
3. Promoting interaction between research institutes and innovation centers in APEC economies by means of establishing a regional network of such institutions and centers.
4. Developing effective public technology dissemination systems to enhance capacity-building and promoting agricultural knowledge sharing and transfer, while ensuring that gender-sensitive dissemination systems are created.
5. Promoting effective mechanisms to facilitate voluntary public-private technology transfer, while respecting intellectual property rights.
6. Developing policy environments for the use, regulation and trade of innovative and emerging technologies.
7. Developing technologies for efficient use and sustainable management of agricultural and fishery resources.
8. Developing technologies such as climate-smart agricultural technology to adapt to or mitigate the impact of climate change.
9. Providing open access to publicly funded agricultural relevant data, such as the G8 Open Data initiative.
10. Supporting initiatives to drive sustainable productivity gains, such as the G20 Meeting of Agricultural Chief Scientists whose goals are to identify global research priorities and targets, facilitate collaboration between public and private sector organizations in key areas, and track progress on established goals over time.
11. Conducting an analysis on agricultural and fishery areas and resources under stress and determine means and ways to return its potentials into full recovery or regenerate.

#### **b. Promoting Effective Management of Marine Ecosystems, Fisheries, and Aquaculture**

The APEC region accounts for two-thirds of the world's wild capture fisheries and more than 80% of the total world share in aquaculture production. Population in APEC member economies consumes around 70% of the world's fish products and fish provides a significant portion of animal protein consumption in the region, especially for low-income, food-deficit economies. For the past 50 years aquaculture has been the fastest growing food production sector in the world, with an annual growth rate of 8,9%. Most of aquaculture production in Asia, or 85%, are small-sized farms.

On the other hand, in recent decades wild fisheries around the world have faced serious problems, namely degradation of the marine and freshwater environments, over-exploitation of marine resources, and illegal, unreported and unregulated (IUU) fishing. These have caused damage to ecosystems and depleted fisheries resources. Related to aquaculture, the lack of effective disease management technology for farmers in developing countries poses a huge risk. Rapid and uncontrolled development of coastal aquaculture also have significant adverse environmental impacts.

**Goals 2020:**

1. Improving fisheries management and sustainable aquaculture practices.
  - a. Increasing the number of APEC economies that ratify, or adhere to, the United Nations Convention on the Law of the Sea (UNCLOS), the United Nations Fish Stocks Agreement (UNFSA), 1982; the Food and Agriculture Organization of the United Nations Compliance Agreement, 1993; United Nations Fish Stocks Agreement (UNFSA), 1995; FAO Port State Measures Agreement, 2009,
  - b. Increasing the number of APEC economies that implement the FAO Code of Conduct for Responsible Fisheries, 1995; FAO four International Plans of Action on Seabirds, Sharks, Fishing Capacity, and IUU fishing, 2001; the Strategy for Improving Information on Status and Trends of Capture Fisheries (Strategy-STF), 2003; and the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security, 2012,
  - c. Combating illegal, unreported and unregulated (IUU) fishing and associated trade and improving fisheries management,
  - d. Sharing best practices and ensuring capacity building, information exchange and the provision of technical and financial assistance between APEC member economies on combating IUU trade in living marine resources and trade in illegally obtained fish production,
  - e. Improving traceability of fish and fish products for consumer protection,
  - f. Encouraging APEC economies to take voluntary measures, as appropriate, regarding certification of sustainable fishery and aquaculture products used directly as foodstuffs and indirectly as feed products, and
  - g. Identifying the economic and food security benefits of rebuilding overfished stocks and putting in place measures to rebuild such stocks.
2. Reducing excess fishing capacity.
  - a. Identifying mechanisms to better manage fishing capacity, such as through projects that facilitate the sharing experiences of APEC economies in fishing capacity reduction and adjustment, to help ensure a balance between such capacity and long-term resource sustainability, and
  - b. Aligning the capacity of the world's fishing fleets with the productivity of their target fish stocks, recognizing the special circumstances, requirements and interest of developing economies and artisanal fishers in developing their fisheries, consistent with the principles of sustainable development and relevant international instruments.
3. Promoting sustainable aquaculture practices.

Sharing best practices between APEC member economies in technologies and innovations on disease management, promoting sustainable, environmentally

and socially responsible feed production systems, recognizing the special circumstances and requirements of developing economies in aquaculture production.

4. Promoting contributions of sustainable managed small scale fisheries and aquaculture to food security.  
Creating greater market access for sustainable harvested fish products of small and medium enterprises (SMEs), small-scale fishers, and small scale aquaculture farmers.
5. Increasing investment in fishery human resources through trainings on technical capacity to foster more rapid implementation of best practice fishery management and legislative measures.
6. Improving gender equality in fishery development and ensuring that modernization and efficiency measures in this sector do not discriminate against women.

**c. Strengthening Farmer's Organization and Cooperation, Strengthening Resilience of Smallholders, Promoting the Welfare of Women in Farming, Empowering Smallholder Farmers into the Food Supply and Value Chain, and Enhancing Services and Training for Small Holders.**

Small farmers provide around 80% of food consumed in developing regions of Asia. Farmers' organizations and cooperatives play an important role in providing small farmers need on a wide range of services. These organizations play also a critical role in empowering farmers, including women, by providing training in the various fields, such as on natural resource conservation, as well as providing greater access to information, technologies, and innovations.

**Goals 2020:**

1. Providing easy and simple access for small holders to agricultural financial sources.
2. Supporting small holder farmers' participation in agricultural insurance in order to reduce farming risks.
3. Empowering farmers and farmer groups or organizations through agricultural education and training, access to information, and technology transfer.
4. Providing small holder farmers and farmer organizations, including women farmers and traders, equitable access to markets and information on production, supply, demand, and prices of agricultural and fishery products in order for them to effectively participate in the markets.
5. Facilitating agricultural and fishery best practices sharing through training, extension services, and technology transfers.
6. Expanding access of women to local and regional agricultural associations, noting that women's groups and cooperatives are often the most difficult to form and sustain.
7. Conducting the targeting programs for women in agriculture by using gender-based analysis of programs' impacts to ensure these women receive maximum benefits from the efforts to achieve sustainable food security.

**d. Ensuring Sustainable Management of Natural Resources such as Land and Water; Enhancing Positive Externalities and Minimizing Negative Social and Environmental Externalities of Agriculture and Fishery; Increasing Resilience to Natural Disasters and Global Climate Change; and Providing Food Safety Net, Including Proper Nutrition, for Vulnerable Communities.**

Soil degradation, desertification, accumulation of salts in soils, overuse of chemical fertilizers, pollution of underground water, release of greenhouse gases, the growth of cities; all of these factors have decreased the world's arable land by 51 million hectares since 1992. Agriculture is also particularly vulnerable to climate change. Many APEC economies are prone to natural disasters. Agriculture has positive externalities such as flood and soil erosion prevention. On the demand side, there is still exist a sizable proportion of population in APEC member economies consumes food and nutrition below daily recommended. Meanwhile proper nutrition consumption is important during early child development, especially during the first 1,000 days. Evidence has shown that optimal nutrition during this time can have a lasting impact on a child's growth, learning, and future productivity.

**Goals 2020:**

1. Promoting agricultural production practices that assist in adapting to, and mitigating of the impact of climate change.
2. Promoting sustainable crop diversification and agricultural production practices which contribute to enhancing land conservation while reducing chemical fertilizer dependencies.
3. Developing and introducing effective conservation systems to maintain soil fertility.
4. Developing sustainable agriculture by encouraging the use of environmentally low impact resources such as fertilizers and converting negative externalities of agriculture such as groundwater pollution and greenhouse gas emission to positive externalities of agriculture such as soil sequestration of Green House Gases( GHGs).
5. Facilitating technology transfers and best practices sharing in the area of sustainable management of land and water resources.
6. Using advanced technology to monitor conditions of land and water resources in APEC economies and sharing of data and considering potential links to this goal and the ongoing implementation of the Group of Earth Observation Global Agricultural Monitoring(GEO-GLAM )initiative
7. Increasing public-private investments in the construction of land-reclamation programs in APEC economies.
8. Promoting the sustainable use of natural resources by all people and societies.
9. Developing universal and voluntary guidelines on natural disaster preparedness for farmers and industries.
10. Facilitating data and information sharing as well as best practices to expand natural disaster preparation and recovery.
13. Building a coherent public-private cooperation system framework in the food and market supply chain for natural disaster management.
14. Facilitating investment for agriculture and fishery infrastructure construction and renovation to prevent and prepare for natural disasters.
15. Improving sustainable irrigation by greater investments in water infrastructure.
16. Promoting technical cooperation in order to improve water resources management in developing countries.

17. Promoting water management and renovation of old facilities for more efficient use of limited water resources.
18. Promoting Participatory Irrigation Management (PIM) and the understanding of multifunctionality of paddy fields and agricultural water in cooperation with the International Network for Water and Ecosystem in Paddy Fields (INWEPF).
19. Identifying policy options and market approaches that give sufficient incentives to farmers, agri-food sector, and consumers to better react to market changes and contribute to enhancing positive externalities such as soil erosion prevention and flood prevention.
20. Identifying food insecure communities and taking targeted steps to overcome the problems, including provision of proper nutrition mainly for pregnant women and children.

## **WORKING GROUP ON FACILITATION OF INVESTMENT AND INFRASTRUCTURE DEVELOPMENT**

### **a. Promoting Investment in Agriculture Including through Promoting the PRAI (Principles for Responsible Agricultural Investment)**

### **b. Infrastructure Development and Analyzing the Impact of Foreign Direct Investment (FDI)**

Low levels of public and private investment in agriculture and infrastructure can lead to low productivity and stagnation of production of many major crops in developing countries. The lack of infrastructure, institution, policies and services facilitating the free flow of goods need to be addressed, such as market access, border administration, telecom and transport infrastructure, and business environment.

Establishing the food supply chain with a cold chain infrastructure, transport and communications infrastructure/services through a strong PPP (Public and Private Partnership) scheme could be strongly effective in reducing food losses and wastes and may also lead to the development of food manufacturing industries which are important for the sustainable economic growth of emerging economies.

#### **Goals 2020:**

1. Increasing public investments in agriculture.
2. Creating an attractive business environment to encourage more private sector investments in agriculture.
3. Ensuring a high level of investor protection, including safeguarding and enforcing the rights and claims of investors and protecting robust intellectual property rights including Plant Variety Protection (PVP).
4. Consolidating information on each economy's regulatory framework for agricultural investment and specific investment information on the Asia-Pacific Information Platform on Food Security (APIP).
5. Sharing good practices of agricultural investments through APIP.
6. Creating lists of prospective infrastructure projects for development using the mechanisms of state-private partnership in the framework of the PPFS.
7. Developing conditions for a functioning, unified transport and logistics network in APEC economies.
8. Reducing post-harvest losses through infrastructure development of food markets and supply chains, including the use of public/private partnerships.

9. Developing a framework of activities/business plans in accordance with the Principles for Responsible Agricultural Investment (PRAI), for APEC economies.
10. Forming a policy/roadmap in the development of the food industry utilizing a cold chain infrastructure and starting several pilot projects for building the cold chain infrastructure in the selected economies through public-private partnerships.
11. Promoting responsible agricultural investments that contribute to food security and nutrition within the framework of the RAI principles which is expected to be endorsed by the UN Committee on World Food Security's in October 2014.
12. Supporting investment programs aimed at strengthening the food security of APEC economies within a framework of cooperation with international financial institutions (banks, funds, etc.).
13. Disseminating knowledge on the use of satellites and information technology to enable the use of "precision farming" techniques.
14. Surveying and mapping unused land suitable for production in APEC economies, taking into account the availability of water resources and the impact on biodiversity.
15. Addressing supply chain barriers to trade, such as market access, boarder administration and telecom and transport infrastructure.

## **WORKING GROUP ON ENHANCING TRADE AND MARKETS**

### **a. Facilitating Trade in Food and Agricultural Products**

Trade in agricultural products plays a key role in ensuring food security. All trade-related measures need to be in compliance with current WTO commitments.

#### **Goals 2020:**

1. Ensuring an affirmation of the pledge to end protectionist measures in trade of agricultural products.
2. Studying the impact of trade-related measures, especially export measures that impact food security.
3. Promoting development of regionally integrated markets.
4. Strengthening confidence in agricultural markets and establishing effective systems of collecting and disseminating market information.
5. Promoting harmonization of standards and adherence to international, science-based standards, i.e. Codex, World Organization for Animal Health (OIE), International Plant Protection Convention (IPPC).
6. Ensuring compliance with the WTO notifications requirement on export restrictions/prohibitions in order to enhance transparency.
7. Reaffirming our pledge to refrain through the end of 2015 from imposing new export restrictions (Declaration of APEC leaders, 2012).
8. Ensuring effective global data standards for the connectivity of the food supply chain in support of APEC's existing supply chain objectives and in coordination with the CTI:
  - a. reviewing deployment of data standards in the framework of APEC and taking into account the interests of the food industry,
  - b. bringing the benefits of using global data standards to the attention of national food authorities, and
  - c. introducing "smart" supply chains with the use of advanced technologies in satellite navigation and intelligent transportation systems.

9. Analyzing food market information such as price levels and the impact of price volatility throughout APEC economies.
10. Increasing transparency of the market by means of:
  - a. obtaining more accurate data on production, consumption, trade and stocks in APEC region, and
  - b. continuing maintenance and upgrading of APIP, creating links between APIP and the G20/AMIS as well as the ASEAN Food Security Information System (AFSIS).

## **b. Reducing Food Losses and Waste**

Loss and waste of food occurs at all stages of the food supply chain because of deficiencies in infrastructure, training, and education and includes actions by farmers, suppliers, and consumers. Data on food loss are very limited and requires greater research.

### **Goals 2020:**

1. Developing unified methodologies to estimate food losses and waste.
2. Identifying major sources of food loss and waste in the distribution channel (farm storage, food harvesting, food processing industries, transportation, retailers, and households), and compiling regional strategies for specific products in both developing and industrialized nations.
3. Introducing a plan for reaching a targeted rate of food loss and waste reduction
4. Facilitating the sharing of best practices in the APEC region.
5. Strengthening food supply chains and reducing food losses in developing economies through public-private partnerships:
  - a. providing farmers with necessary technologies and managerial knowledge in handling and storage through improved extension services,
  - b. enhancing investments in modern agricultural machinery and equipment, storage facilities and transportation infrastructure,
  - c. facilitating programs that encourage smallholder farmers to organize, diversify and scale up their production and marketing, and
  - d. enhancing investments in the food supply chain with cold chain infrastructure in order to develop the food manufacturing industry and help increase revenues for farm producers.

## **c. Improving Governance Frameworks**

A number of separate public agencies deal with the various aspects of food security. A few economies in the APEC region have a centralized agency as a coordinating body which is tasked to deal with food security as a whole. Various communication strategies with stakeholders, including the private sector, are undertaken in APEC economies with regards to food security policies.

### **Goals 2020:**

1. Sharing strategies and experiences among APEC economies regarding their food security policy governance frameworks and their food security communication strategies with the private sector.
2. Determining the best or, at least, better governance framework for food security policy and communication strategies in each APEC economy, for example by establishing policy deliberating council with private sector and civil society membership for the purpose of incorporating external stakeholders' viewpoints

at the policy planning stage; conducting public hearings before important policy decisions are made; establishing policy evaluation council with private sector and civil society membership to objectively evaluate various policy decisions and their implementation.

**d. Promoting Studying and Sharing Best Practices in Risk Management Methods among Stakeholders in order to Strengthen Food Security**

Transitory food insecurity refers to unpredictable and abrupt occurrences in food production and trade which cause a temporary decline in access to adequate food. Unpredictable threats could be political, technical, demographic, or environmental. For example, the recent world food price hikes in 2007 and 2008 caused food insecurity in many countries and induced various policy actions including introduction of export restrictions, pursuance of self-sufficiency and establishment of food reserves.

**Goals 2020:**

1. Evaluating the likelihood and impact of food security threats, with soliciting stakeholder input during the evaluation process.
2. Creating diversified strategies to respond to various potential economic and environmental risks for each of the APEC member economies.
3. Sharing best practices in risk management methods to strengthen food security in APEC economies.

\*\*\*