STRATEGIC PLAN OF ACTION ON ASEAN COOPERATION IN CROPS (2016 – 2020)

A Study Report

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7/3/2014

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Abbreviations and Acronyms

AADCP	ASEAN-Australia Development Cooperation Program
ACCFS	ASEAN Coordinating Committee on Food Safety
ACCSQ	ASEAN Consultative Committee on Standards & Quality
ACEDAC/ ASWGAC	ASEAN Centre for the Development of Agricultural Cooperatives/ ASEAN Sectoral Working Group on Agricultural Cooperatives
ADB	Asian Development Bank
AEC	ASEAN Economic Community
AEGFS	ASEAN Experts Group on Food Safety
AFCC	ASEAN Multi-Sectoral Framework on Climate Change: Agriculture, Fisheries and Forestry towards Food Security
AFSIS	ASEAN Food Security Information System project
AFSRB	ASEAN Food Security Reserve Board
AIFS	ASEAN Integrated Food Security Framework
AINRD	Agriculture Industries and Natural Resources Division
AMAF	ASEAN Ministers of Agriculture and Forestry
AMS	ASEAN Member States
APEC	Asia- Pacific Economic Cooperation
APTCS-FSBD	ASEAN Plus Three Comprehensive Strategy on Food Security and Bioenergy Development
APTERR	ASEAN Plus Three Emergency Rice Reserve
ASCC	ASEAN Socio-Cultural Community
ASEC	ASEAN Secretariat
ASWG	ASEAN Sectoral Working Group
ASWGC	ASEAN Sectoral Working Group on Crops
ASWGFi	ASEAN Sectoral Working Group on Fisheries
ASWGL	ASEAN Sectoral Working Group on Livestock
ATFC	ASEAN Task Force on CODEX
ATFFS	Ad-Hoc ASEAN Task Force on Food Security
AWG	ASEAN Working Group
ATWGARD	ASEAN Technical Working Group on Agricultural Research and Development
AWGATE	ASEAN Working Group on Agricultural Training and Extension
ASWGAC	ASEAN Sectoral Working Group on Agricultural Cooperatives
CAC/ CODEX	Codex Alimentarius Commission
CEPT	Common Effective Preferential Tariff
CLMV	Cambodia, Laos, Myanmar and Vietnam
EAERR	East Asia Emergency Rice Reserve pilot project
ERIA	Economic Research Institute for ASEAN and East Asia
EWG	Expert Working Group
EWG GAP	Expert Working Group on Good Agriculture Practice
EWG PS	Expert Working Group on Phytosanitary Measures
FAF	Food, Agriculture and Forestry
FAO	Food and Agriculture Organization
GAP	Good Agriculture Practice
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German Development Cooperation)
IAI	Initiative for ASEAN Integration
IFPRI	International Food Policy and Research Institute
IPPC	International Plant Protection Commission
Joint Committee	Joint Committee on ASEAN Cooperation on Commodity Product Promotion Scheme
MRL	Maximum Residue Levels
MTR	Mid-Term Review

NDG	Narrowing the Development Gap
NGO	Non-Government Organization
NTB	Non-Tariff Barriers
NTM	Non-Tariff Measures
PPE	Public- Private Sector Engagement
SEOM	Senior Economic Officials Meeting
SOM-AMAF	Senior Officials Meeting of the ASEAN Ministers on Agriculture and Forestry
SPA	Strategic Plan of Action
SPA-C	Strategic Plan of Action on Crops
SPA-ES	Strategic Plan of Action on Food and Energy Security
SPA-FAF	Strategic Plan of Action on Food, Agriculture and Forestry
SPA-FS	Strategic Plan of Action on Food Security
SPS	Sanitary and Phytosanitary
ST	Strategic Thrust
TOR	Terms of Reference
WG	Working Group
WTO	World Trade Organization

Executive Summary

A. Introduction

The Special Meeting of SOM-34th AMAF agreed on the need to relook and develop a post 2015 vision, and objectives and goals for ASEAN Cooperation in Food, Agriculture and Forestry (FAF) sectors by mid 2015. The main purpose of this report is to assist Agriculture Industries and Natural Resources Division (AINRD) in developing the objectives, goals and strategies of the ASEAN 5 years '(2016-2020) Strategic Plan of Action (SPA) for the crop sector and in providing recommendations to enhance and facilitate the implementation of this 2016-2020 SPA. Furthermore, it provides sectoral input into the overall FAF Roadmap together with sectoral inputs from forestry, food, fisheries and aquaculture,

The terms of reference (TOR) comprises 3 main components, viz : (a) stock take the progress and achievements in ASEAN integration related to Crops sector as part of the overall ASEAN integration process; (b) identify and analyse current global and regional economic trends, issues and challenges for Crops post 2015, and (c) recommend strategies for the crop sector to meet these challenges and emerging issues as well as institutional measures to enhance cooperation and coordination within and among related sectors for SPA implementation.

The approach taken in this study is a desk review of current programme frameworks, FAF SPAs and related literature, together with documents and reports requested from and through AINRD. The scope of documentation review is limited to recent meetings reports and documents since 2010. Besides the ASEAN Roadmap and its respective Blueprints, ASEAN Economic Community (AEC)Scorecard and in particular the SPA of ASWGC, the meeting reports of the crops and crop-related sectors and bodies administering, overseeing and/or engaging in crops sector-related activities, are used as well.

B. ASEAN Policy on Cooperation on Crops

In the ASEAN Vision 2020 Statement, agreed at the 2nd Informal ASEAN Summit, December 1997, the direction given to the food, agriculture and forestry sectors was to "enhance food security and international competitiveness of food, agriculture and forest products, to make ASEAN a leading producer of these products, and to promote the forestry sector as a model in forest management, conservation and sustainable development",

The six strategic thrusts in the SPA of 2006-2010 were:

1. Strengthening of Food Security Arrangements in the Region; *[Sectors :Food(Security), Agriculture(Cooperatives, Fisheries)]*[1]
2. Enhancement of International Competitiveness of ASEAN Food and Agricultural Products/Commodities; *[Sectors: Food (Handling-Halal), Joint Committee on ASEAN Cooperation, Agriculture(Crops, Fisheries, Livestock)]*
3. Enhancement of ASEAN Cooperation and Joint Approaches on International and Regional Issues;*[Sectors : Joint Committee on ASEAN Cooperation, Agriculture(Crops, Fisheries, Livestock)]*
4. Development and Acceleration of Transfer and Adoption of New Technologies; *[Sectors: Joint Committee on ASEAN Cooperation, Agriculture(Cooperatives, Crops, Extension, Livestock)]*
5. Enhancement of Private Sector Involvement;*[Sectors : Joint Committee on ASEAN Cooperation, Agriculture(Cooperatives, Crops, Fisheries, Livestock)*]
6. Management, Sustainable Utilization and Conservation of Natural Resources. *[Sectors :Agriculture (Extension, Fisheries)]*

With the inception of the ASEAN Roadmap in 2007 and the commitment to realization of an ASEAN Community especially the AEC brought forward to 2015, the themes and strategic thrusts remained the

[1] *-Sectors involved*

same.

The ASEAN Sectoral Working Group on Crops (ASWGC) has oversight of the Crop Sub-Sector. The goal of the Crops Sub-Sector ASWGC is to promote the sound development of the sector in the ASEAN region by identifying areas of cooperation among the ASEAN Member Countries as well as with third countries, groups of countries or international agencies. The development of the sector is guided by the AEC Blueprint with the implementation of the Roadmap to ASEAN Community. The ASWGC develops its own Strategic Plan of Action of the Crops (SPA-C) to achieve the broader goals of the AEC Blueprint for FAF. Of the 6 strategic thrusts of FAF, the Crops subsector incorporated Thrusts 2-5 into their SPA.

There were a number of other working groups and committees involved in crop activities such as Ad-Hoc ASEAN Task Force on Food Security, ASEAN Technical Working Group on Agricultural Research and Development, ASEAN Sectoral Working Group on Agricultural Training and Extension, Joint Committee ASEAN Cooperation on Commodity Product Promotion and ASEAN Sectoral Working Group on Agricultural Cooperatives. The risk of overlap of activities undertaken is ever present especially with the onset of multi-sectoral frameworks such as ASEAN Integrated Food Security Framework (AIFS), ASEAN Plus Three Comprehensive Strategy on Food Security and Bioenergy Development (APTCS-FSBD) and the **ASEAN** Multi-Sectoral Framework on Climate Change: Agriculture, Fisheries and Forestry towards Food Security (AFCC).

C. Global and Regional Trends and Issues

A scan of the global and regional agriculture scene revealed that the major trends and issues prevailing in the next five years or thereabouts are :

- *Increasing demand for food and a changing food consumption pattern*
  The world population will continue to increase another 750 million by 2022 to 7.8 billion. The demand for food will still increase 70% by 2050. With the growing affluence of the large emerging economies, diets are moving away from cereals to higher protein foods.

- *Competing demands and diminishing quality and quantity of natural resources grows*
  Intensification of human activities including farming depletes and threatens the quality of natural resources. Progressive breakdown of ecosystems stems from a combination of demographic pressure and unsustainable natural resources management practices.

- *Crop productivity slows down*
  Average world yield growth for crops and especially for cereals has been slowing in part due to reduced investment in crop research and development, reduced dissemination of improved varieties, degradation in agro-ecological conditions and unsustainable agricultural management practices.

- *Rising food price and volatility*
  Food prices will trend upward during the first few decades of the 21st century in lieu of supply and demand. Prices might not be as high as at crisis levels but it will continue to rise as a result of the slowdown in yield growth and rising demand.

- *Prevalence of climate change and natural disasters*
  Over the next 10–20 years, climate change may prove to be the greatest threat to food security. Evidence of climate change is accumulating. It is increasingly negatively impacting agriculture, forests and fisheries. In spite of the measures that may be taken to mitigate it, its impact will continue to increase. The international community has so far been incapable of taking firm action to control greenhouse gas (GHG) emissions

- *Globalization and trade expansion*
  The volume of international trade in agricultural products has been increasing considerably. The

trend is expected to continue. This increase reflects more intraregional trade and also more trade between distant countries. Developing countries have participated actively in this trade expansion. The increased volume of agricultural trade reflects economic growth and an increased economic integration which involves agri-food systems across the world.

D. ASEAN Challenges

From the perspective of the trends and issues in the global and regional arena, 6 development challenges are identified for the crop sector as of significance :

a. *Increase food crop production and rural development and their contribution towards economic development and integration of ASEAN*
Ensuring equitable growth and deeper economic integration among ASEAN economies comes down to generating robust growth while maintaining that it is inclusive and equitable. A robust agriculture development is not only critical to the food security of the population at large but also is key to poverty alleviation by raising future incomes and overall quality of life of the rural population and thus achieving the goal of inclusive growth.

b. *Promote and enhance sustainable, efficient and equitable natural resources management and utilization programmes in food and non-food agricultural production*
Limited and yet highly competitive demand for natural resources as well as intensification of farming activity will put pressure on the environment. Environmentally sustainable use of natural resources has to be guided by “green economy” policies to protect and conserve these resources from degradation and pollution

c. *Accelerate technology diffusion and absorption in key crop agriculture production areas through collaborative research and development and technology transfer via strategic alliances with private sector and dialogue partners as the industry upg*rades
Given the low productivity of agriculture in ASEAN and in the face of depleting land and water resources and stagnating crop productivity, science and technology solutions are critical in advancing crop agriculture productivity, improving market competitiveness, transforming key agriculture production systems with sustainability approaches, improving food safety and nutrition, and adapting to and mitigating climate change.

d. *Strengthen food security and resilience in farm production to minimize food price volatilities and improve nutrition security*
To achieve the goal of ensuring long-term food security and to improve the livelihoods of farmers in the ASEAN region, ASEAN needs to increase food production; reduce postharvest losses; promote conducive market and trade for agriculture commodities and inputs; ensure food stability; promote availability and accessibility to agriculture inputs; improve nutrition security and operationalise regional food emergency relief arrangements.

e. *Minimize the adverse impact of climate change on agriculture and food security as well as reduce their contributions to climate change*
A multi-sectoral approach is necessary to integrate climate change adaptation and mitigation measures into strategies for agriculture in vulnerable agriculture and rural sectors and mainstream climate change actions into ASEAN socio-economic development programmes. Given the uncertainty surrounding climate change, the implementation of anticipatory measures is challenging, as they require in-depth information and knowledge about climate change and its impact.

f. *Promote and enhance intra- and extra-ASEAN trade and long-term competitiveness of ASEAN agriculture products for integration into a single market and production base of global competitiveness standing*
Among the priorities foci for integration are enhancement of trade among ASEAN member countries, and long-term competitiveness of their food and agriculture products. By continuing to

harmonize their standards and quality and by standardizing their trade certifications of major traded commodities, their agricultural products are expected to become more globally competitive. As the tariff is almost zero in Common Effective Preferential Tariff **(**CEPT) scheme, the main issues are shifting from tariff to wider trade facilitation issues including entrenched Non-Tariff Measures (NTMs).

E. Issues in ASEAN Cooperation

a. *Work Scope of Sectoral Working Group*
The work scopes of TOR of working groups are too general. As such it contributes to an overlap in scope of activities as well as uncertainty in demarcation of areas to cover in terms of working out projects to accomplish strategic thrusts. Further, there are numerous WGs involved in crop activities. The risk of overlap and inefficiencies results from limited communication and cooperation amongst the relevant WGs.

b. *Cross-Cutting and Emerging Issues*
Leaving thematic issues to sectoral bodies and groups to cherry pick projects and activities would be inadequate in an era where results and timeline matter.

c. *Sub-regional cooperation programmes*
From an overall perspective and feedback, there is also an overlap and possible duplication of efforts in economic development and even spreads thin efforts at national level.

d. *Lack of private sector involvement*
Lack of private sector participation and consultation in the setting of standards compromises the impact of measures implemented. Private sector is under-utilized as an engine for growth in raising productivity and modernizing the value chain of production systems.

e. *Country or Networking initiatives*
These initiatives lagged in formal commitment, implementation milestones, project indicators, impact assessment and final follow-up upon completion as compared to donor-supported projects

f. *Partnership/cooperation arrangements*
Continual engaging of dialogue and development partners without engagement criteria spreads thin limited resources.

F. Recommendations

The priority areas for Crops cooperation and development are (a) increase food production and food security (b) trade facilitation to enhance competitiveness and economic community integration (c) enable sustainable crop agriculture production (d) increase the resilience of crop agriculture to climate change (e) accelerate diffusion and transfer of the enabler - technology and best practices for increased productivity.

To improve the coordination and effectiveness in ASEAN cooperation on crops, the recommendations include (a) setting up an overarching body such as decentralised Centre for Crop Agriculture to coordinate crop activities that are spread over a number of ASWGs and AMAF subsidiary bodies (b) revise ASWGC's TOR and realign ASWGC's focus to more crop-centric matters (c) capitalise and synergise existing subregional cooperation arrangements and (d) formulate engagement criteria with potential partners (e) set up research project funding under a bidding selection process

The SPA has been reviewed. It is recommended that the SPA (2016-2020) action plan comprises 6 strategic thrusts (ST), viz:

a. Enhancement of international competitiveness of ASEAN food and agricultural

products/commodities;
b. Development and acceleration of transfer and adoption of new technologies
c. Enhancement of private sector involvement
d. Strengthening food production and productivity
e. Sustainable management and utilization of resources
f. Responding to climate change

Strategic objectives for each ST, are also proposed. Aside from clarifications, the 6 proposed STs received favorable feedback and endorsement from the 21st ASWGC held in June 2014 in Cambodia.

The goal for the ASEAN cooperation on crops is to be a productive, competitive, sustainable, resilient and inclusive industry sector that ensures economic and equitable integration, food security, sustainable management of resources and protection from climate change.

STUDY REPORT FOR THE STRATEGIC PLAN OF ACTION ON ASEAN COOPERATION IN CROPS (2016 – 2020)

1. Introduction

1.1. Background

Recognising the target date to realise the ASEAN Community is fast approaching, the ASEAN Leaders, at their 22nd ASEAN Summit held in April 2013 in Brunei Darussalam, have tasked all ASEAN Community Councils to begin work on a post-2015 vision, including consideration of what should form the next stages of ASEAN's integration efforts across the three pillars, as well strategic ideas on how ASEAN can maintain its relevance in the evolving regional architecture. To follow-up the Leaders' guidance, the Special Meeting of the Senior Officials Meeting of The ASEAN Ministers on Agriculture and Forestry SOM-34th AMAF agreed on the need to develop a vision, objectives and goals of the ASEAN Cooperation in Food, Agriculture and Forestry (FAF) sectors towards 2020, based on the review of the current framework and Strategic Plan of Action (SPA).

The study of each FAF sector will be conducted by their respective consultant in consultation with the Ad-hoc Taskforce (representatives from AMSs appointed by SOM-AMAF), ASEAN Sectoral/Working Groups under SOM-AMAF, relevant stakeholders and Dialogue and Development Partners. The objectives of the Crops sectoral study are: (a) stock take of progress and achievements in ASEAN integration related to Crops sector; (b) identify and analyse current global and regional economic trends, issues and challenges for Crops, (c) reconcile policy instruments and framework related to Crops, including cross-cutting issues such as food security, biofuel, R & D climate change, etc. ;(d) provide guidance to ASEAN Sectoral Working Groups (ASWG) Crops and related AWGs as well as relevant stakeholders and Dialogue/Development Partners on how to enhance their efficiency and contribution in support FAF and collaboration with other sectors beyond 2015, and (e) propose recommendations to meet post 2015 ASEAN challenges to Crops sector including opportunities and new strategies to ride on ASEAN integration initiatives.

1.2 Methodology

The report is based on a desk review of related literature, together with documents and reports requested from and through AINRD. The scope of documentation review is limited to post 2010 meetings. Besides ASEAN Economic Community (AEC) Blueprint and Scorecard and Strategic Plan of Action (SPA) of ASWGC and related working groups, the meeting reports of the bodies administering, overseeing and/or engaging in crops sector-related activities, was be used as well.

The process of preparation and revision of the draft is undertaken in consultation with the Ad-hoc Task Force on Developing New Vision on Food, Agriculture, and Forestry, the Agriculture Industries and Natural Resources Division (AINRD), and related ASEAN Sectoral/Working Groups under SOM-AMAF, relevant stakeholders and Dialogue and Development Partners. They provide inputs and comments to the draft output documents in the development of objectives, goals and strategies of the post 2015 ASEAN 5 years '(2016-2020) Strategic Plan.

2. Overview of ASEAN Community Roadmap from perspective of Food, Agriculture and Forestry sectors

The Food, Agricultural and Forestry sectors are a top priority for ASEAN. In line with the guidance of the Fourth ASEAN Summit in 1992 to strengthen regional cooperation in the areas of development, production, and promotion of agricultural products, the ASEAN Ministers on Agriculture and Forestry (AMAF) identified seven priority areas as reflected in the Ministerial Understanding (MU) on ASEAN Cooperation in Food, Agriculture and Forestry signed in October 1993 in Bandar Seri Begawan. The MU acts as the umbrella of the ASEAN cooperation in food, agriculture and forestry.

1. Strengthening food security in the region;
2. Facilitation and promotion of intra- and extra-ASEAN trade in agriculture and forestry products;
3. Generation and transfer of technology to increase productivity and develop agribusiness and silvo-business;
4. Agricultural rural community and human resource development;
5. Private sector involvement and investment;
6. Management and conservation of natural resources for sustainable development; and
7. Strengthening ASEAN cooperation and joint approaches in addressing international and regional issues.

For the forestry sector, ASEAN, specifically developed five strategic thrusts, viz:

1. Sustainable forest management
2. Strengthening ASEAN cooperation and joint approaches in addressing international and regional forestry issues
3. Promotion of intra- and extra-ASEAN trade in forest products and private sector participation
4. Increasing productivity and efficient utilisation of forest products
5. Capacity building and human resources development.

The agriculture sector under AMAF comprises the crops, fisheries, and livestock sub-sectors.

2.1. Food, Agriculture and Forestry cooperation under ASEAN Community Roadmap

The important contributions of ASEAN cooperation in Food, Agriculture and Forestry (FAF) to ASEAN's economy, human and social development and environment and in particular to food security, poverty alleviation, rural development and trade facilitation are outlined in the Roadmap for an ASEAN Community (2009-2015). The basic objective of the ASEAN cooperation in FAF is to formulate and implement regional integration and cooperation activities to enhance the international competitiveness of ASEAN's food, agriculture and forestry products as well as further strengthen the food security arrangement in the region and joint positions in international fora.

2.2 AEC Blueprint

In 2007, the AEC Blueprint basically consolidated these 7 priority areas for agriculture and 5 strategic thrusts for forestry under the A7 component of the ASEAN single market and production base (Pillar 1 of the Blueprint). The goal of AEC 2015 is to establish ASEAN as an economic entity resting on four pillars: 1) single market and production base; 2) competitive economic region; 3) equitable economic development; and 4) integration into the global economy. Originally targeted for 2020, the AEC was accelerated for establishment by 2015 at the 12th ASEAN Summit of Jan 2007. In aiming to be a single market and production base by 2015, the ASEAN Economic Community (AEC) Blueprint lays out the approaches of ASEAN cooperation in food, agriculture and forestry as follows:

1. To enhance intra- and extra-ASEAN trade and long-term competitiveness of ASEAN's food, agriculture and forestry products/commodities.
2. To promote cooperation, joint approaches and technology transfer among ASEAN Member Countries and international, regional organisations and private sector.
3. To promote ASEAN agricultural cooperatives as a means to empower and enhance market access of agricultural products, to build a network mechanism linking agricultural cooperatives, and to fulfil the purpose of agricultural cooperatives for the benefit of farmers in the region.

The C2 component - Initiative for ASEAN Integration (IAI) is also a complementary part of the AEC Blueprint. The AEC 2015 cannot be achieved without narrowing the development gap between the old members and the new members of ASEAN. The primary measure of the IAI that would be significant in the FAF is in the area of technical assistance and capacity building for both private and public sectors in the CLMV (Cambodia, Laos, Myanmar and Vietnam) countries, specifically in development of infrastructure development, human resource, information and communication technologies (ICT), poverty elimination and economic integration measures.

2.3 AEC Scorecard

To ensure a timely implementation of the AEC initiatives, ASEAN has established a monitoring mechanism called the Scorecard. As a compliance tool, the Scorecard reports the progress of implementing the various AEC measures, identifies implementation gaps and challenges in realizing an ASEAN Economic Community.

The AEC Scorecard[2] of the Food, Agriculture and Forestry (FAF) sectors, reported the implementation rate as follows: Phase I (2008-2009) increased from 87.6% to 89.5% since October 2012, Phase II (2010-2011) from 67.4% to 72.12% since October 2012 and Phase III (2012-2013) reached 71.88% by end of March 2013. Implementation of the AEC 2015 Scorecard is monitored in 4 phases (2008-2009, 2010-11, 2012-2013, 2014-2015).

ASEAN has made considerable progress in implementing the AEC. The short fall mainly results from the delays in ratification of signed ASEAN-wide agreements and their alignment into national domestic laws as well as delays in implementation of specific initiatives. A measure will only be considered implemented if all the ten ASEAN Member States are able to implement the measures in their individual jurisdiction. Hence, failure of one country to move and implement the measures may result in non-implementation of regional measures. The other monitoring device in ASEAN is the Non-Tariff Barriers (NTB) Database. The NTB database is only based on official notifications of NTBs. NTBs were supposed to be eliminated by 2010, except for the Philippines (by 2012) and for CLMV (by 2015 with flexibility to 2018 for some products).

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The deadline for realizing the AEC is December 2015. The AEC Scorecard has its limitations as a subjective self-assessment compliance tool which is qualitative in nature. It also does not provide analysis and explanation of the results[3]. Given the limitations of the AEC Scorecard, plus institutional obstacles and challenges, fully achieving the AEC by the end of 2015 seems highly improbable overall. As a senior economist at the Asian Development Bank (ADB) said 2015 should not see ASEAN suddenly transformed, its nature and processes abruptly changed, its members' interests substantially altered. As remarked by ASEAN's former secretary general, Rodolfo Severino, 2015 should be viewed as "a work in progress rather than as a hard-target year".

Cascading downwards, sectoral working groups contribute to the implementation of relevant priority actions or measures by coordinating with member states for implementation at national level. Generally, the strategic approaches are agreed at the ministerial level but are based on consultation with all stakeholders including ASEAN sectoral bodies. Detailed project plans to achieve strategic objectives and goals are worked out by relevant sectoral working groups.

2.4 ASCC Blue Print

FAF activities also come within the ambit of the ASEAN Socio-Cultural Community's (ASCC) core elements of :(a) Human Development; (b) Social Welfare and Protection; (c) Social Justice and Rights; (d) Ensuring Environmental Sustainability (e) Building the ASEAN Identity; and (f) Narrowing the Development Gap. The main sections of the ASCC Blueprint related to the food, agriculture and forestry sector are B3, D8, D11, and F. Under B3 component of "enhancing food security and food safety is the strategic objective of ensuring adequate access to food at all times for all ASEAN peoples and ensure food safety in ASEAN Member States. The actions include among others :

[2] Special SOM –34th AMAF Report , August 2013

[3] Pg 36, Toward an ASEAN Economic Community—and Beyond, Asian Economic Integration Monitor (AEIM) Oct 2013

1. Harmonize national food safety regulations with internationally-accepted standards, including quarantine and inspection procedures for the movement of plants, animals, and their products;
2. Promote production of safe and healthy food by producers at all levels;
3. Ensure that food is available at all times for all ASEAN citizens;
4. Encourage the application of environmentally sound technologies in farming and food processing;

Promotion of sustainable agriculture practices by combating land degradation for sustainable land management in ASEAN Member States (AMS) is one of the listed activities under component D8 - Promoting Sustainable Management of Natural Resources and Biodiversity. D11 is specifically on promotion of sustainable forest management. Whereas component F is more generic, focussing on narrowing the development gap in relevant FAF areas.

The action lines of the ASCC are monitored using a matrix of status of implementation per characteristic and/or element. In the FAF sectors, there are currently 59 action lines. As at July 2013[4], the rate of completion or implementation is 57.6%.

[4] Special SOM-34th AMAF Report Appendix 4

3. ASEAN Policy on Cooperation in Food, Agriculture and Forestry Sectors

In the ASEAN Vision 2020 Statement, agreed at the 2nd Informal ASEAN Summit, December 1997, the direction given to the food, agriculture and forestry sectors was to "enhance food security and international competitiveness of food, agriculture and forest products, to make ASEAN a leading producer of these products, and to promote the forestry sector as a model in forest management, conservation and sustainable development".

To implement the ASEAN Vision 2020, the 20th AMAF Meeting, held on 17-18 September 1998 in Hanoi, agreed to adopt the Hanoi Plan of Action (HPA) as the first in a series of plans of action for realisation of the goals of the Vision. In it, the Strategic Plan of Action (SPA) on ASEAN Cooperation in Food, Agriculture and Forestry for the period of 1999 - 2004 was outlined for implementation. The SPA covers the overall cooperation in the three major sectors i.e. food, agriculture and forestry.

ASEAN would strive to provide adequate levels of food supply and food accessibility within ASEAN during instances of food shortages to ensure food security and at the same time, enhance the competitiveness of its food, agriculture and forestry sectors through developing appropriate technologies to increase productivity and by promoting intra- and extra–ASEAN trade and greater private sector investment in the food, agriculture and forestry sector.

In October 2003 at the 9th ASEAN Summit ASEAN Member Countries took a decision under the Bali Concord II to solidify and accelerate integration in the region. The Concord provided a set of milestones to reach the goals and objectives of the ASEAN Vision 2020 and further define the four themes of the ASEAN Vision 2020 that were set out in 1997. The goals of the Bali Concord II form an integral part of the next Plan of Action, the Vientiane Plan of Action, which is intended to serve as successor to the Hanoi Plan of Action, setting strategies, mechanisms and activities for achieving these goals for the next six year time period from 2004 to 2010.

At 14th ASEAN Summit on 1 Mar 2009 at Cha-am, Thailand, 1 March in 2009, AMSs decided to replace the Vientiane Action Programme (2004-2010) (VAP) with the Roadmap for an ASEAN Community (2009-2015). The key priority areas identified by the VAP and captured in the Roadmap for the FAF sectors under the theme -" enhancing competitiveness for economic growth and development through closer economic integration", are:

1. Facilitating and promotion inter-and extra-ASEAN trade
2. Development of appropriate technologies to increase productivity, and
3. Greater private sector involvement and investment
4. Ensuring sustainable management of land-based resources while enhancing optimum agricultural production.
5. Enhancing food security and safety

The themes 1-3 were captured under the AEC and 4-5 under the ASCC Blueprints respectively.

3.1. Strategic Plan of Action 2006 – 2010

The SPA for 2006-2010 was endorsed by the ASEAN Ministers on Agriculture and Forestry in October 2004 in Yangon. Closely adhering to the key priority areas of cooperation identified by the 1993 Ministerial Understanding on ASEAN Cooperation in Food, Agriculture and Forestry, its objective as was with previous SPAs is :
To formulate and implement regional cooperation activities to enhance the international competitiveness of ASEAN's food, agricultural and forestry products as well as further strengthen the region's food security arrangement and joint positions in international fora.

The six strategic thrusts are:

1. Strengthening of Food Security Arrangements in the Region; *[Sectors :Food(Security), Agriculture(Cooperatives, Fisheries)]*[5]
2. Enhancement of International Competitiveness of ASEAN Food and Agricultural Products/Commodities; *[Sectors: Food (Handling-Halal), Joint Committee on ASEAN Cooperation, Agriculture(Crops, Fisheries, Livestock)]*
3. Enhancement of ASEAN Cooperation and Joint Approaches on International and Regional Issues*;[Sectors : Joint Committee on ASEAN Cooperation Agriculture(Crops, Fisheries, Livestock)]*
4. Development and Acceleration of Transfer and Adoption of New Technologies; *[Sectors: Joint Committee on ASEAN Cooperation, Agriculture(Cooperatives, Crops, Extension, Livestock)]*
5. Enhancement of Private Sector Involvement*;[Sectors : Joint Committee on ASEAN Cooperation, Agriculture(Cooperatives, Crops, Fisheries, Livestock)*]
6. Management, Sustainable Utilization and Conservation of Natural Resources. *[Sectors :Agriculture (Extension, Fisheries)]*

The forestry sector has 5 related strategic thrusts that are forest and forest products-centric.

The Strategic Thrust 1 in the FAF-SP is "Strengthening Food Security Arrangements in The Region". There were four action programmes, namely:

1. Strengthening of ASEAN food security statistical database and information,
2. Establishment of a Regional Food Security Information System for ASEAN,
3. Review of the Agreement on the ASEAN Food Security Reserve, and
4. Study on Long-term Supply and Demand Prospects of Major Food Commodities such as rice, corn, soybean and sugar in ASEAN.

These action programmes were largely aimed at gathering and building information and data systems for supporting regional and national food security systems.

3.2. Overview of the Strategic Plan of Action 2011 – 2015

With the inception of the ASEAN Roadmap in 2007 and the commitment to realization of an ASEAN Community especially the AEC brought forward to 2015, the themes and strategic thrusts remained the same. There is no FAF-SPA for overall food, agriculture and forestry. Each of the sectors worked out their own detailed SPA guided by the Blueprints and ASEAN policy on cooperation on FAF. Only the AEC Scorecard is reported to SOM-AMAF.

Based on the respective sectoral SPAs of the FAF sectors, the 6 strategic thrusts are :

1. Strengthening food security arrangements in the region *[Sectors :Food(Security), Agriculture(Cooperatives, Crops, Fisheries)]*
2. Enhancement of international competitiveness of ASEAN food and agricultural products/ commodities *[Sectors : Food (Handling-Halal), Joint Committee on ASEAN Cooperation Agriculture(Crops, Fisheries, Livestock)]*
3. Enhancement of ASEAN cooperation and joint approaches in international and regional issues*; [Sectors : Joint Committee on ASEAN Cooperation Agriculture(Crops, Fisheries, Livestock)]*
4. Development, acceleration of transfer and adoption of new technologies *[Sectors: Joint Committee on ASEAN Cooperation , Agriculture(Cooperatives, Crops, Extension, Livestock)]*
5. Enhancement of private sector involvement *;[Sectors : Joint Committee on ASEAN Cooperation , Agriculture(Cooperatives, Crops, Fisheries, Livestock)]*

[5] *-Sectors involved*

6. Management, sustainable utilization and conservation of natural resources. *[Sectors :Agriculture (Extension, Fisheries)]*

Capacity building and human resource development, although not listed as specific strategic thrusts, remains an important strategic input especially in Narrowing the Development Gap (NDG) efforts under IAI, to be undertaken in the food and agriculture sectors. The IAI Work Plan 2 (2009-2015) is to assist the CLMV countries to meet ASEAN-wide targets and commitments towards realizing the ASEAN Community 2015. Work Plan 2 was adopted on 14th ASEAN Summit on 1stMarch 2009. Essentially, the Work Plan covers the areas outlined on the FAF SPA with the emphasis on capacity and infrastructure building.

Distinct from food and forestry, ASEAN cooperation in agriculture aims to enhance intra- and extra-ASEAN trade and long-term competitiveness of ASEAN's food and agriculture products by ensuring the region's agri-food production is of high quality, safe and healthy. Enabling member states to produce quality and tradable agriculture products is advanced through developing good agricultural practices (GAP), assurance standards for the production, harvesting and post-harvest handling of agricultural produce, quality standards of horticulture produce and the ASEAN maximum residue limits (MRLs) of pesticides. To facilitate intra- ASEAN trade and free flow of goods within ASEAN as per ASEAN Trade in Goods Agreement (ATIGA) commitments, the integration of the priority sector of Agro-based Products, harmonization of SPS requirements and inspection and quarantine procedures were accelerated. These measures would enhance the speedy realization of an ASEAN single market and production base.

The agriculture sector appeared to include only crops, fisheries and livestock. Their downstream activities of training and extension plus Research & Development (R&D) cut across the 3 different sub-sectors. Both agriculture extension and training and R&D have their own Working Groups.

4. ASEAN Policy on Cooperation in Crops sub-sector

The ASEAN Sectoral Working Group on Crops (ASWGC) has oversight of the Crop Sub-Sector. The goal of the Crops Sub-Sector ASWGC is to promote the sound development of the sector in the ASEAN region by identifying areas of cooperation among the ASEAN Member Countries as well as with third countries, groups of countries or international agencies. With the inception of the Roadmap to ASEAN Community, the development of the sector is guided by the AEC Blueprint. The ASWGC develops its own Strategic Plan of Action of the Crops (SPA-C) to achieve the broader goals of the AEC Blueprint for FAF. Cascaded from the FAF's objectives, the crops sectoral objective is:
To formulate and implement regional cooperation activities to enhance the international competitiveness of ASEAN's food and non-food crops produce as well as further strengthen the region's food production and supply, and joint positions in international fora.

Of the 6 strategic thrusts of FAF, the Crops subsector incorporated Thrusts 2-5 into their SPA. For 2011-2015, the action programmes under these 4 strategic thrusts are as follows :

A. Enhancement of international competitiveness of ASEAN food and agricultural products/ commodities
    1. Monitoring of the Implementation of the CEPT Scheme for AFTA for crop products
    2. Intensification of cooperation in production and processing technology development and transfer and enhancement of development, harmonization and adoption of quality standards for products.

        i. Harmonization of phytosanitary measures for crop products
        ii. Enhancement of compliance to WTO/SPS requirements for market access and competitiveness
        iii. Strengthening national frameworks for Pest Risk Analysis (PRA).
        iv. Harmonization of national standards with international standard
        v. Harmonization of Maximum Residue Limits (MRLs) of Pesticides among ASEAN Countries.
        vi. ASEAN Standards for Horticultural Produce and other Food Crops.
        vii. ASEAN-Crops Sectoral Working Group Website
        viii. ASEAN Plant Health cooperation in capacity building
        ix. Replacement of methyl bromide for fumigation
        x. Regulation of movement of biocontrol agents
        xi. Electronic Phytosanitary certification
        xii. Guidelines for ASEAN Nursery Certification for export to facilitate intra-ASEAN trade in plants
        xiii. Harmonization and Implementation of ASEAN GAP

B. Enhancement of ASEAN cooperation and joint approaches in international and regional issues
    1. Coordinating and strengthening joint positions on international and regional fora and organizations such as WTO, FAO, APEC, Codex and ASEAN Dialogue Partners.
    2. Pursuing common positions on international commodity issues

C. Development, acceleration of transfer and adoption of new technologies
    1. Identification of improved production/ post-harvest technologies available in the region and elsewhere for possible adoption in ASEAN Member Countries.
    2. Implementation of Regional cooperation to enhance vegetable research and development in ASEAN region

2.4 Enhancement of private sector involvement

1. Inviting the private sector to participate in meetings of working group

The SPA (2011-2015) for Crops subsector is in Table C.1

4.1. ASEAN cooperation in Crops-interrelated Activities

4.1.1. Food security

Highly fluctuating food prices especially during the global financial crisis in 2008 has increased food security concerns. Ensuring long-term food security has emerged as a primary goal of development in the ASEAN Community. Sustainable food production is an important aspect of securing food security.

With emphasis on addressing the long-term food security in the ASEAN region, an ASEAN Integrated Food Security (AIFS) Framework and supporting Strategic Plan of Action on Food Security (SPA-FS) are developed to provide scope and joint pragmatic approaches for cooperation among ASEAN Member States. AIFS and its 5 year (2009-2013) plan were adopted by ASEAN Leaders at the 14th ASEAN Summit in 2009. The Framework serves to promote and integrate efforts in strengthening food security and its development. The goal of SPA-FS is to ensure long-term food security and to improve the livelihoods of farmers. The objectives are as follows:

1. To increase food production;
2. To reduce postharvest losses;
3. To promote conducive market and trade for agriculture commodities and inputs;
4. To ensure food stability;
5. To promote availability and accessibility to agriculture inputs; and
6. To operationalise regional food emergency relief arrangements.

These objectives relate to the value chain of food security and supply and food production. The priority commodities for food security identified for ASEAN include rice, maize, soybean, sugar and cassava. In the implementation of the AIFS, relevant ASEAN Sectoral Bodies including ASWGC on food crops production and supply, would be accountable for the overall implementation of the AIFS Framework/SPA-FS and monitoring of commitments under their respective purview.

4.1.2. Climate change

Agriculture including crop production and distribution, is the sector most vulnerable to climate change due to its high dependence on climate and weather. The effects of climate change such as extreme climate, sea level rise, loss of biodiversity, emerging and re-emerging diseases and pest, etc. would impact food and non-food crop production. To address the emerging issues of climate change to food security, AMAF at its 31st Meeting on 10 November 2009 endorsed the ASEAN Multi-Sectoral Framework on Climate Change: Agriculture and Forestry towards Food Security (AFCC). The objective of the AFCC is to contribute to food security through sustainable, efficient and effective use of land, forest, water and aquatic resources by minimizing the risks and impacts of and the contributions to climate change. To achieve the overall goal of the framework, the following objectives are considered:

1. coordination on the development of adaptation and mitigation strategies; and
2. cooperation on the implementation of integrated adaptation and mitigation measures.

In assessing climate change impacts as well as implementing climate change mitigation and adaptation measures, the agriculture, fisheries, livestock and forestry sectors where land and water resources are basic inputs, would be primary focus areas. AFCC pursues a cross-sectoral program approach for effective food security policy making and implementation. Hence ASWGC will be working closely with the ASEAN Ad hoc Steering Committee on Climate Change and Food Security, which leads the mutual learning process on climate change and food security. In the

AFCC Strategic Plan, ASWGC is involved in 2 of the 3 main components of the framework. . Furthermore, a Climate Resilient Network (CRN) was set up with ATWGARD focal points with the support of the GIZ, through the GAP CC (ASEAN German Programme to Response to Climate Change), to facilitate exchange of experiences and piloting of climate smart agricultural practices and technologies. International and national research institutes were involved.

The AIFS also addresses emerging issues related to food security, namely climate change. In the recently endorsed AIFS 2015 – 2020 SPA, Climate Smart Agriculture will be addressed in AMS with pilot testing of technologies and practices (such as conservation agriculture, SRI, integrated crop-livestock, organic agriculture, drought and flood tolerant varieties of crops, etc.)..

4.1.3. Research and development

The SOM- 35thAMAF Meeting held on September 2013 endorsed the revised Terms of Reference of the ASEAN Technical Working Group for Agricultural Research and Development (ATWGARD). It was formed in 2003. The objectives of the ASEAN Technical Working Group on Agricultural Research and Development (ATWGARD) are:

1. to provide policy inputs for decision-making in ASEAN agricultural research and development;
2. to provide framework for ASEAN agricultural research and development prioritization; and
3. to facilitate cooperation with existing ASEAN bodies for intergovernmental networking, technical assistance, and knowledge sharing in agricultural research and development.

Its scope of activity includes :

1. Institutional and electronic fora as well as knowledge exchange systems among the ASEAN national agricultural research centres.
2. Cooperative and sub-regional R&D undertakings in food, agriculture, and forestry research.
3. Human resource development on agricultural R&D.
4. Exchange of expertise on agricultural R&D

As ATWGARD's SPA indicates that its R & D activities are primarily crops-related, the 2 Working Groups will need to work closely together for synergism and complementarity as suggested by AMSs[6].

4.1.4. Bioenergy

Biofuel is one of the factors driving up commodity and food prices as food and bioenergy crops compete for land, water and other resources. However, bioenergy development can contribute towards advancement of agricultural and rural development, climate change mitigation and energy security. Recognizing that bioenergy may have adverse impact on food security, the ASEAN Plus Three Comprehensive Strategy on Food Security and Bioenergy Development (APTCS-FSBD) Framework supported by 2010-2013 Strategic Plan of Action on Food and Energy Security (SPA-FES) was endorsed at the 11th AMAF Plus Three Meeting in Oct 2011. The 6 strategic thrusts of the SPA are as follows :

- Expounding the potentials and implications of bio-fuel production to food and energy security
- Identification and addressing emerging issues on bio-fuel development with food and energy security
- Promotion of bio-energy development from agricultural wastes towards cost reduction of agricultural inputs, improvement of farmer's livelihoods, long-term rural development and food security

[6] *Para 69, 20th ASWGC Meeting Report*

- Enhancement of cooperation on research and development for new and renewable energy sources
- Strengthening of national policy on sustainable bio-energy development striking the balance of food and fuel crop production under the food security principles
- Enhancement of consultation mechanisms between the food and energy sectors

The outputs of the Framework's SPA are incorporated as line of actions under the ASCC's component of enhancing food security and food safety. Hence Crops' partnership and knowledge input would contribute towards balancing bioenergy and food security.

4.1.5. Training and Extension

Agricultural extension and training has now become recognized as an essential mechanism for delivering information and advice as an "input" into farming. In ASEAN, there has been a growing recognition of the need to reach, influence, and benefit the multitudes of small, resource-poor farmers. For them, socioeconomic guidance focusing both on means by which farmers might maintain their income levels from improved production methods and resource utilization, and on the ways of assuring the longer term welfare of farmers and their families, is critical. Agricultural extension services are thus adding a strong social dimension to their activities.

The SPA of ASEAN Working Group on Agriculture and Training Extension (AWGATE) currently indicate their activities as:

1. Establishment and maintaining of an information network for ASEAN Member Countries in agricultural and agro-forestry technology transfer, training & extension programmes.
2. Development and implementation of collaborative training and extension programmes
3. Trainings under the South-South Cooperation Project implemented.

There are definite common and complementary areas of actions with ASWGC primarily in both upstream and downstream activities of improved and sustainable crop productivity and establishing good agriculture practices.

4.1.6. Agricultural Cooperatives

Considering that farmers and agri-food producers in ASEAN are small-scale, the empowerment of farmers through the promotion of agricultural cooperatives is an ASEAN priority. To prepare for realization of AEC by 2015, efforts should be enhanced both in promoting agriculture cooperatives at the national level and their networks at regional level. Groups of smallholders through cooperatives can realize economies of scale. The key objective of the ASEAN Center for the Development of Agricultural Cooperatives (ACEDAC) and the ASEAN Sectoral Working Group on Agricultural Cooperatives is to promote development and growth of agricultural cooperatives as a means of improving the living standard of the people, particularly the small farmers and fishermen. In empowering personnel and leadership of cooperatives, the SPA includes an initiative to enhance and develop the role of women in the agricultural cooperatives in ASEAN

The strategic thrust of direct connection with the Crops Sector's objectives is that of promotion of Intra-ASEAN trade in agricultural commodities through cooperatives.

4.1.7. Joint ASEAN Cooperation & Approaches on Commodity Product Promotion Scheme

A Joint Committee, comprising of chairpersons of the National Focal Points Working Groups or Industry Clubs, concerned government officials, the representative of the ASEAN Chambers of Commerce and Industry (ASEAN-CCI), the relevant private sector recommended by the National Coordinators, and an ASEAN Secretariat representative, oversee the implementation of the Scheme. The main aim of the scheme is to jointly promote and expand ASEAN products into international markets as well as counter trade barriers to their market access. Besides that, it also serves to enhance intra-ASEAN trade and the international competitiveness of ASEAN products. The scheme operates under a Memorandum of Understanding (MoU). The current MoU runs from 2009-2014. Excluding tuna, 10 products are on the joint promotion list for international market access, viz carageenan/ seaweeds, cocoa, coconut, coffee, forest products, palm oil,

peas & beans, pepper, cassava and tea. The SPA of the Joint Committee indicates there are several areas of overlap such as technology transfer and R&D of crop production, harmonization of quality and food safety standards, GAP, and training and extension. However because these are product or commodity specific, there are no real duplication of effort presently. The opportunity of synergies could be exploited where 2 or more working groups are working on the same discipline.

4.1.8. Initiative for ASEAN Integration (IAI)

Narrowing the Development Gap (NDG) efforts through IAI is to assist the CLMV countries to meet ASEAN- wide targets and commitments towards realizing the ASEAN Community. IAI Work Plan 2(2009-2015) was adopted on 14th ASEAN Summit on 1st March 2009. The actions under A7 component of FAF include :

1. Conduct capacity building for harmonization and inspection/sampling procedures.
2. Provide assistance to harmonize the Maximum Residue Limits (MRLs) of commonly used pesticides for widely traded crop products in accordance with international standards/guides.
3. Conduct a study by 2011 on how to increase competitiveness of food, agriculture and forestry products/commodities including addressing gap among CLMV and other ASEAN Member States in relation to food, agriculture and forestry related issues.
4. Provide assistance to CLMV by 2011 in implementing Good Agriculture / Aquaculture Practices (GAP) for agricultural and food products and develop national GAP.
5. Provide assistance to each CLMV country to harmonize Sanitary and Phyto-sanitary (SPS) measures for agricultural, food and forestry products with significant trade / trade potential.
6. Develop collaborative research and technology transfer in food, agriculture and forestry products including training and extension programmes for CLMV countries.
7. Establish strategic alliances and joint approaches with the private sectors in promoting food safety, investment and joint venture opportunities, promotion of agricultural products and market access in each CLMV country.
8. Conduct study to empower and enhance market access of agricultural products and to build a network mechanism linking agricultural cooperatives among CLMV and other ASEAN Member States.
9. Organise training workshops on Good Manufacturing Practices/Good Hygiene Practices and Sanitation Standard Operating Procedures for small and medium enterprises (SMEs) in relation to food, agriculture, aquaculture and forestry products.

Many of these actions are crops-related.

5. Achievements and Gaps of Crop Sector according to SPA to date

5.1. Summary

Overall the Crops Sector has made good progress in accordance with its stated strategic objectives. Several of these activities have been highly successful and many are continuing. Despite these achievements, there seem to be some issues. They are both procedural and substantive. There seems to be some overlap of activities among subsidiary ASEAN bodies and work with dialogue partners especially those connected with agriculture activities. Funding is a major constraint in terms of processes for approval and implementation as well as sources. Private sector engagement had been minimal. Trade facilitation measures undertaken are without market consultation. There is a lack of emphasis given to narrowing the development gap for the CLMV countries and implementing initiatives in multi-sectoral frameworks as AIFS. A summary of the achievements is Table B.2

5.2. Achievements and gaps to date

5.2.1. Strategic Thrust 2 : Enhancing their international competitiveness of ASEAN food and agricultural Products/Commodities

The Sector has undertaken 5 main priority actions in this strategic thrust 1 - to facilitate intra and external ASEAN trade in agriculture products and enhance their competitiveness. This appeared to be where the bulk of the Crops Sector effort is concentrated. Good progress is made in enhancing ASEAN competitiveness, especially through improvement and alignment of ASEAN standards of agricultural products

1. Establish Good Agricultural Practice for crop products with significant trade/trade potential by 2012-2013

A. Progress

Excellent progress has been made in the development of ASEAN Good Agriculture Practices (GAP) for fruit and vegetables. The ASEAN Good Agricultural Practices (GAP) for production of fresh fruits and vegetables and its 4 interpretative guidelines had been published. ASEAN GAP Guidelines were launched at an ASEAN Seminar on GAP on 11-12 July 2008. The establishment of national GAP programmes based on the Regional GAP standard, in most ASEAN Member States is completed. The Guidelines had been translated into the respective national languages. Legislation, where required in some countries were put in place. Regional Workshop on Benchmarking and Alignment National GAP to ASEAN GAP was held on 19-20 April 2010 in Bohol, Philippines. All national GAPs have to align with Food Safety Module of the Guidelines. The complete Guidelines comprised 4 modules – Food Safety, Environmental Management, Produce and Quality, Workers Health, Safety and Welfare. Indonesia, Lao PDR, Malaysia and Thailand have incorporated all the 4 modules into their National GAPs.

Based on the criteria if the national standard has been officially approved and the National GAP Certification Committee has been established to manage the national GAP, the AMS have all completed establishing their national GAP. GAP training and awareness programmes have been conducted extensively especially in CLMV countries.

Having established national GAPs is considered a first steps toward international recognition of the ASEAN GAP Standard.

B. Gaps

Implementation and management of the ASEAN GAP in CLM countries is still on-going. Only some AMSs have adopted all the 4 modules of the Guidelines. The focus for AEC 2015 appeared to be only the food safety module. However, even if the management of the national GAP is in place, there has to be regional and/or international acceptance of ASEAN GAP. AMSs are addressing the issue and are scheduling their efforts for completion during the window 2013-2016. There is a need for private sector engagement in the entire process especially ASEAN agro-processing and sourcing companies/supermarket chains. These companies would be the drivers for the recognition of these systems and to free them from NTMs. As important as it is,

present private sector engagement is only farmer-centric.

2. Harmonisation of national standards for quarantine inspection and sampling procedures with international standards of of phytosanitary measures (ISPMs) by 2010

A. Progress

The AMSs have generally completed harmonizing their national standards with 15 IPPC International Standard for Phytosanitary Measures (ISPMs) related to inspection and sampling, viz.: No. 6, 7, 10, 12, 13, 15, 17, 19, 20, 23, 24, 25, 28, 31, and 40. Implementation status of harmonization of the ISPMs were based on evidence that they were adopted with legislative or administrative support as part of national standard operating procedures (SOPs).However 2 AMSs are expected to complete the translation of the ISPMs into national language by Oct 2013. Harmonized inspection and sampling procedures purportedly would facilitate entry of intra-ASEAN goods via uniform clearance procedures.

B. Gap

Follow up training and documentation on harmonized inspection and sampling procures in the form of an ASEAN Manual would help standardize interpretation of the procedures as well as the level of expertise. The assessment of implementation have been largely qualitative.

3. Harmonize Sanitary and Phytosanitary (SPS) measures for crops products with significant trade / trade potential by 2015.

A. Progress

ASEAN Phytosanitary (PS) Guidelines for the importation for 7 products viz: rice-milled, potato tuber, dendrobium cut flowers, paddy, banana fruit, oil palm and citrus fruit had been completed and endorsed by AMAF since 2008. The drafts Importation Guidelines for Mango fruit, Durian fruit, Corn seed, and Coffee bean for consumption are under consideration, pending the refinement of the pest risk assessment. The process is on-going. The slow pace of guidelines development is compounded by lack of expertise in pest risk assessment and pest list development for each commodity.

The Guidelines and the Audit Check List for ASEAN Nursery Certification Scheme for Export had approved by 34th AMAF in Sep 2013 for implementation

B. Gaps

Although these harmonized guidelines are to facilitate importation of products of trade significance or potential, there is no agreed principles of harmonization or justification for product selection and prioritization for AEC 2015. The selection becomes critical if this is an on-going process with no apparent end in sight. It appeared that these guidelines are of immense importance to plant health regulatory authorities. To facilitate trade and accessibility the guidelines should be circulated widely to private sectors and traders in particular. NTMs for agricultural products continue to be high on the intra-ASEAN list of trade impediments[7].. T

4. Harmonize the food safety standards for horticultural produce and agricultural products of economic importance in the ASEAN region by 2015. (2008-2015)

A. Progress

As of Sep 2013 about 850 MRLs (Maximum Residue Limits) covering some 70 pesticides over 103 various types of horticulture produce/products ranging vegetables/fruits to oil/flour, have been harmonized and accepted as ASEAN MRLs. Some of these MRLs for minor crops have been submitted for CODEX Alimentarius Commission's endorsement as well. The process of harmonization have is undergirded by an agreed set of "Principles of Harmonisation of ASEAN MRLs" that is revised and kept dated on a regular basis. The process of harmonization is on-going because of the large number of pesticides and produce combinations involved. Since 1996, the process has evolved from mere extrapolation of CODEX MRLs to residue field trials to

[7] *Pg 29 , Impact of AFTA on Intra-AFTA Trade, ERIA Discussion Papers, May 2013, ERIA-DP-2013-05*

generate ASEAN original data following CODEX protocol.

An ASEAN Pesticide Database was established on a networking arrangement among the pesticide regulatory authorities. (http://www.portal.doa.gov.my/aseanpest/).It is aimed at information and knowledge sharing among ASEAN regulatory authorities as well as be one-stop window for information on ASEAN pesticide regulation and control.

B. Gaps

With AEC 2015 on the horizon, there is a need to prioritize the formulation of MRLs on produce that is traded within ASEAN as well as set end-targets for the harmonization process. The Pesticide Database appeared to be exclusive to regulatory authorities. It could be engaging to commercial companies and the public.

5. Establishment of ASEAN Standards for horticultural produce and other food crops

A. Progress

Since 2006, 29 ASEAN standards were established. The harmonization initiative covered all quality attributes of horticultural produce with emphasis on fruits and vegetables. The produce quality standards that were harmonized were Mango, Pineapple, Durian, Papaya, Pumelo, Rambutan, Guava, Lansium, Mandarin, Mangosteen, Watermelon, Young Coconut, Banana, Garlic, Shallot, Jackfruit, Cucumber, Melon, Salacca, Okra, Cashew Kernels, Sweet Pepper, Onion, Chilli Peppers, Wax apple, Chico (Sapodilla), Eggplant, Pumpkin, and Sweet Corn. The aim is assure quality and enhance the competitiveness of ASEAN horticulture through regional standards. The regional standards was aligned to the international standards such as ISO and Codex Alimentarius.

B. Gaps

Effort had been made to tie up to harmonize produce covered by the EWG on MRLs. The extent to which these standards had been distributed and their effectiveness and impact to trade of the fruit and vegetable industry should be evaluated as the on-going harmonization process continues.

6. ASEAN Cooperation on Plant Health

A. Progress

ASEAN Regional Diagnostic Network (ARDN) had been endorsed by the Special SOM-32nd AMAF, August 2010. The objectives of the project are to: (a) enhance the capacity of ASEAN countries to identify plant pests and diseases; (b) promote regional networking of this capacity; and (c) stimulate the adoption of new, diagnostic techniques. Networked diagnostic capacity will give credibility to the national pest lists that are required by ASEAN Member Countries, to obtain access to international markets on one hand and on the other to justify SPS measures. Where member countries are at different stages in technical and infrastructure capacity development and where soft skills are scarce and inaccessible, countries can benefit immensely by integrating into regional networks to enhance sharing of expertise and facilities. The project has established a clearing house to receive specimens for identification and compiled a list of regional pest and disease specialists on various pest types. The 2nd phase on network protocol and infrastructure development and training of first-line identifiers and specialists await funding.

B. Gaps

The ARDN revolves around National Plant Protection Organizations and their personnel. Stronger and formalized linkages with universities and national research organizations will strengthen the network. Support from financial institutions, agrochemical suppliers and exporters of farm produce and those who involved in market access of produce will help to sustain the network in the long term.

7. Regulation of movement of biocontrol agents

A. Progress

Under the auspices of the project, ASEAN Biocontrol for sustainable agrifood systems (para 5.2.2), draft guidelines were completed to regulate trade in biocontrol agents.

5.2.2. Strategic Thrust 4: Developing and accelerating the transfer and adoption of New Technologies;

In this strategic thrust 4, the main objective is to identify improved production/ post-harvest technologies available in the region and elsewhere for possible adoption in ASEAN Member Countries. To do that, the Sector's main thrust is in holding training and workshop to identify and develop new/ improved technology in agricultural production, postharvest and processing activities. There are 2 projects in progress, viz.: ASEAN – AVRDC Regional Network for Vegetable Research and Development (AARNET) and the ASEAN Biocontrol for Sustainable Agrifood Systems.

A. Progress

1. AARNET

To enhance vegetable supply through regional collaboration, the ASEAN-AVRDC Regional Network (AARNET) for Vegetable Research and Development was formed in 1999. The Asian Vegetable Research and Development Centre (AVRDC) supports the network with resources and expertise on vegetable farming. Three priority areas were identified for development, viz.: Indigenous vegetables and conservation, Variety Selection, Pre-harvest and Post-harvest Handling. These were subsequently re-scoped because of lack of funding to: Germplasm conservation, gene-mining and plant breeding, and Crop management, postharvest, marketing and nutrition. Workshops were held to share R & D information as well as expert consultation to identify research priorities. These priorities will be integrated into a roadmap of potential research programs that will harness the full potential of AARNET and contribute to the ASEAN Integrated Food Security Framework and its Strategic Plan of Action for Food Security.

2. ASEAN Biocontrol for Sustainable Agrifood Systems

Initiated in 2011, the first phase of the project is due to be completed in December 2013. A second phase (2014-2017) would commence. The objective of the project is to develop ASEAN harmonized guidelines on Regulatory Framework on the use of Biocontrol Agents for sustainable agricultural farming systems, and to promote the use of Biocontrol Agents in the ASEAN Member States farming systems. The 2nd phase would extend the objectives to dovetail towards a road map for an ASEAN sustainable agrifood system. It would go beyond biocontrol agents to bio-fertilisers/irrigation and farm economics. The ASEAN Biocontrol project is part of the ASEAN-German Programme on Response to Climate Change (GAP CC).

3. Conduct and participate in the training and workshop related to crops sub-sectors

With their focus on training, Crops has recently linked up with ATWGARD to conduct a Workshop on Good Agriculture Practice (GAP) and Organic Agriculture, and is part of the AFCC's Project :"Production System Approach for Sustainable Productivity and Enhanced Resilience to Climate Change". This initiative is being support by the ASEAN-German Programme on Response to Climate Change (GAP CC) - GIZ - which has set up a Climate Resilient Network to facilitate exchange and piloting of climate smart practices and technologies. The network comprises of both National and International Research Institutes. Consultations together with relevant ministries and private sector to (1) promote a common understanding of the climate change related threat to the agriculture sector focused on selected crops (rice, maize and cassava) (2) identify successful practices and policies at AMS level for tackling these climate change related threats that can be promoted and up-scaled; and (3) identify common concerns and capacity needs, and propose regional support strategies and instruments to address these in a coherent manner. This was done through national consultations, assessments and studies and fed into the regional workshops with ATWGARD.

Dialogue partners especially Australia, China and ROK have over the years provided extensive training in plant protection, quarantine and plant health diagnostics to ASEAN. Since 2006, ROK has a yearly the training program by their Animal and Plant Quarantine Agency for 2 plant quarantine officers from each ASEAN country. There are also training that are incidental to approved crop-related production projects. Technical assistance and capacity building including infrastructure development are an integral part of projects.

B. Gaps

One of the major limitations to the above strategic thrust is linking with partners and resource mobilization to develop projects. The obvious advantage of the ASEAN Biocontrol for Sustainable Agrifood Systems Project was available funding and partnership. The formula at this current stage of ASEAN development was to have project drivers or champions in AMS. This project is the only ASWGC project pursued under the sustainable food production component of the AIFS Framework.

In regards to technical assistance and capacity building, the challenge is to identify and prioritize support measures that initiates and sustains intra-regional capacity to pass on and further develop on expertise acquired.

5.2.3. Strategic Thrust 5: Enhancing private sector involvement

In implementing Strategic Thrust 5, Crops Sector engages and encourages the private sector to participate in its programmes and meetings.

1. Advanced Pest Risk Analysis Workshop, Sep 2013 , Bekasi, Indonesia

The workshop was held in collaboration with Croplife Asia and CABI. The training was attended by participants from Departments of Agriculture and private companies in Indonesia, Thailand, Cambodia, Malaysia, Philippines, Lao-PDR, Myanmar and Brunei Darussalam. The strength and difference from regular workshops was having private sector involvement both in organizing as well as participating in the workshop. Private companies are made aware and exposed to ASEAN collaboration and contribution towards SPS and its implication on market access for agricultural products.

2. Public-Private Workshop on Agricultural Productivity Enhancing Innovations, Technologies and Practices

A. Progress

The Workshops would be organised at the national and regional levels in 2013-2014, with administrative and financial support by the ASEAN-U.S Maximizing Agricultural Revenue through Knowledge, Enterprise Development and Trade (MARKET) Project. The aim of the workshop is to provide a platform for both government and private sector stakeholders in the agricultural sector to discuss and share their knowledge and understanding of the available agricultural productivity enhancing innovations, technologies, and techniques that are suitable for application by farm holdings in ASEAN. The Workshops will focus on innovations, technologies and practices that are especially suitable for use by small-scale farmers and vulnerable groups (e.g. women) to enhance yields and quality of crops both for human consumption and animal feed.

B. Gaps

Public private sector partnership is vital to the creation of AEC by 2015 or later. The most important task is to raise awareness as well as transfer the benefits of ASEAN integration in the realm of trade facilitation, agri-innovation and technology, or information and skills to the grass-roots of the agriculture industry. Importance must be given to public-private sector participation and regular consultations must be encouraged in the work of the Sector especially in the industry-wide guidelines and protocol formulation, wherever and whenever possible. Transparency reinforces participation from those affected by the changes.

6. Global and Regional Trends and Issues

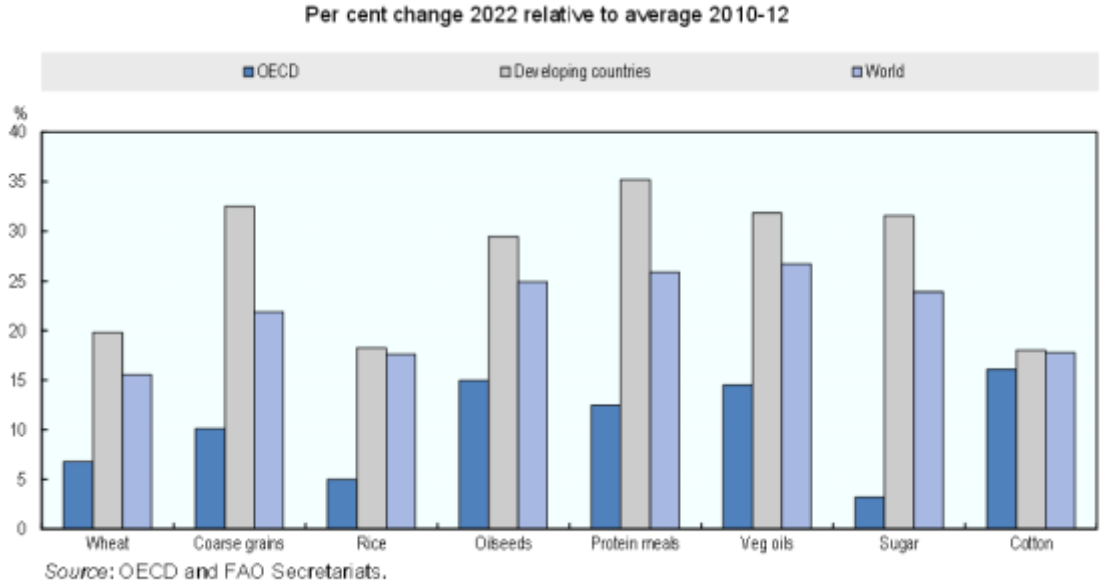
6.1. Increasing demand for food and a changing food consumption pattern

Global trends

Although the world population growth rate is expected to slow down to just 1% per annum in the next decade, world population will continue to increase another 750 million by 2022 to 7.8 billion. The demand for food will still increase 70% by 2050. Developing countries are expected to continue to experience the fastest population growth. These countries are expected to be the leading source of an increased demand for agricultural products. Higher consumption of agricultural products is being driven by growing populations that are increasingly concentrated in large urban centres and mega cities. Rising per capita incomes and expanding middle classes are added factors. The growing affluence of the large emerging economies and developing countries is also changing dietary patterns.[8] (Fig 1&2)

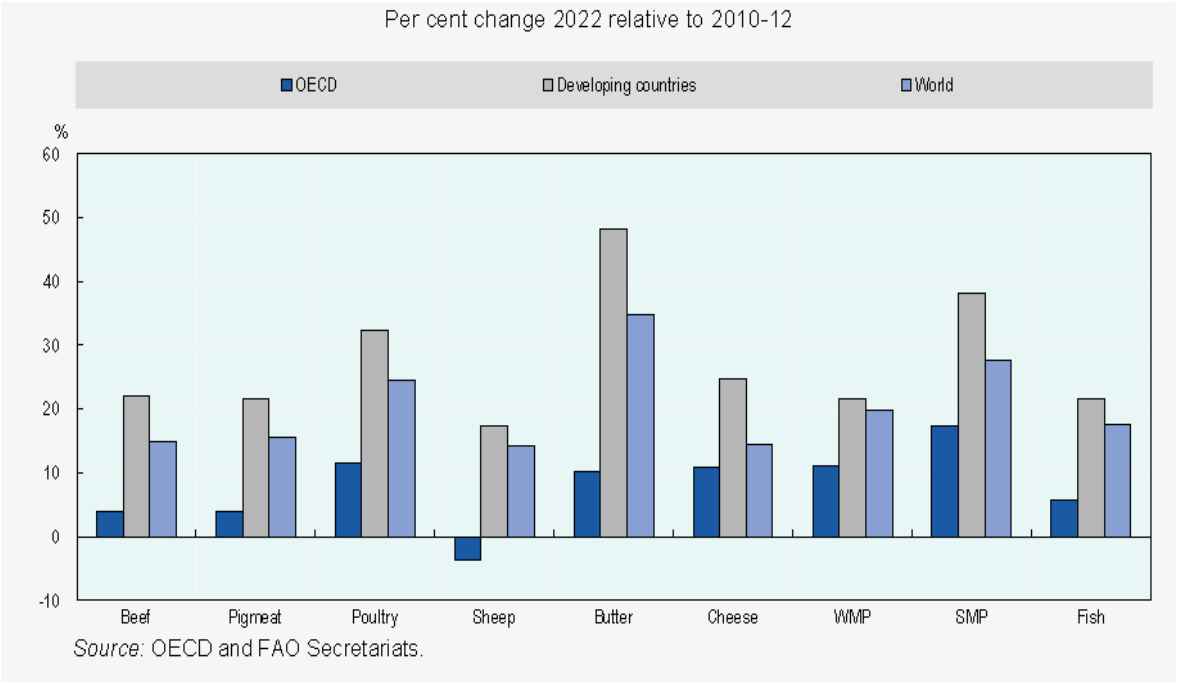
Despite faster growth, per capita consumption of agricultural products is generally lower in the developing countries than in the developed countries. But consumption rate is expected to continue to grow faster in the developing countries. On the other hand, some developing countries and developed countries are reaching high levels of per capita consumption and entering a phase of declining population. They would be experiencing a fall in aggregate demand as 2020s arrive.

Fig 1 : Higher Consumption of Crop Products in next decade.



[8] OECD-FAO Agricultural Outlook2013-2022, Accessed *www.oecd.org/site/oecd-faoagriculturaloutlook on 11 Apr 2014*

Fig 2 : Higher Consumption of Livestock and Fish in next decade.



With economic development and increased per caput consumption (Table 1), developing countries are trending towards a move away from a mainly cereal diet to one of higher protein foods, including meats and dairy products. The shift is towards more livestock products, including fish, vegetable oils and to a lesser extent, sugar as sources of energy.[9] (Table 2) These three food groups together now provide 29% of total food consumption (i.e. dietary energy supply) of the developing countries, up from 20 % three decades ago. Their share is projected to rise further to 35 % in 2030 and to 37 % in 2050 (in industrialized countries the share has been around 48 % for several decades now). However, higher consumption of meat and dairy products would also invariably lead to increased livestock feedstocks such as maize and soybeans.

Regional Trends

The Asia-Pacific region is home to two-thirds of the world's population. Regardless of rapid economic growth, Asia remains the home to 67% of the world's hungry people (some 552 million) and more than 900 million people who subsist on less than $1.25 per day[10]. The region still holds the highest proportion (62%) of the world's undernourished population. There is widening income disparity and social inequality between the rich and the poor.

Food demand will increase as a consequence of population growth, urbanization and a growing middle class in emerging economies. By 2050, 63 % of the region's population will live in urban areas[11]. As incomes rise, food preferences shift toward high value fruit and vegetables, wheat, livestock products and value-added foods. Middle and upper-income consumers are willing to pay more for quality products that meet their expectations for taste, packaging, and appearance. This demand transition is also caused by urbanization and increased female participation in the labor market. There is a premium on easy to-prepare "convenience" foods. Changing Asian diets have also commensurate with declining per capita consumption of rice.

[9] Global Trends and Future Challenges–Web Annex(2012), http://www.fao.org/docrep/meeting/025/md883E.pdf
[10] ADB 2013. Food Security Challenges in Asia. Working paper, p
[11] FAO 2012. APRC/12/6

Table 1 :Global and regional dietary energy supply (kcal per caput per day)

Region	1999-2001	2002-2004	2005-2007	2008-2010	2011-2013
World	2710	2740	2780	2820	2860
Developed Countries	3340	3410	3420	3390	3390
Developing Countries	2550	2580	2630	2700	2740
Sub-Saharan Africa	2220	2260	2330	2370	2430
Latin America & Caribbean	2800	2860	2900	2950	3010
East Asia	2820	2860	2910	3030	3040
South Asia	2320	2310	2350	2390	2440
South-Eastern Asia @	2370	2460	2550	2660	2790

Footnote : @ - ASEAN plus Timor Leste

Table 2:Vegetable and animal sources of energy in the diet (kcal per capita per day)

	1969			1979			1989			1999			2009*		
Region	T#	V	A	T	V	A	T	V	A	T	V	A	T	V	A
World	2343	1977	366	2478	2092	386	2644	2229	415	2733	2276	457	2823	2333	491
Europe	3221	2353	868	3344	2369	975	3385	2371	1014	3237	2320	917	3403	2464	938
Asia	1983	1839	144	2171	1997	175	2449	2205	244	2602	2247	355	2706	2277	429
South Eastern Asia	1928	1799	129	2122	1991	131	2289	2121	168	2391	2176	214	2657	2347	310

 # - T – total kcal, V - kcal of vegetable origin, A - kcal of animal origin

**- 2007 figures in case nof Europe and World.*

Footnote : @ - ASEAN plus Timor Leste

6.2. Competing demands and diminishing quality and quantity of natural resources grows

Global trends[12]

Agricultural output for the basic food items (crop, fish and livestock including dairy) grew by 2.1% p.a. over the last decade. But it is projected to slow down to 1.5% p.a in the coming decade[13]. This would still be faster than population growth. The projected increase in world crop production is on a downward trend. Over the period from 1997/99 to 2030 it is 55 %, as compared to 126 % over a same period in the past. Similar increases for the developing countries as a group, are 67 and 191 %, respectively.

A number of factors are expected to cause production to grow less rapidly than in the past. Food consumption as result of declining population growth rate is anticipated to slow down. Land available for agricultural production is becoming more limited in the face of mounting non-agricultural use such as for human settlements, infrastructure, mining and industry. About 38% of world's land is used for agriculture (Table 2). Globally, agricultural land area increased marginally by 2% over 40 years, from 35% in 1970 to 37% in 2011. Most of the increase came from the "land-abundant" regions of South America and sub-Saharan Africa, with an unknown but probably a considerable part, coming from deforestation.

[12] OECD-FAO Agricultural Outlook 2013-2022, Accessed *www.oecd.org/site/oecd-**fao**agriculturaloutlook on 11 Apr 2014*

[13] OECD-FAO Agricultural Outlook 2013-2022, Accessed *www.oecd.org/site/oecd-**fao**agriculturaloutlook on 11 Apr 2014*

Added to that is the competition over natural resources including water for non-food crop use such as production of biofuel and non-food raw materials and products. Intensification of human activities including farming, deplete and threaten the quality of natural resources as well. Progressive breakdown of ecosystems stem from a combination of demographic pressure and unsustainable natural resources management practices. The drivers of unsustainable resource use include poor governance, inadequate and conflicting policies and legislation, weak institutions and inadequate incentive mechanisms for farmers and other users of land resources to adopt sustainable natural resources and landscape management. Insecurity of tenure and land fragmentation are major barriers to sustainable land and fisheries uses.

One quarter of the world's food-producing lands/soils are highly degraded or are rapidly being degraded. Add to that, other soils which are degrading "moderately", plus the areas under threat, makes up to one-third of the Earth's cropland. Worldwide, 1.5 billion people are affected. Degradation processes include the following: accelerated soil erosion on sloping lands, depletion of nutrients and organic matter, damage to soil structure and health, loss of water holding capacity in rain-fed systems, overuse of mineral fertilizers in intensive systems, depletion of aquifers, soil and water salinization associated with increased groundwater withdrawals and inadequate drainage in irrigation systems, and salt water intrusion in coastal areas[14]. Further, the natural resources degradation as highlighted by the United Nations International Strategy for Disaster Reduction, is linked to natural disasters.

Most countries now face limits on the availability of suitable land for agriculture. This is in part due to intensive competition from other no-food uses that would bring higher economic returns than from food production.

With new cultivatable land in shorter supply, or concentrated in specific regions of the developing world, much of the increase in agricultural production up to 2022 will come from higher yields. Given that prices of fertilizers and other farm chemicals, and machinery costs are closely related to oil prices, any rise in oil prices is expected to quickly translate into increasing production costs. In addition, inputs of scarce resources like water are becoming increasingly limited in supply to agriculture and become more costly to procure. Higher production and supply costs will reduce the profitability of capital intensive agriculture even as increased costs of production will raise commodity prices. This development can be expected to further slow the growth in production. Overall, the increasing scarcity of arable land, water constraints and rising input and energy costs in agriculture all serve to highlight the critical importance of achieving higher agricultural productivity in a more sustainable manner both at the farm level and in upstream and downstream sectors of the food supply chain.

Regional Trends[15]

During the last 4 to 5 decades, the scope for expanding farmland has narrowed considerably worldwide. Land constraint is most acute in Asia. Its annual growth rate of agricultural area of arable land and permanent crops has been only 0.49% since 1980[16]—less than in Latin America (0.61%) and Sub-Saharan Africa (0.89%). The size of arable land in some of Asian countries has already started to decline. About 53% of land is still used for agriculture (Table 3).

Half the economies in the region expanded land area devoted to agriculture between 2000 and 2011. Increases in food prices stimulated the expansion of crop and pastures land. This trend is most notable in smaller economies.

Land degradation and soil erosion are also rapidly taking place in the region, while arable lands are being converted for other uses. Water scarcity is one of the biggest challenges to agriculture and food production in the region. Agriculture consumes nearly 70 % of total water use, which will be increased

[14] FAO 2012.Global trends and challenges for the work of the organization. Web Annex . http://www.fao.org/docrep/meeting/025/md883E.pdf.
[15] FAO 2012. APRC/12/6
[16] ADB 2013 Key indicators for Asia and the Pacific 2013. 4th Edition, p11

further as food production expands. By 2030, 40% of developing Asia is projected to face a severe water shortage. Competition for natural resources, especially land and water for food crops and other uses such as bio-energy crops, should further increase. The production of bio-fuels is expected to double in the next decade.

Fig 3 : Agricultural Land Use as percentage of Land Area, 1970 – 2011 .

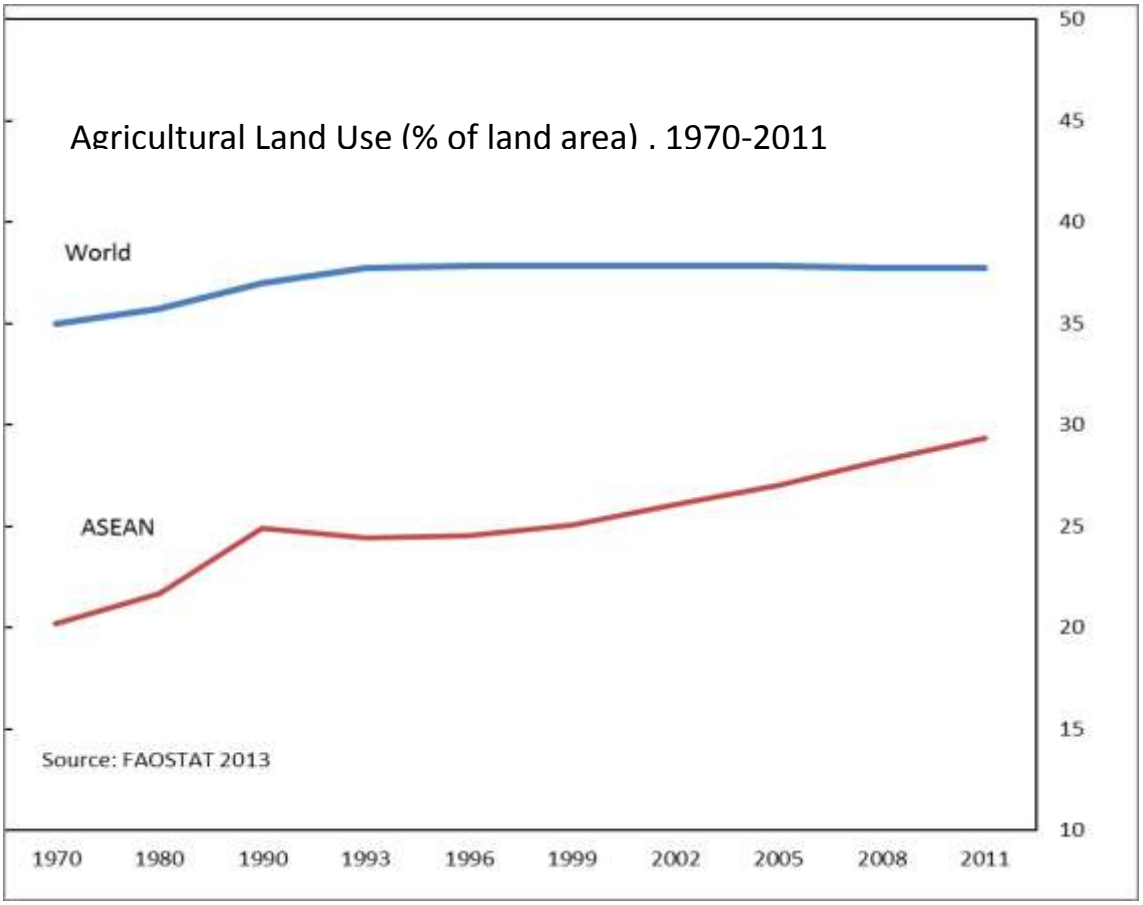


Table 3 :Land under Agricultural Use (in million ha)

Region		1970	1980	1990	1993	1996	1999	2002	2005	2008	2011
Africa	Agric	1067.9	1081.1	1104.1	1098.4	1109.8	1120.9	1132.7	1153.5	1164.5	1169.7
Africa	Land area	2964.9	2964.8	2964.8	2964.8	2964.8	2964.8	2964.8	2964.8	2964.8	2964.8
Asia	Agric	1106.6	1153.5	1288.0	1651.2	1646.0	1653.9	1658.6	1631.0	1624.9	1633.5
Asia	Land area	2685.8	2685.8	2685.6	3096.4	3095.7	3095.7	3094.0	3093.8	3093.8	3093.5
ASEAN	Agric	87.8	94.1	108.1	106.0	106.5	108.8	112.9	116.8	122.1	127.0
ASEAN	Land area	434.2	434.1	434.1	434.1	434.1	434.1	432.7	432.6	432.6	432.6
World	Agric	4565.8	4662.5	4832.8	4909.8	4920.7	4926.9	4925.2	4921.5	4907.8	4911.6
World	Land area	13056.1	13055.9	13055.6	13010.9	13009.4	13014.4	13012.2	13012.0	13009.6	13009.5

Source : FAOSTAT

6.3. Crop productivity slows down

Global trends

Average world yield growth for crops and especially for cereals has been slowing at least for the past two decades, in part due to reduced investment in crop research and development and dissemination of improved varieties. Crop yields would continue to grow, but at a slower rate than in the past. On average, annual growth would be about half (1.3%-world; 1.5%-developing countries) during 2005/07 to 2030, of its historical growth rate (2.2%-world; 3.0 %-developing countries) during 1961-2007 [17] This deceleration in growth of yields has been under way for some time now. For most crops, however, the annual growth rate of yields in the projected decades will be well below that of the past. They reflect in part differences and degradation in agro-ecological conditions and in part differences in agricultural management practices and the overall socio-economic and policy environment. Growth in crop production comes through growth in crop yields and/or expansion in the physical area (arable land) allocated to crops. Beyond that, increases in cropping intensities, such as increased multiple cropping and/or shortening of fallow periods, could also lead to an expansion in the area harvested. Since arable land growth is limited, yield growth will be relied primarily to increase crop production.

Improved farm productivity suggests that future yield increases will depend heavily on the development of adapted and improved varieties and on their appropriate dissemination and use[18].The emergence of biotechnology, as a major source of innovation in agriculture, has mobilized private sector involvement. Strengthening national research institutions, developing public policies related to science and innovation, and increasing public investments and partnerships with the private sector will be needed for a more universal utilization of potential innovations for increasing food production and poverty reduction in the developing world.

Globalization of food production systems has increased the number of large-sized farming firms. Integrating vertically and morphing into large and complex global value chains (GVCs), these capital intensive farms farm by contractual arrangements. They are particularly prevalent in Latin America, Eastern Europe, Central Asia, South-East Asia and more recently in some parts of Sub-Saharan Africa. This trend stems from economies of scale. As much as there are new opportunities for economic activity and growth, they can result in the displacement of small scale agriculture and family farms. However these global food corporations can make an important contribution as vehicles of capital and skills, technologies. They can bring about access to both domestic and export marketing channels, and creation of linkages to the rural economy. There are, however, snags such as excessive concentration of market power (and its eventual abuse) in the hands of a few large enterprises operating in many countries.

Regional Trends [19]

A critical constraint to improving food security in the region is stagnation of crop productivity for major cereal crops, especially rice and wheat. The rate of growth of Asian rice and wheat productivity has trended downwards since the 1980s. Rice harvest areas continue to rise gradually, but Asian wheat areas have stagnated since the early 1990s. The availability of cereals is important as they are the primary source of calories for the poor. Rice is particularly important for the region because most of world's supply is produced in Asia.

FAO estimates that about 91 % of the growth in production is expected to derive from increases in yields, while 4.3 % from area expansion and another 4.5 % from an increase in crop intensity. For all the major food crops, there is potential with existing technology to raise productivity both per unit land and per unit of water used. The reducible “yield gap under optimal management, are often quite large in Asia as yields are well below its potential productivity. Farmers are rarely able to achieve more than 80% of potential

[17] Bruinsma, J. 2011. The resource outlook to 2050: By how much do land, water use and crop yields need to increase by 2050? (http://www.fao.org/docrep/014/i2280e/i2280e06.pdf). Table 6.2
[18] FAO 2013. C2013/7
[19] FAO 2012. APRC/12/6

yields due to a range of agronomic factors and economic constraints. There is clear scope for efforts to assist farmers through traditional extension and modern technologies including ICT to enhance productivity[20]. Investment in agricultural research and development would play a key role in future food security. Besides providing infrastructure and introducing new technologies, the way forward toward modernizing and developing Asia's agriculture to be more productive is linking farmers to Global Value Chains (GVCs) with the objective of shifting them into agribusiness mode. The agribusiness transformation could deliver great benefits such as providing access to premium export markets, hasten innovation and promoting agro-industrial modernization.[21] The average productivity of a worker in agriculture is 3–5 less than that of a worker in manufacturing or services. On the other hand, the risk is a few major agricultural GVCs can render small farmers vulnerable to the demands of big buyers, and offers neither security nor an equitable share of the value created along the chain. Smallholder systems will continue to dominate agricultural production in developing Asia in the next 2 decades. It is estimated that Asia contains some 350 million small farms operating less than 2 hectares (ha) of cropland. If the average farm household has five members, then about 1.8 billion people or about 45% of all Asians, depend on small farms for all or part of their livelihoods. Small farms occupy only about 40% of the total farm area. But they produce a much larger share of the region's staple crops and a significant part of which enters the market. Their productivity growth over the past 35 years has been critical to Asia's food security and its success in poverty reduction.

Productivity growth in food crop agriculture has leveled during the past decade. Many analysts attribute this to declining investment in the agriculture sector by governments and the international community. If the fundamental sources of stagnating productivity in developing country agriculture are not addressed, soaring and volatile food prices could return.

6.4. Rising food price and volatility

Global trends[22]

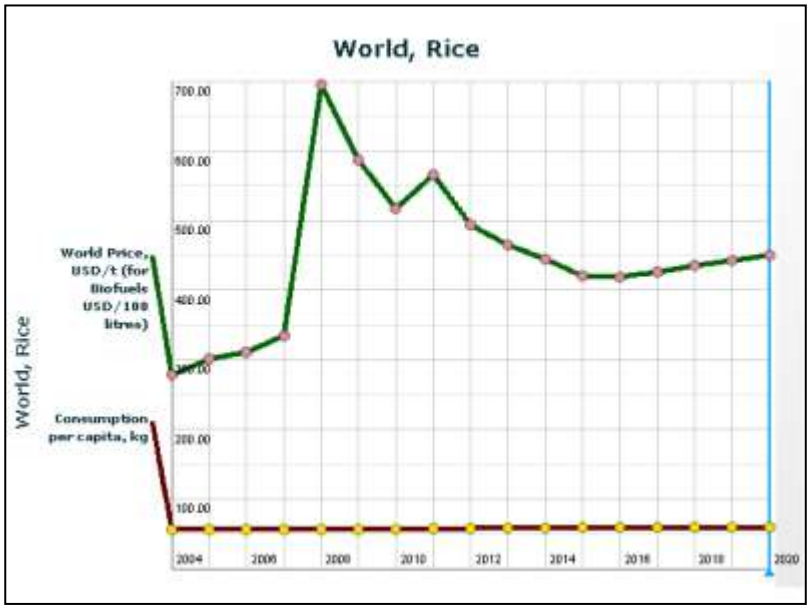
Food prices will trend upward during the first few decades of the 21st century in lieu of supply and demand. Compared with the baseline prices in 2003–2005, food prices in real terms in 2050 are likely to be somewhere between the baseline and crisis levels of 2007–2008. This trend is the result of the slowdown in yield growth and rising demand. The demand will be driven by higher food requirements due to larger populations and higher incomes, and by the increasing demand for biofuels. The rising cost of fossil fuels has improved the financial viability of biofuel crops as an alternative energy source. Ethanol production is expected to increase 67% over the next ten years with biodiesel increasing even faster but from a smaller base. By 2022, biofuel production is projected to consume a significant amount of the total world production of sugar cane (28%), vegetable oils (15%) and coarse grains (12%).[23]

Up until 2006, the cost of the global food basket had fallen by almost a half over the previous thirty years, when adjusted for inflation. Declining real prices in agriculture over the long term resulted from technological advances and a relatively slow demand growth. After decades of declining real prices of basic foods, international prices of rice, wheat, and corn began rising in the early 2000s, with the increase accelerating sharply after 2006. Prices spiked twice. The first peak was in mid-2008, led mainly by rice. This was followed by a decline, and then corn and wheat prices peaked again in mid-2012, and also followed by a modest decline. Globally, rice, wheat, and corn directly contribute 50% or more of the food energy in the diets of the poor. Sharply higher and more volatile food prices threaten hundreds of millions of vulnerable people who spend a large share of their income on food. Most of that is on starchy staples. These people have limited capacity to cope. [24]The surge in food prices, coupled with the global economic slowdown in 2008–2009, was said to have moved about an additional 100 million people into hunger in 2009, thus pushing the number of undernourished people in the world to 1 billion.

[20] ADB 2013 Food Security Challenges in Asia, p22
[21] ADB 2013 Key indicators for Asia and the Pacific 2013. 4th Edition, p42
[22] FAO 2013. C2013/7
[23] OECD-FAO Agricultural Outlook 2013-2022 *http://www.oecd.org/site/oecd-faoagriculturaloutlook/highlights-2013-EN.pdf*
[24] FAO 2009a. World Food Situation: Food Price Indices. August 2009. *www.fao.org/worldfoodsituation/FoodPricesIndex/en/*

Recent price increases and their high volatility may be explained by several causes, including supply shocks, low stocks, rising energy prices, trade restrictions applied by some countries in response to the food crisis and increased global demand.

Fig 4 : Global rice price and consumption per capita(kg), 2004-2020



Source : OECD-FAO Outlook 2013-2022

As of July 2013, it appears that world food prices are stabilizing, but at a considerably higher level than what prevailed before the crisis. (Fig 3.) A secular rise in the food price level would reflect underlying supply and demand forces that are not likely to recede. The high volatility observed will also continue. FAO's baseline projections indicate that, under plausible assumptions on yield improvements and rates of expansion in land and water use, it should be possible to meet world's food demands. However, the relationship between demand and supply remains uncertain, especially because of the additional constraints arising from environmental concerns. Significant efforts in investments, technological innovation and policies to support sustainable agricultural development are needed to achieve this required supply.

High price volatility has mostly negative consequences, as markets participants have difficulty planning ahead and adjusting to fluctuating market signals. In the longer-term, higher commodity prices could benefit producers around the world and net food exporting countries. But it will negatively affect world consumers, increase food insecurity for poor consumers, and negatively affect the macroeconomic position of net importing countries. These positive and negative effects have led many developing countries after 2008 to implement policies to restrict trade and/or regulate internal prices.

Regional Trends

High and volatile food prices slow the dramatic progress in poverty reduction and add impetus to the concerns about rising inequity in Asia despite the region's remarkable economic growth and development during the last three decades. The food crisis, by and of itself, has had a lesser impact on growth in Asia than the regional impacts of the global economic downturn. This is to be expected, since the main sources of economic growth in Asia lie outside of agriculture. Assuming there are no further shocks, most countries

are capable of managing year-to-year variations in cereal supply through public and private stocks and trade. Despite that, the food prices are still nearly double, both in nominal and real terms, if compared with that of ten years ago. In many countries, the retail price of rice remains nearly 10-30 % higher than before the price crisis. Food prices contribute to inflation especially in the poorer countries.

From the supply side, the rate of growth of Asian rice and wheat productivity has trended downward since the 1980s (Figures 6 and 7). Rice harvest areas continue to rise gradually, but Asian wheat areas have stagnated since the early 1990s. Events of price crises will recur as climate change increases the frequency of extreme weather events large enough to damage crop production on a global scale. At the same time, yield growth of major crops in Asia and the rest of the world will decrease between now and 2050 with stagnated crop productivity. With yield growth of major crops slowing down, food prices will rise. Besides that, many factors in a globalized commercial world affect price volatility and spikes such as high crude oil prices, the impact of climate and natural disasters, export restriction and other policy measures of exporting countries, as well as unreliable market information that spawns speculation and panic buying.

6.5. Prevalence of climate change and natural disasters

Global trends[25]

Over the next 10–20 years, climate change may prove to be the greatest threat to food security. Evidence of climate change is accumulating. It is increasingly negatively impacting agriculture, forests and ocean fisheries. In spite of the measures that may be taken to mitigate it, its impact will continue to increase. The international community has so far been incapable of taking firm action to control greenhouse gas (GHG) emissions.

Global warming will affect agriculture in a number of ways, including: a) very likely increase in the frequency of hot extremes, heat waves and heavy precipitation; b) likely increase in tropical cyclone intensity; and c) very likely precipitation increases in high altitudes and likely decrease in most subtropical land regions. Climate change stresses the already exhausted capacity of natural resources for food production. Agriculture is particularly vulnerable as some slight changes in temperature or rain patterns can have devastating effects on crops, grasslands or forests. The increase in temperature will lead to risks of spread of transboundary plant and animal diseases outbreaks, deterioration of soil quality, loss of biodiversity of plant animal species and irrigation water availability as a result of widespread melting of snow and glaciers.

Vulnerable communities and people in fragile environments, such as dry lands, mountain areas and coastal zones will be particularly affected. Already some of the most vulnerable countries are food insecure. These effects will be very diverse among regions and countries. Mitigation strategies in agriculture, adaptation to climate change and creating greater resilience are a growing concern. Strong collective action at national, regional and global levels is needed. There is a dual relationship between sustainable development and climate change. On the one hand, climate change influences key natural and human living conditions and thereby also the basis for social and economic development. On the other, society's priorities on sustainable development influence both the GHG emissions that are causing climate change and the vulnerability.[26]

Climate induced and natural resource degradation disasters are on the rise. Disasters adversely affected the lives and livelihoods of millions over the past years with particular deleterious consequences for the poor. The impacts of large-scale, mega-disasters are catastrophic with lasting consequences. Floods, hurricanes, tsunamis and other hazards destroy agricultural infrastructure and assets, crops, and production capacity. Drought alone has caused more deaths during the last century than any other physical hazard. Asia and Africa rank first among continents in the number of people directly affected, while Africa has a high concentration of deaths associated with drought. These natural hazards have a direct impact on agriculture and food security. They interrupt market access, trade and food supply to the

[25] FAO 2012.Global trends and challenges for the work of the organization. Web Annex
[26] IPCC Fourth Assessment Report: Climate Change 2007

cities. They reduce income, deplete savings, and erode livelihoods.

Regional Trends

In Asia and the Pacific region, negative consequences of climate change are seen as a frequent occurrence of natural disasters such as floods and droughts, which have doubled in the past ten years. These have affected food production and price stability[27].

Other evidence of tangible climate change impacts is accumulating at the subregional level. The low-lying rice-growing deltas are particularly vulnerable to sea level rise and saltwater intrusion. People in areas also face increased risk of disease as water levels rise. Hence, the populations of Asia's low-lying delta regions are vulnerable both to lower land productivity and to increased morbidity and lower work capacity due to climate change. [28]

Climate change is reported to adversely affect wheat production in South Asia by 2030, and rice production in Southeast Asia, particularly in the Greater Mekong Subregion. It is predicted that climate change will have a strong effect on food prices. Rice, wheat, and soybeans prices could increase by 10%–50%, while the price of maize is expected to double by 2050. According to recent projections by International Food Policy and Research Institute (IFPRI), Asia's production of irrigated wheat and rice will be 14% and 11 % lower, respectively in 2050 than in 2000 due to climate change. Climate change will also increase extreme weather events—such as floods, droughts, and typhoons—which will have serious consequences for agriculture, food, and forestry production. This is of particular concern to Asia, as it is the most disaster-afflicted area in the world. Of the 10 countries with greatest economic losses to extreme weather, five are in Asia - Bangladesh, the People's Republic of China, India, Indonesia, and Pakistan [29]. Between 1975 and 2006, 89% of people affected by natural disasters in the world were in Asia. Using three indicators of vulnerability - exposure, sensitivity, and adaptive capacity, the most vulnerable countries in the region are Afghanistan, Bangladesh, Cambodia, India, the Lao People's Democratic Republic, Myanmar, and Nepal.

6.6. Globalization and Trade Expansion

Global trends[30]

The volume of international trade in agricultural products has been increasing considerably over the last four decades, following reduced physical and economic barriers to trade and lower transport costs. Total agricultural exports have increased from USD 3.5 billion in 1961-1963 to about USD 110 billion in 2009. The trend is expected to continue. This increase reflects more intraregional trade as well as more trade between distant countries. Developing countries have participated actively in this trade expansion. The increased volume of agricultural trade reflects economic growth and an increased economic integration which involves globalized agri-food system akin to the rest of the economy. However agricultural trade grew at a slower pace compared to other goods. This arises from the higher protectionism that characterizes the sector. It has dropped from 23% of merchandise trade to 6.2% over 2005 to 2007.

The distribution of trade flows has changed dramatically. Instead of exporting tropical products, fast population growth in developing countries and the availability of cheap staple food, have turned developing countries into net importers of agricultural products. This trend is especially so in Least Developed Countries and is expected to continue into 2050s. The traditional agricultural trade surplus in the balance of payments of the developing countries has been diminishing over time and turned into a net deficit in recent years. One of the main factors influencing this trend is the agricultural and trade policies of the main players in world markets with subsidy and protectionist policies. Meanwhile emerging economies in Latin America, Eastern Europe and Asia have become large net exporters, especially of cereals and oil seeds, reducing the role of OECD countries. Trade in processed agricultural and food products is also increasing.

[27] FAO 2012. APRC/12/6

[28] ADB 2013 Food Security Challenges in Asia, p 27

[29] ADB 2009. Operational Plan for sustainable food security in Asia and the Pacific,p 6

30 FAO 2012.Global trends and challenges for the work of the organization. Web Annex

The share of processed products in total food export is higher and growing relatively faster in high income and upper-middle income countries, and notably in countries like Argentina, Brazil, Chile, Indonesia, Malaysia, Thailand and Turkey.

Trade policies are evolving towards more openness. Along with the multilateral framework, agricultural trade is also developing along a set of bilateral and regional agreements. These are discriminatory in nature, as they imply the application of different conditions to different trading parties, and are legally based on exceptions allowed by WTO rules. Policies will continue to evolve with the flow of the economical tide. Sustained growth prospect in emerging economies may bring about increased pressure toward trade liberalization and the opening-up of markets. However, prospects of slow growth in the world economy may revert pressures toward increasing protectionism.

At the same time, large global suppliers have benefited from subsidies in export markets and the transformation of the retail sector in importing countries, resulting in a growing prevalence of higher foreign product standards. These factors contributed to the growing trade deficit of many developing countries, which shifted their trade status from a position of net exporters to that of net importers.

This is a challenge, given that the concept of trade facilitation covers a broad range of obstacles. They can be both deliberate and unintended but nevertheless limiting market access. These obstacles may comprise human and physical infrastructure, along with institutions including customs and trade- related services. Physical infrastructure, especially transport infrastructure, is a fundamental piece of this solution.

These trends are likely to extend in the future such as: a) the increasing product differentiation and concerns for safety issues will lead to more use of standards, including private standards b) environmental issues like the carbon footprint of products will likely be translated into trade regulations; c) impact of trade on food security and protection against cheap imports in developing countries, d) growth of large transnational agri-food conglomerates affecting international market power

Trade facilitation is increasingly recognized as the key to unlocking further gains from international trade. At the recent WTO 2013 Doha round of negotiations in Bali, there were renewed commitments to trade facilitation measures to reduce trade costs by cutting red tape in customs procedures, documentations and inspections. Trade facilitation could cut global trade costs by more than 10%, raising annual global output by over $400 billion, with benefits flowing disproportionately to developing economies. However poorer countries' ability to make the required capacity upgrades would require assistance. With that aside, the latest Bali round of talks offer little headway into further trade liberalization between the developed and developing countries.

Regional Trends

The share of developing Asia in global agricultural exports has increased from 12 % in 1970 to 17% in 2012. The composition of export trade has changed, away from traditionally grown tropical products (including coffee, cocoa, tea, sugar, spices, and nuts) toward horticulture production, seafood, and processed products. Developing countries are typically net exporters of oilseeds and products, coffee and cocoa, sugar, and fruits and vegetables, and net importers of dairy products and cereals. [31] The Asia-Pacific region has accelerating its trade growth since 2000 largely because of population growth, change in dietary practices, increased disposable incomes and rising commodity prices in some emerging economies.

High-income Asian economies have made significant agricultural expansion. The GDP growth of the People's Republic of China (PRC) provides stimulus to agri-food activity in the region. The PRC is expected to become a net importer of agri-food in the coming decades, which will have immense implications within the region. A number of factors have caused the need for increased regional trade within Asia such as loss of momentum in the latest round of multilateral trade negotiations, combined with

[31] ADB 2013 Key indicators for Asia and the Pacific 2013. 4th Edition

a rise in freight costs due to higher fuel prices[32]. Intra-regional agri-trade in Asia and the Pacific grew faster than trade with the rest of the world. In 2008, more than half of Asia-Pacific agri-products were exported within the region, followed by European Union (15%) and the United States of America (10%). Asia-Pacific exports within the region increased from about $66 billion in 2004 to $118 billion in 2008 and accounted for about one-fifth of the world agri-exports. Intra-regionally also, China, Australia, Thailand, Malaysia and New Zealand alone, share two-thirds of the total regional Asia-Pacific export. China was responsible for a quarter of the Asia-Pacific's total agri-exports to the region during 2004-08. Nonetheless, the intra-regional demand plays a crucial role for accelerating the export growth.[33] The emergence of new and stricter standards for agricultural imports in European and North American economies makes Asia and the Pacific a more attractive export market. Multiple private standards by big Multi-National Corporations (MNCs) and large retailers pose a continuous challenge to agri-exporters of the Asia-Pacific region. Asia-Pacific countries are increasingly being integrated into the region's market. Japan, China, the Republic of Korea, Malaysia, and Hong Kong together import about 75% of the agricultural goods exported by Asia-Pacific countries.

Increasingly global and regional trade is a key driver of crop modernization of the agriculture in the region. It has spurred technological changes of production practices, shift production from traditional to high value products, expand food processing industries and boosts other value-added industries along the supply chain. The share of its agribusiness in GDP in Asia has even become higher than that of agriculture itself. Agribusiness activities in the region are being increasingly organized. The driving factors behind such vertically integrated agribusiness are meeting volume requirements, quality and safety standards required by international trade arrangements, and demand toward high quality processed or packaged foods. In the process, it creates employment opportunities for farmers and other supply chain actors. Participation of Small and Medium Enterprises (SMEs) in various supply chain functions is also positively influenced by export growth. Agri-imports are also complementing the food deficit in many developing countries in this region.[34]

FTAs are increasingly used as a trade policy instrument. 47 FTAs are currently in effect. The proliferation of FTAs in Asia is likely to be sustained. Another 79 are either under negotiation or proposed. The intense FTA initiatives in Asia are because of: (i) deepening market-driven economic integration in Asia, (ii) European and North American economic integration, (iii) the 1997–1998 Asian financial crisis, and (iv) slow progress in the WTO Doha negotiations.[35] However from the agricultural trade perspective, better coverage of agricultural product lines in Asian FTAs is needed and a gradual approach to liberalization seems optimal for developing economies.

Trade facilitation issues are increasingly a part of regional trade policy discussions. Trade facilitation provisions are also included in a growing number of FTAs in Asia and the Pacific. The APEC member countries are committed to reduce their trade costs through trade facilitation by 5% over 5 years since 2001. To reach that target, APEC member countries prepared a trade facilitation action plan (TFAP) and reported their progress annually. TFAP II with a target of further 5% reduction was launched in 2008. While significant progress has been made, the trade facilitation performance gap between Asia and the Pacific and the world's most developed economies remains large. Trade facilitation for agricultural products can tremendously develop export competitiveness of Asia-Pacific countries by simplifying trade procedures, harmonizing product standards, improving efficient conformance assessment, and reforming infrastructure and trade-related services.[36] Improving trade facilitation could produce greater benefits than tariff reductions.

[32] ADB 2010 Regional Trade Opportunities for Asian Agriculture.

[33] ESCAP 2011. Facilitating Agricultural Trade in Asia and the Pacific

[34] ESCAP 2011. Facilitating Agricultural Trade in Asia and the Pacific

[35] ADB 2010. Asian FTAs: Trends, Prospects, and Challenges

[36] ESCAP 2013. Designing and implementing trade facilitation in Asia and the Pacific. 2013 Update

7. ASEAN outlook and changing trends in ASEAN agriculture

7.1. Importance of food supply

ASEAN basic food consumption pattern and population growth follow a similar global and regional trend – increase per capita consumption and a change in food consumption pattern towards a livestock-based diet (Table 1 & 2). ASEAN's per capita GDP increased almost 3 fold from US$1067 in 1980 to US$2877 in 2011. During that time, the population grew from 535 million to 600 million and will continue to grow at about 1.5% p.a (2000-2010). Despite large income increases since 80s, the food consumption change is gradual perhaps due to religious diet restrictions in a number of AMSs. Incidence of absolute poverty (incomes below US$1.25 /day) has dropped from around 175 million (42 % of total population) in the early 1990s to around 80 million (15% of population) in 2011[37]. In terms of per kaput food consumption, ASEAN has exceeded that of the average of developing countries by 2011-2013(Table 1).

Most of these poor live in rural areas. Their main economic activities relate to agriculture. Their fortunes are intertwined with those of agriculture development. However there is a growing middle class. Middle-class better educated consumers also require better quality food and high value fruits and vegetables eg organically grown. Equally, rice would be consumed in different ways – less as a simple staple but perhaps more in the form of processed foods. Hence change in consumption patterns has an enormous impact on the farming and the primary processing (milling) sector. It is restructuring the rice trade to one oriented to export. With rapid urbanization and industrialization, the role and structure of agriculture in ASEAN economies is changing as well. Rural labour is migrating to cities as they hold out higher paying jobs.

7.2. Sustainable agriculture production, competing use of natural resources and their depletion

Over the period 1970-2011, the percent of agricultural land area in ASEAN increased substantially from 20.2% to 29.4%.(Table 3). Changes in dietary preferences and increases in food prices were among the factors that stimulated the expansion of land used for crops as a percentage of total land area. This trend is most notable in CLMV economies, but is also observed in Indonesia, the Philippines, Thailand and Vietnam[38]. However with increasing population over the past thirty years, per capita arable land availability has declined by 17 % in Indonesia, 34 % in Vietnam, and a dramatic 47 % in the Philippines. Indonesia, and Vietnam have been losing some prime food crop lands to industry, urbanization, and infrastructure, and have few viable options for opening up new lands for food crops (except for the Outer Islands in Indonesia)[39]. Industrialization is inevitable for an economy to achieve high income levels. ASEAN like other developing economies is restructuring away from agriculture, with land once used to grow basic food crops being reallocated to expanding cities and factories producing higher value export products.

Significant shifts toward biofuel crops are observed in Indonesia and Malaysia, and other crops in Thailand. The difference in value per hectare between high-value agricultural products and traditional staples can be dramatic—tobacco and oranges earn about 10 times as much per hectare as rice, and the ratio is over 30 for bananas. Sugarcane, cassava, and sweet sorghum are used for bioethanol production whereas biodiesel production would use palm oil, *Jatropha curcas*, or *Moringa oleifeira*, The upward trend is reflected in global outlook for production of biodiesel (Fig 4). The price of oil is a key factor since high oil prices makes the production of alternative energy sources such as biofuels, competitive. The price of crude oil declined in the first quarter of 2009 to a low of a little under $45 per barrel (/bbl) from its peak of about $140/bbl.

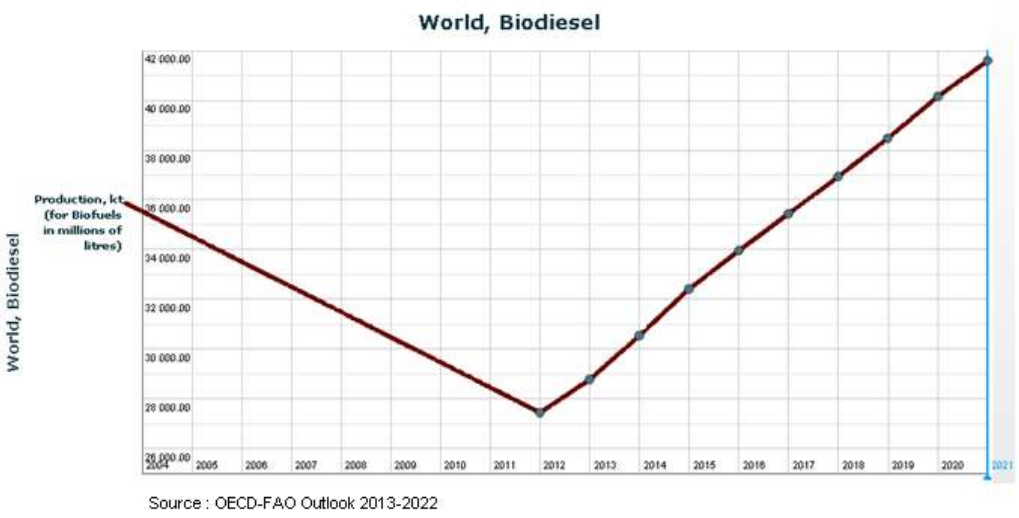
The major crops in the ASEAN in descending production quantity (tonnes) are rice, sugar-cane, cassava, oil-palm, maize, vegetables, coconuts, bananas, rubber, citrus fruit, coffee, soybeans and cocoa (Table A.6).Contributing to a fifth or more of the world's production are rice, cassava, oil palm coconuts, rubber,

[37] JICA 2012. ASEAN Dynamism : Agricultural transformation and food security 2040.
[38] ADB 2013 Key Indicators for Asia and the Pacific 2013 44th edition
[39] JICA 2012. ASEAN Dynamism : Agricultural transformation and food security 2040.

bananas, coffee, cocoa and spices (2012 figures). Rice cultivation is still dominant in agro-based ASEAN economies.

Land and water resources in the region are also under significant stress as well. Water erosion affects Indochina (40 M.ha), the Philippines (10 M.ha) and Indonesia (22.5 M.ha). In relative terms (as % of the total country area) moderate to extreme water erosion is particularly important in the Philippines (38%), Thailand(15%) and Vietnam (10%)[40]. Agricultural activities can lead to water erosion, wind erosion, chemical degradation, which is almost exclusively a result of improper management of cultivated arable land and physical deterioration of soil structure. But water erosion effect is the predominating factor in land degradation. Although natural resources are abundant in Southeast Asia, they are depleting rapidly in meeting the consumption needs of growing populations.

Fig 5 :Global Production Trend in Biodiesel, 2004-2020



Source : OECD-FAO Outlook 2013-2022

7.3. Research and development and technology diffusion and absorption for crop productivity

Increased food crop production in the recent past has resulted primarily from productivity increases (cropping intensification and yield increases). The ASEAN countries enjoyed a robust growth of 2.7 % per annum in agriculture between 1985 and 2010. ASEAN compared favorably with the global agricultural growth rate (2.4 %) during 1980–2011. However, this growth rate lagged that of China (4.3 %) and India (3.1 %). The region's rich resource endowment (arable land and water) combined with relatively low wage rates have allowed most countries to benefit from robust global demand for agriculture products. However as the overall GDP growth rate (5.0 %) was even higher than agriculture, the share of agriculture declined from 22 to 12 %[41]. Table 4 shows production of 5 major food commodities is leveling. With the exception of sugar-cane, maize, soybean, cassava and even rice in some years between 2007and 2011, were seeing production decline.

[40] International Soil Reference and Information Centre (ISRIC). (1997). The assessment of the status of human-induced soil degradation in South and Southeast Asia. Available at (http://www.isric.org/sites/default/files/ASSODEndReport.pdf)
[41] JICA 2012. ASEAN Dynamism : Agricultural transformation and food security 2040.

Table 4:Rate of Growth of ASEAN 5 major food crops, 2004 -2011

Products	2004	2005	2006	2007	2008	2009	2010	2011	2007-2011
Paddy	3.0	3.0	3.0	2.8	5.8	-14.7	2.1	4.0	-0.3
Maize	12.6	6.5	0.6	10.6	15.1	2.3	-16.7	-2.4	1.2
Soybean	7.3	16.2	-8.5	-7.5	11.6	-3.3	0.3	-10.3	-2.1
Sugarcane	-8.4	-24.5	18.2	12.5	9.1	-12.2	-24.1	32.6	1.6
Cassava	-4.4	-3.6	23.5	6.0	1.5	4.9	-8.8	10.6	2.6
Source : ASEAN Food Security Information (AFSIS) Database, based on country (MOA) data submission									

In addition, crop productivity leaves more to be desired. As an indication, Table A.4 and Table A.5 show that the productivity for rice and vegetables is below the global average.

The context for agriculture production in ASEAN is changing, marked by an increasing connection with the food supply chain, including progress on the multi-functionality of production and the gradual marginalization of small farmers and stakeholders. Strengthening agricultural productivity would benefit from a holistic approach of an integrated supply chains that include smallholding family farms with trading networks under public-private partnerships. These changes will require a fundamental transformation at the farm level, viz: introduction of more intensive and specialized farming activities; higher productivity; and the development of effective value chains. Farmers will require considerable technical advice to make the switch from traditional to high-value crops as well as sound marketing information and linkages to actors further up the value chain via pro-farmer cooperatives/associations. As elsewhere in the immediate region, rapid infusion of technological changes (crop intensification; mechanization; hybrid seeds; more efficient use of water, energy, fertilizers; and climate resilient crops.) would be the lever for improving productivity and offsetting higher input costs (including labor and energy), while producing higher quality products demanded by consumers.

As countries make the ongoing transition from subsistence and input-driven production to commercial and more capital intensive agriculture, the role of the private sector will become paramount. Most of the financing necessary to modernize agriculture and sustain productivity improvements would need to come from the private sector. Hence their participation is critical to move toward a single ASEAN market and production base that is competitive regionally and competitive.

7.4. Food security

AMSs have tried to soften the impact of food price increase and volatility especially upon the most vulnerable part of the population by export restrictions, price controls, price subsidies, and import facilitation. As a growing and competitive market economy, state intervention is a balancing act between protecting consumers or assisting agricultural producers to benefit from rising prices. There is still a number of AMSs that are largely agricultural. Food price inflation is an important barrier to economic access to food.

To strengthening food security, ASEAN devised a regional scheme (APTERR) as an effective and timely mechanism for supply of staple rice as food aid for emergency relief and/ or under unusual market situation. The buffer mechanism using a stockpile support fair/balanced food trade within the acceptable levels of food prices that ensures due consideration is given to balancing domestic accessibility to food and intra and extra regional food trade. The focus of food security and self-sufficiency is primarily on rice.

Of recent, AMSs are considering extending the commodity scope from rice to other highly speculative commodities such as cooking oil, sugar and maize to safeguard against the alarming risk of food price volatility. ASEAN would be adopting a step-by-step approach in considering expanding APTERR as a role model for other food commodities. This sequential approach appears to be a judicious modality in future widening of commodity scope for the emergency reserve scheme.

7.5. Climate change issues

Southeast Asia is one of the world's most vulnerable regions to climate change, due to its long coastlines, high concentration of population and economic activity in coastal areas, and heavy reliance on agriculture, fisheries, forestry and other natural resources. Climate change already affects Southeast Asia. Southeast Asia's average temperature has increased at a rate of 0.1 – 0.3°C per decade and sea level has risen at 1 – 3 millimeter (mm) each year over the last 50 years or so. The region also experienced a downward trend in precipitation during 1960 – 2000. Increasing frequency and intensity of heat waves, droughts, floods, and tropical cyclones are occurring in recent decades.
Climate change will thus threaten food security in the region with its dimensions impacting food availability, food accessibility, food utilization and stability. It will have a knock-on effect on economic development. This threat will be further exacerbated by additional food and energy requirements of an increased population. Natural disasters will have trans-boundary effects. Disease vectors may also move between countries. Possible impacts of climate change on agriculture and food security at local and national levels will hinder sustainable development. Above that, it may also lead to conflicts over the use of land and water resources and to internal and regional migration of people, with possible threats to the regional security.

Climate change is worsening water shortages, constraining agricultural production and threatening food security. Further, it can cause forest fires, coastal degradation, and greater health risks. The region is projected to warm further, following the global trend. The weather will become drier still in the coming decades in many parts, particularly in Indonesia, Thailand, and Viet Nam. Further rises in sea level is expected. Southeast Asia is likely to suffer more from climate change than the global average, in terms of declining crop yields; loss of rich forests; damage to coastal resources; increased outbreaks of diseases; and associated economic losses and human suffering. About an estimated 1.1% of ASEAN population would be at risk of droughts, floods and extreme temperature according to a FAO report. (Table 5). The hazard regions in ASEAN are listed in Table 6.

Table 5: ASEAN Population at risk of natural disasters

	Droughts, flood & extreme temp	**Pop (000)**	**Affected pop (000)**
	% pop affected		
	2009	**2009**	**2009**
South-Eastern Asia	**1.1**	**589567**	**6485.2**
Brunei Darussalam		406	
Cambodia	6.6	14085	929.61
Indonesia	0.2	231370	462.74
Lao People's Democratic Republic	2.7	6128	165.46
Malaysia	0.1	28307	28.307
Myanmar	0.1	59130	59.13
Philippines	0.8	92227	737.82
Singapore		4988	
Thailand	3.8	66903	2542.3
Viet Nam	1.6	86025	1376.4
Source: FAO Stat Yearbook 2013			

Table 6: ASEAN Climate hazard hotspots and dominant hazards

Climate hazard hotspots	**Dominant hazards**
North western Vietnam	Drought
Eastern coastal areas of Vietnam	Cyclones, drought
Mekong region of Vietnam	Sea level rise
Bangkok and as surrounding areas in Thailand	Sea level rise, floods
Southern regions of Thailand	Drought, floods
The Philippines	Cyclones, landslides, floods, drought
Sabah state in Malaysia	Drought
Western and eastern area of Java Island, Indonesia	Drought, floods, landslides, sea level rise
Source : Yusuf A.A & H Francisco (2009) Climate Change Vulnerability Mapping for Southeast Asia. EEPSEA. (http://www.eepsea.org.)	

The region therefore has a high stake in taking action against climate change.[42] The region heavily relies on agriculture for livelihoods—the sector accounted for 43% of total employment in 2004 and contributed about 11% of GDP in 2006. Its high economic dependence on natural resources and forestry—as one of the world's biggest providers of forest products—also puts it at risk. An increase in extreme weather events and forest fires arising from climate change jeopardizes vital export industries. The impacts, adaptive capacity and vulnerability to climate change are not the same across regions. The severity of the impacts of climate change in this region is the result of the following factors [43]:

- high concentration of population and economic activity along long coastlines is exposed to sea level rise,
- the physical impacts of climate change are expected to be unevenly large,
- the population is heavily reliant on climate-sensitive sectors such as agriculture, fisheries, forestry and natural resources in terms of national income and employment,
- the high incidence of poverty in the region leads to greater vulnerability and
- the countries have limited financial, technological and institutional capacity.

7.6. Trade liberalization, facilitation and integration

Presently five out of the eight developing ASEAN countries have a surplus trade balance in agricultural products. Total ASEAN trade peaked over 2011-12 and then declined sharply in 2013. Similarly, ASEAN intra-trade in agricultural products has slightly declined from 24% in 2004 to 20% in 2013. (Fig 6)This is reflective of a weakened global economy as a growing number of major developed economies struggling from recession over 2012.

ASEAN exports of agricultural products have risen from 6.5% in 2002 to 11% in 2011(Table A.10). That is almost a 2 fold increase in 10 years. The main exports are oil palm, cassava, rice, rubber, and coconuts. Cocoa exports are declining sharply from 14 % in 2002 to 7% to 2011 (Table A.10) Cassava exports has increased dramatically over the last decade and sugar cane moderately. Although still substantially small in comparison to world market, high value vegetables are increasingly making market impact. Soy beans, maize and other fodder crops exports are increasing in value to a smaller extent.

ASEAN imports over the same period are 6% of the world import trade value. Main imports are rice, fodder, coconuts, cocoa, rubber and sugar. (Table A.9) The bulk of which would be intra-ASEAN trade for consumption and processing as in the case of rice and rubber, respectively. In intra-ASEAN trade, processed agricultural products dominate, viz: rubber (HS40), tobacco (HS 24), beverages (HS 22), cocoa (HS 18) and cereal preparations (HS 19), and animal and vegetable fats (HS 15) (Table A.7). In terms of % commodity share of total ASEAN trade, fresh produce such as live plants (HS 6), edible fruits and vegetables (HS 7 & 8), coffee, spices tea(HS 9), cocoa (HS 18), cereals (HS 10) and tobacco (HS 24) are of significant trade value (Table A.6). These are HS items, quality standards and SPS measures could target to complete harmonization. On the average from 2004-2013, trade value of plant produce (HS 6-14,17-24,40) is 83% of total ASEAN agricultural trade (includes livestock and fisheries i.e HS 1-24,40)). (Table A.6)

Trade with dialogue partners is fairly stable with the exception of India where there is a big increase from 2% in 2004 to 8% in 2013 (Fig 7). Total intra-trade i.e. including non-agricultural products hovers at around 25 % (Table 6.). With India and China as growing and emerging markets, WTO plus measures in FTA Agreements could be explored to grow those areas via trade facilitation measures.

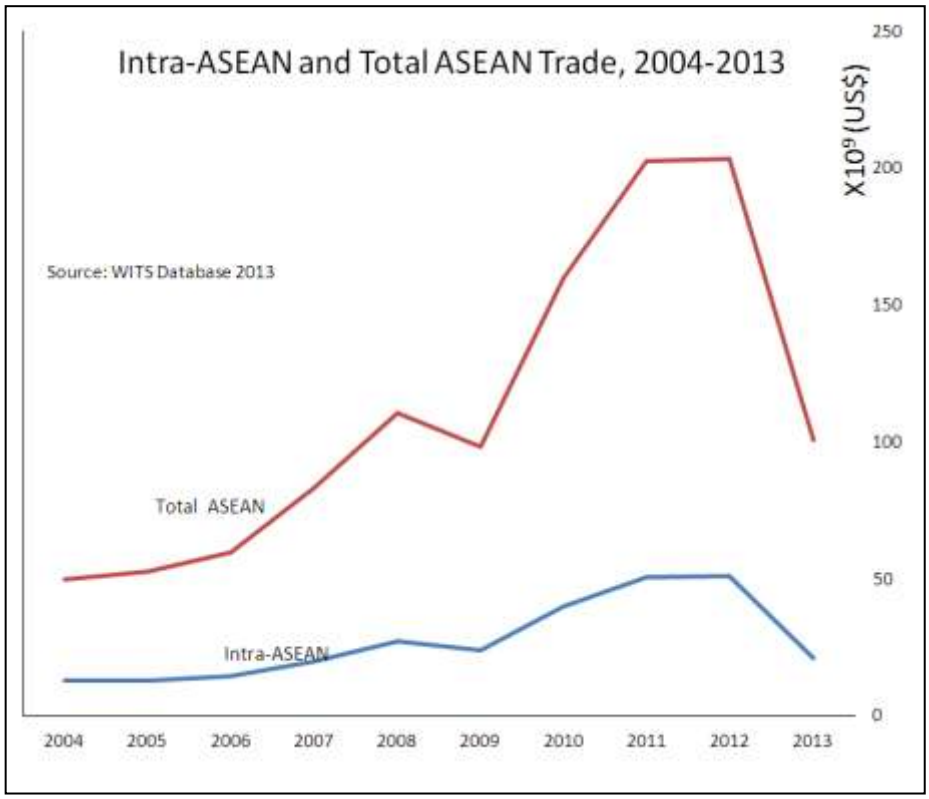
The ASEAN has taken a proactive role in trade facilitation since 1993, when its members agreed to establish an ASEAN Free Trade Area (AFTA). AEC Blueprint of 2003 takes economic integration a leap further. It aims to transform and integrate ASEAN into a highly competitive, single market and production base by 2015. Essentially, a single market and production base involves removing barriers to intra-

[42] ADB 2009. The Economics of Climate Change in Southeast Asia: A Regional Review.

[43] Koh, Kheng Lian and Lovleen Bhullar, 2010, Adaptation to Climate Change in the ASEAN Region, Draft version, London: Centre for Law and the Environment, University College London.
http://www.ucl.ac.uk/laws/environment/docs/hongkong/Adaptation%20to%20CC%20ASEAN%20(KL%20Koh%20AND%20Lovleen%20Bhullar).pdf

ASEAN trade and capital flows — tariff, non-tariff, and as well as behind the border. Several agreements already provide rules and monitoring mechanisms to make the AEC adhere to international best practices and making the region fully integrated into the global economy.

Fig 6 :Intra- ASEAN and Total ASEAN Trade Trend, 2004-2013



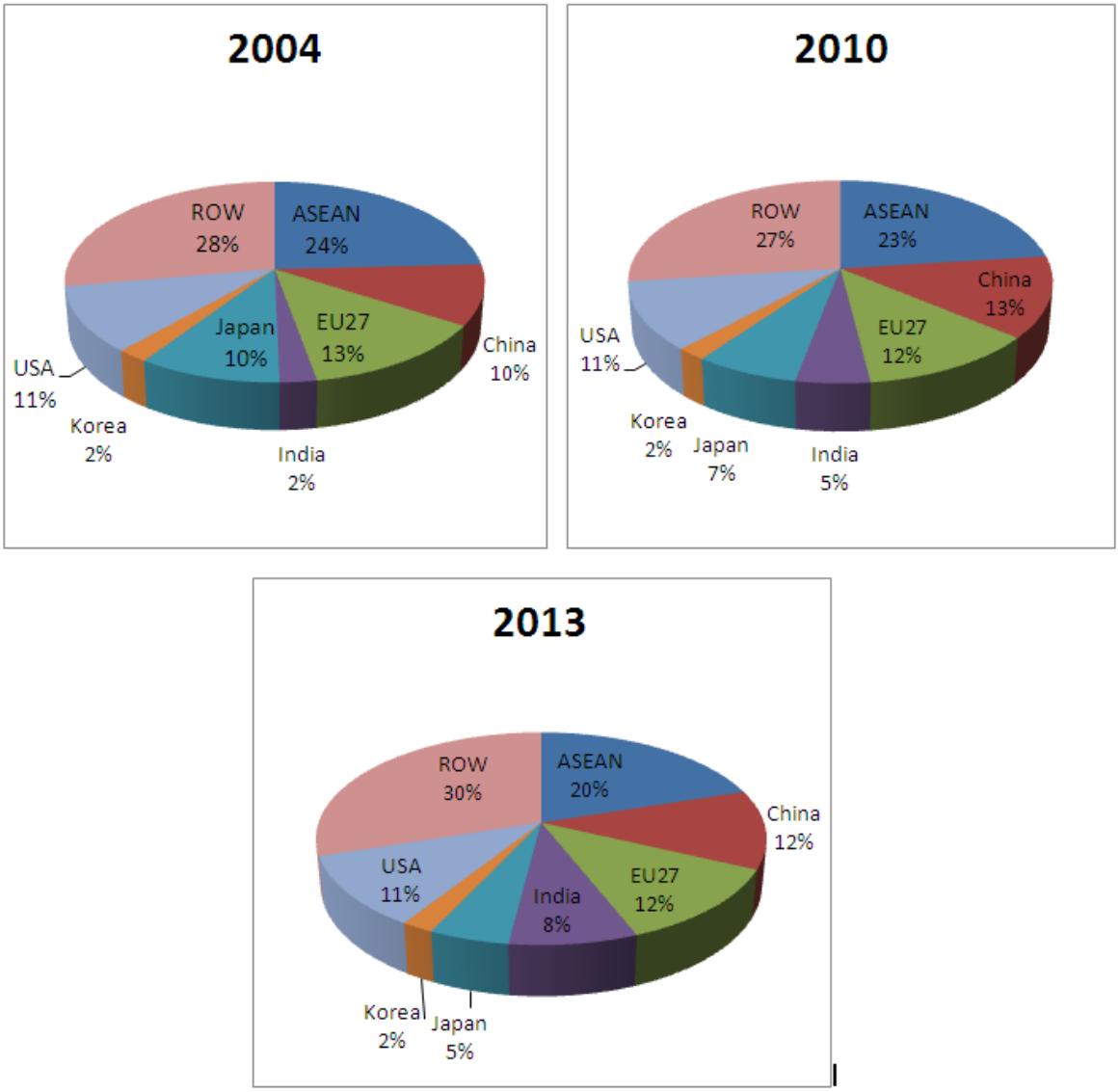
The ASEAN Trade in Goods Agreement (ATIGA) of 2010 enhances trade liberalization and trade facilitation to improve the free flow of goods within ASEAN. It comprises elements such as the removal of non-tariff barriers, rules of origin, standards and conformance, sanitary and phytosanitary measures, customs and other trade facilitation measures. It establishes a mechanism to monitor the elimination of non-tariff barriers (NTBs) and calls for an ASEAN Trade Facilitation Work Program by each AMS with purpose of creating a consistent, transparent, and predictable environment for international trade transactions.[44] Besides SPS measures and Technical Barriers to Trade (TBTs), there are a wide range of NTMs such as import bans, quotas and licenses, finance measures and others.

For agriculture, NTMs through SPS measures is to protect human, animal and plant health. Up to 2010, the ASEAN core NTMs i.e. those measures that are most prone to trade protection and import restriction are, on the average, most prevalent in agricultural than in non-agricultural products.[45] The list of crop-related NTMs extracted from the 2006 ASEAN NTM register is in Table A.11. There are at least 45 product lines with NTMs levied by 5 AMS or more. The total affected import trade i.e. derived from value given by 3 to 4 AMSs, is about US$ 2.3 billion. The targeted commodities for NTM removal are rice, fresh fruit and vegetables, coconuts, coffee, oils seeds, soybeans, dried fruit, live plants and cut flowers. Table 7 also gives an idea of the composition of these ASEAN products traded within ASEAN and to the world. In trade value terms, the top 10 trade restricted commodities are rice, cocoa beans, oil palm, coconut, sugar cane, maize, onions, fresh fruits, coffee and pepper. (Table A.6)

[44] ADB 2010. ASEAN +1 FTAS and Global Value Chains in East Asia. Ch3

[45] ERIA 2012. Mid-Term Review of the Implementation of AEC Blueprint. Chap 13

Fig 7 :ASEAN Major Market Destination for Agriculture Products, 2004 -2013



Notes : ROW stands for Rest of the World
Source WITS Databases (2013)

Table 7:Total intra-ASEAN trade share(%) of total ASEAN trade to the world, 2002 -2012

ASEAN												
Indicator	Partner	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Intra-regional Trade Intensity Index	ASEAN	3.89	4.28	4.24	4.26	4.23	4.35	4.20	3.95	3.72	3.66	3.59
Intra-regional Trade Share (%)	ASEAN	22.65	24.44	24.44	24.86	24.85	25.01	24.85	24.31	24.62	24.26	24.56

End-Notes：

- Intra-regional trade intensity index is the ratio of intra-regional trade share to the share of world trade with the region, calculated using sum of exports and imports data. An index of more than one indicates that trade flow within the region is larger than expected given the importance of the region in world trade.
- Intra-regional trade share is the percentage of intra-regional trade to total trade of the region, calculated using sum of exports and imports data. A higher share indicates a higher degree of dependency on regional trade.

Source : ADB Asia Regional Integration Centre

Table 8:The Commodity Composition of Intra -ASEAN Agriculture Trade and the share of intra- -ASEAN trade to the total ASEAN trade in 2004-2013

HS Code	Agriculture Products	Frequency Distribution of intra-ASEAN Agriculture trade (%)			Intra-ASEAN trade share by Commodity (%)		
		2004	2010	2013	2004	2010	2013
01	Live animals	1.58	1.30	1.18	70.21	50.10	39.14
02	Meat and edible meat offal	0.40	0.28	0.29	7.84	5.61	4.24
03	Fish & crustacean, mollusc & other aquatic invert	9.32	4.42	4.95	19.56	14.48	23.18
04	Dairy prod; birds' eggs; natural honey; edible pr	3.52	2.82	1.98	27.50	23.35	12.56
05	Products of animal origin, nes or included.	0.21	0.06	0.05	18.70	9.31	8.53
06	Live tree & other plant; bulb, root; cut flowers	0.34	0.25	0.19	24.30	26.17	27.43
07	Edible vegetables and certain roots and tubers.	2.15	2.06	1.72	22.46	21.91	23.13
08	Edible fruit and nuts; peel of citrus fruit or me	2.12	1.92	1.87	20.28	17.48	14.55
09	Coffee, tea, matï and spices.	1.83	1.92	3.15	17.44	17.78	28.75
10	Cereals	7.62	11.09	3.60	22.09	31.56	13.65
11	Prod.mill.indust; malt; starches; inulin; wheat g	1.49	1.68	1.70	26.60	25.56	35.79
12	Oil seed, oleagi fruits; miscell grain, seed, fru	1.25	0.85	0.63	15.73	11.53	6.55
13	Lac; gums, resins & other vegetable saps & extrac	0.19	0.13	0.18	19.66	13.20	9.45
14	Vegetable plaiting materials; vegetable products	0.14	0.17	0.09	37.07	40.81	23.14
15	Animal/veg fats & oils & their cleavage products;	13.10	17.41	18.97	23.14	21.51	12.56
16	Prep of meat, fish or crustaceans, molluscs etc	1.73	1.16	0.94	7.35	6.58	11.43
17	Sugars and sugar confectionery.	5.50	6.46	4.69	49.81	46.35	28.50
18	Cocoa and cocoa preparations.	3.46	4.80	6.09	37.32	39.68	41.63
19	Prep.of cereal, flour, starch/milk; pastry cooks'	5.47	5.46	7.56	46.32	47.61	55.44
20	Prep of vegetable, fruit, nuts or other parts of	1.28	0.91	0.85	12.23	12.27	14.29
21	Miscellaneous edible preparations.	4.60	5.43	8.90	35.73	43.79	49.99
22	Beverages, spirits and vinegar.	5.42	4.99	4.54	37.26	39.39	51.79
23	Residues & waste from the food indust; prepr ani	2.63	2.34	2.45	18.49	11.95	8.80
24	Tobacco and manufactured tobacco substitutes	7.05	4.37	6.03	56.41	50.40	49.00
40	Rubber and articles thereof.	17.61	17.72	17.38	20.57	18.42	17.61

Source: WITS Database 2013

Inefficient border administration affects the competitiveness of ASEAN exports by raising costs and shipping times. While the overall performance of ASEAN may have improved in recent years, there is considerable room for improvement of trade processes and procedures in individual countries. The ASEAN Economic Community Blueprint and ASEAN+1 FTAs offer a useful framework for channelling efforts to further reduce trade transaction costs between ASEAN and its dialogue partners. This would unlock ASEAN's trading potential, promote the growth of regional value chains and trade in East Asia and help to rebalance global growth.[46] ASEAN has FTAs with Australian and New Zealand (AANZFTA), China (ACFTA), India (AIFTA), Japan (AJCEP) and Korea (AKFTA).Productivity growth alone will only generate low-value surpluses. Combining this with trade facilitation measures, including infrastructure investments like the GMS corridors, will amplify benefits.

In order to avoid an overlap of and/or tangential development programmes, there is a need to integrate the sub-regional frameworks such as Greater Mekong Subregion (GMS), the Brunei Darussalam-Indonesia-Malaysia-Philippines East ASEAN Growth Area (BIMP-EAGA), the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), and the Indonesia-Malaysia-Thailand Growth Triangle (IMT-GT) into the ASEAN community with a mutually reinforcing approach.

7.7. ASEAN integration and initiatives

Narrowing the development gap within and across ASEAN economies is a critical step for deepening economic integration and ensuring the benefits of ASEAN integration through implementation of the Initiative for ASEAN Integration (IAI) [47]. Over the past two decades, CLMV countries have steadily caught up with the more advanced ASEAN economies: the ratio of average per-capita GDP of the ASEAN-6 to CLMV countries declined from over 11 times in 1990 to about 4 times in 2010. If 2030 per-capita GDP growth aspirations are met, the ratio would further fall to about 3 times. At the same time , there should be an "graduation" of CLMV from the IAI once they have achieved a certain level of economic development (e.g., lower-middle income level).

A priority initiative of the AEC Blueprint is the enhancement of its third pillar (equitable economic development). Under this is the recognition of the strategic importance of small- and medium-sized enterprises (SME) for equitable growth in the region. The Blueprint has proposed measures for continued SME development in the region through facilitating access to finance, information, markets, and technology. Regional production networking as an important source of economic growth, outsourcing and subcontracting, offers increasing opportunities for SMEs to capitalize on regional economic integration.

Economic integration in the form of free movement of agricultural products will yield "efficiency gains" for a AMS such as benefits derived through specialization, competition and better allocation of resources in production. However, with lower tariff protection, if any, local SMEs' survival will be affected by increased competition. Hence financial and technology support to boost productivity and competiveness are essential cornerstone for SMEs' development. On the other hand, being small, SMEs have the advantage of agility to meet market trends.

ASEAN's vast diversity and the need to accelerate convergence could be its greatest challenge in creating a meaningful ASEAN Community or in the more immediate term, AEC 2015. However, an effective AEC should exploit diversity as an opportunity and use it to comparative advantage for enhanced competitiveness and greater diversification and better integration as borderless community[48]. However, the ASEAN institutional model governed by decision by consensus — often summarized as the "*ASEAN way* has its limitations. It inhibits operational decisiveness and renders strengthening regional cooperation more difficult by giving de facto veto rights to those favoring the status quo. Therefore, *the ASEAN way* needs an efficiency update by introducing more formal rules and adopting a more flexible decision-making system.

[46] ADB 2010. ASEAN +1 FTAS and Global Value Chains in East Asia. Ch1

47 ASEAN 2009. Cha-am Hua Hin Declaration on the Roadmap for the ASEAN Community (2009-2015)

48 ADB 2012. ASEAN 2030 Toward a Borderless Economic Community — DRAFT HIGHLIGHTS

7.8. Transformation of agricultural sector, agro-industrialization and the globalization of food production

ASEAN agriculture is increasingly linked to value chains aimed at modernizing agriculture as an industry. Contract farming in the Greater Mekong Subregion (GMS) sub region is already making strident progress.[49] In tandem, profitable agriculture plus higher labor costs are driving diversification from traditional to higher-value crops. In the Cambodia HARVEST programme, administered by the US Feed the Future Initiative, producer groups of 10 to 30 members, coordinate vegetable production, build simple value chain with traders and buyers, and receive bulk discounts on farm input purchases. They have diversified from rice to vegetables. Development of agro-industries will provide growing opportunities for value addition of agricultural production, with larger shares of domestic products processed locally and exports shifted from agricultural commodities to processed foods. Demands associated with storing, processing, and distributing the expected growing volume of perishable food items will require a supply side response in the form of substantial investments in the different value chains. These have been undertaken by the private sector. The trend towards agri-food processing is inevitable as manufacturing progressively takes a more central place in the national economies as pathways towards economic development. Increasing percentage of trade value is going to processed agricultural products (Table 7). As a result of growing supply chains and production networks, two-thirds of merchandise trade is in components than just finished products. Table 7 also shows that a large percentage of these processed products are traded within the region.

Fragmented production block processes that are located in places or in other AMSs that possess different location advantages, save on the total production cost. When the savings of production costs in production blocks is large and incurred service link costs for connecting dispersed located production blocks are small, business viable production networks form. SMEs play a crucial role. SMEs are essential components of production networks, involved in inter-firm fragmentation in various forms such as subcontracting arrangements. SMEs can be important participants in the vertical integration of value chains of finished agricultural products.

New high paying jobs in agro-industries will become available in semi-urban and rural areas. The key to future transformation of agriculture and profitability of farms will be improvements in productivity through much needed infrastructure investments for farm mechanization, irrigation, capital or credit and technology. Private-sector or Small Medium Enterprises (SMEs) agricultural firms engaged in large-scale contract farming can provide farmers with such technical, financial and marketing assistance, as farming gets more organized as part of a supply value chain both to domestic and global markets.

SMEs are the backbone of the ASEAN economies and are key towards this transformation. They account for more than 96 per cent of the private sector enterprises and for between 50 and 95 per cent of employment in many AMSs. In addition, the contribution of SMEs to GDP is generally significant, about 30-53 per cent, and the contribution of SMEs to exports is between 19-31 per cent[50].

Given the trends of rising globalization and economic integration in the ASEAN region, there is significant potential for the SME sector to increase its contribution to the region's development through greater participation in global value chains (GVCs).

49 ADB 2012.Agricultural trade facilitation in the Greater Mekong Subregion

50 2010. ASEAN Strategic Action Plan for SME Development -2010 – 2015. [http://www.aseansec.org/SME/SPOA-SME.pdf]

8. Main Challenges to ASEAN Cooperation in Crop agriculture

In view of the trends and issues in the global and regional arena, 6 development challenges are identified for the crop sector as of significance for developing the ASEAN's 5 year Plan (2015-2020) towards ASEAN Cooperation in Food, Agriculture and Forestry

8.1. Increase crop production and rural development and their contribution towards economic development and integration of ASEAN.

To ensure equitable growth and deeper economic integration among ASEAN economies narrows down to generating robust growth while ensuring that it is inclusive and equitable. A robust agriculture development is critical to the food security of ASEAN. It is also the key to poverty alleviation by raising future incomes and overall quality of life of the rural population. Consequently, the goal of inclusive growth can be achieved. The percent contribution by the agriculture to the GDP ranges from 30-35% in Cambodia, Myanmar and Lao PDR where the percent population agriculture employed is as high as 70%, to 10 % in Malaysia where 13% of the population is engaged in agriculture (Table A.1). On the average about 43% of the ASEAN population in 2010 is employed in agriculture (Table A.2). That has declined from 49% in 2001.

Increased gender equity in access to resources, goods and services is another high-impact area which could increase yields on their farms by 20-30 %[51]. This could raise total agricultural output in developing countries by 2.5–4 percent, which could in turn reduce the number of hungry people in the world by 12–17 percent. Closing the input gap on agricultural land held by women could increase yields on their land to the levels achieved by men.

For rural growth to be both sustainable and inclusive, farm productivity and rural incomes have to be raised by narrowing the development gap within and across ASEAN economies. Growth potential in CLMV countries is enormous. These member states have the natural resources, a young and growing population, and being strategically located between PRC with India. The Framework for Equitable Economic Development (adopted at the 19th ASEAN Summit) — and the Initiative for ASEAN Integration (IAI) are aimed at helping overall CLMV development. Channeling external assistance from development partners and giving priority to support these initiatives within the overall AEC Blueprint will greatly improve economic convergence. Integrating food production and processing among ASEAN economies would transform structurally and modernize the agriculture sector even as it is facing concurrently an outflow of labor from farms to industry. Facilitating and supporting participation and integration of SMEs such as farmers, traders, processers and distributers, in the agricultural and food- processing value chain, domestic or global will contribute to increased value creation, production and profits. They could nurture new business ideas, enhance productivity, improve economic structure, and lead economic development on a more resilient and sustainable path. There exists limitation to ASEAN SMEs to increase their contribution to the region's development, viz: limited sustainable entrepreneurial drive in the sector, lack of skill and expertise in organization and management for enterprises' efficiency, flexibility, and competitiveness, minimal clustering and network forming among SMEs, that can help small firms overcome some of the barriers of difficult access to information, markets, and inputs, and difficulty gaining access to finance[52]. The development of SMEs in the region is important as success in this effort will go a long way toward reducing regional and domestic income gaps, creating a balance of income and employment, and securing sustainable human and social security.
(ASCC B.1, B.3; AEC A.7, C.2)

8.2. Promote and enhance sustainable, efficient and equitable natural resources management and utilization programmes in food and non-food agricultural production.

Limited and yet highly competitive demand for natural resources as well as intensification of farming activity will put pressure on the environment. Ensuring environmentally sustainable use of natural

[51] FAO 2011. State of Food and Agriculture 2010-2011 -Women in Agriculture.Closing the gender gap. p42

[52] 2010 ASEAN Strategic Action Plan for SME Development -2010 – 2015. [http://www.aseansec.org/SME/SPOA-SME.pdf]

resources has to be guided by “green economy” policies to protect and conserve these resources from degradation and pollution.

Yet at the same time, balancing the 3 needs of feeding the increasing population, providing economic opportunities for poverty alleviation of the farming populace but without adding pressure on the environment, demand multi-sectoral trade-offs with appropriate checks and balances. It requires an ASEAN community effort to ensure social and political sustainability of production systems. To have any measure of success, all actors along the supply and demand chain from producers, buyers and consumer including public sector would need to be committed in terms of will and resources such as infrastructure and technology.

Small farmers play a significant role as stewards of the natural resource base and will play a central role in efforts to sustain agriculture and reduce land-based GHG emissions. National polices and strategies for reducing the negative impact of agriculture on natural resources and balancing competing use for them between food security and a bioenergy demand, would need to be strengthened as they are country-specific and country-led.
(AEC A.7, C.2; ASCC B.1, B.3,D.8)

8.3. Accelerate technology diffusion and absorption in key crop agriculture production areas through collaborative research and development and technology transfer via strategic alliances with private sector and dialogue partners as the industry upgrades.

Given the low productivity of agriculture in ASEAN and in the face of depleting land and water resources and stagnating crop productivity, science and technology solutions are critical to advance crop agriculture productivity, improve market competitiveness, transform key agriculture production systems with sustainability approaches, enhance food safety and nutrition, and manage climate change negative impacts. Agricultural research helps generate new technologies for increased agricultural productivity and resilience through diversification of the production systems.

R & D and technology has to be cascaded down to where it matters – farmers and producers level. Hence agricultural R&D and extension services, whether public or private, have to ensure farmers particularly smallholders have access to the public goods, latest technologies and adequate inputs to produce more output. Smallholder agriculture remains a large part of ASEAN agriculture in the next 5-10 years. Combining increased productivity and resilience will require a high level of investment in research to develop productive land-use systems with minimal ecological risk such that biodiversity may be used productively and conserved.

Table 9: Agricultural R&D spending, 1996–2010 a share of Agriculture GDP

Country	Public Agricultural R & D Spending as a % share of AgGDP		
ASEAN	1996	2002	2008
Cambodia	na	na	0.16
Myanmar	0.06	0.03	na
Indonesia	0.37	0.28	0.31
Lao PDR	na	0.30	na
Malaysia	1.15	1.92	1.05
Philippines	0.34	0.48	0.33
Thailand	0.69	0.51	0.32
Vietnam	0.09	0.17	0.17
Other Asia -Pacific countries			
China	0.33	0.46	0.50
India	0.25	0.38	0.40
Australia	4.06	3.35	3.56
Japan	4.03	4.79	5.46
Korea, Rep. of	1.66	1.45	2.30
New Zealand	2.57	2.15	2.22
Asia-Pacific average	0.62	0.70	0.63

Source : IFPRI 2013. Benchmarking Agricultural Research Indicators across Asia-Pacific. ASTI Regional Synthesis Report

Agricultural R&D spending as a share of agricultural output in Asia–Pacific is lagging behind other regions of the developing world. These low ratios are a clear sign of underinvestment in agricultural R&D. If the region is to meet its agricultural, broader economic and emerging challenges, such as rapid population growth, climate change, environmental degradation, and food price volatility, levels of investment in agricultural R&D need to increase. In addition, such investments will need to be better managed, timed, and targeted to ensure maximum impact on productivity growth and poverty reduction. Increased diversification of funding sources will also be necessary. The private sector particularly , for example, is still an untapped resource in many of the region's countries. Supporting policy reforms offer further potential to ensure that the benefits of agricultural R&D translate into results[53]. Furthermore, linked to R&D technologies, is the capacity to scale these up. Hence institutional structures are just as important (i.e. extension system, private sector involvement etc) to scale up the outreach of the technology.

Countries that have invested more in agricultural research and development, whether through better seeds and inputs or better post-harvest and processing technologies or better infrastructure, generally have higher agricultural productivity levels and incur lower losses in food production and distribution[54].
(AEC A.7 (39,40), C.2; ASCC B.21, B.3,D.8)

8.4. Strengthen food security and resilience in farm production to minimize food price volatilities and improve nutrition security.

To achieve the goal of ensuring long-term food security and to improve the livelihoods of farmers in the ASEAN region, ASEAN need to increase food production; reduce postharvest losses; promote conducive market and trade for agriculture commodities; ensure food stability; promote availability and accessibility to agriculture inputs; improve nutrition security and operationalize regional food emergency relief arrangements.

Food security is a complex and multidimensional issue. It therefore requires a multi-sectoral approach particularly at national level. Hence prioritization and monitoring are keys to progress. Food security and food self-sufficiency, however, are often at odds with one another. Self-sufficiency policies that distort market signals using protectionist strategies, such as import bans, have high social costs given their

[53] IFPRI 2013. Benchmarking Agricultural Research Indicators across Asia-Pacific. ASTI Regional Synthesis Report

[54] ERIA 2013. Thought/Issues Paper on ASEAN Food Security: Towards a more Comprehensive Framework

distributional effects. They place food self-sufficiency at variance with the goals of food security and poverty reduction. The focus of food security and self-sufficiency is primarily on rice. AMSs have a much more open policy towards other food commodities, such as maize and wheat.

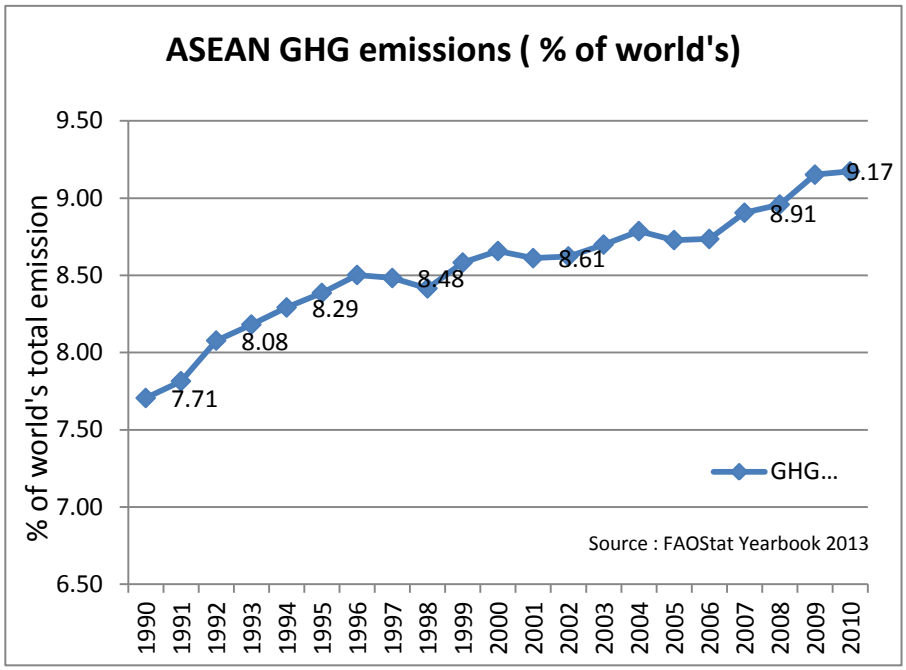
But, by improving agricultural productivity and domestic competitiveness, imports are likely to be deterred, and consequently, higher levels of self-sufficiency will be compatible with food security and poverty reduction. Further, economic integration of ASEAN should open the way wide for member countries to rely on each other to meet their short term needs for rice through assured and open trade with each other and a shared buffer stock as part of the "economic community" membership privileges. The move to extend the commodity scope of the buffer stockpile to vulnerable commodities could further enhance security if carefully managed.
(AEC A.7, ASCC B.1,B.3)

8.5. Minimize the adverse impact of climate change on agriculture and food security as well as reduce their contributions to climate change.

This necessitates a multi-sectoral approach to integrate climate change adaptation and mitigation measures into strategies for agriculture in vulnerable agriculture and rural sectors and mainstream climate change actions into ASEAN socio-economic development programmes. Given the uncertainty surrounding climate change, the implementation of anticipatory measures is challenging, as they require in-depth information and knowledge about climate change. There is also limited availability of experts, accurate information on the climate change situation at the national level.[55]

[55] Koh, Kheng Lian and Lovleen Bhullar, 2010, Adaptation to Climate Change in the ASEAN Region, Draft version, London: Centre for Law and the Environment, University College London. http://www.ucl.ac.uk/laws/environment/docs/hongkong/Adaptation%20to%20CC%20ASEAN%20(KL%20Koh%20AND%20Lovleen%20Bhullar).pdf

Fig 8 :ASEAN Greenhouse Gas (GHG) Emissions, 1990 - 2010



In order to get a clearer idea of the dimensions of the challenge of climatic change for food security in the ASEAN region, a " stocktaking " of impacts on and risks of climate change for food security is required. Several of the adaptation initiatives in the region have been connected with natural disasters. The ASEAN Multi-Sectoral Framework on Climate Change: Agriculture, Fisheries and Forestry towards Food Security (AFCC Framework) represent a comprehensive and strategic ASEAN approach to address the impacts of climate change in these three sectors. The AFCC Framework was endorsed by the ASEAN Ministers on Agriculture and Forestry in November 2009. AFCC is closely linked with the existing ASEAN Integrated Food Security (AIFS) Framework and the Strategic Plan of Action on Food Security in the ASEAN Region (SPA-FS) 2009 -2013. The AFCC provides a cross sectoral platform, to enhance synergies and cooperation between the relevant sectoral working groups, and also the working group on climate change. Under the AFCC the mainstreaming of climate change in the working groups is being promoted and initiatives, such as the Climate Resilient Network with ATWGARD are being supported. Adapting to climate change and climate variability is the 'new normal'. GHG emissions contributed by ASEAN agriculture continue to rise with the pace of agriculture production (Fig 8), from 7.7% in 1990 to 9.2% in 2010. These emissions are cumulative of manure application, enteric fermentation, rice cultivation and burning of crop residues.
(AEC A.7, ASCC B.1, B.3,D.10)

8.6. The challenge for ASEAN is to promote and enhance intra- and extra-ASEAN trade and long-term competitiveness of ASEAN agriculture products for integration into a single market and production base of global competitiveness standing.

Reaching the goal of economic integration requires the removal or lowering of tariffs as well as the implementation of trade facilitation measures--important among which are the reduction in and elimination of Technical Barriers to Trade (TBT). This is key to achieving this goal as the differences in regulations, standards and conformance assessment measures are impediments to the movement of goods from one country to another within the region. ASEAN has adopted a Trade Facilitation Framework. This is aimed at becoming a fully economically integrated region. The ASEAN Trade Facilitation Framework includes simplification, standardization and harmonization of customs, standards and sanitary and phytosanitary (SPS) measures. There are also the ASEAN Single Window implementation and an ASEAN Trade

Repository for transparency and visibility of all actions and interventions by stakeholders.

Over the years, the target has been the low hanging fruits. However, these issues are not always the most economically important for ASEAN or for the individual member states. The crux in the coming years is to review both the barriers and the potential economic benefits of tackling them.

There is also a need for greater emphasis on engagement with the private sector or SMEs, supporting information exchange, and developing mechanisms for feedback and support for the process. This includes involving private sector in identifying NTBs, and provide where available expertise in their monitoring and elimination. One foremost factor contributing to the slow progress in tackling NTBs is the difficulty in identifying which non-tariff measures are barriers to trade. ASEAN should consider creating a stronger culture of private sector involvement as they are main actors on the market floor. Currently the NTM register is open for reporting by AMSs only. Selection of NTBs for elimination is done by sectoral groups unilaterally. Member states have the most important role to play as they need to buy into the goal of a single market and production base. The resolute removal of NTBs hence requires a commitment on the part of member states[56].

Among the priorities foci for integration are enhancement of trade among ASEAN member countries, and long-term competitiveness of their food and agriculture products. By continuing to harmonize their SPS and quality standards and by standardizing their trade certifications of major traded commodities, their agricultural products are expected to become more globally competitive. As the tariff is almost zero in CEPT scheme, the main issues should shift from tariff to wider issues focusing on NTMs. Tariffs for highly sensitive goods like rice and sugar still persist within the community.

On the other hand, trade also plays an increasingly important role in stabilizing food availability in almost all countries. When agricultural-based countries experience declining per capita production of staple foods, the role of trade becomes more pivotal in the food security and poverty alleviation as discussed earlier.[57]

Narrowing the development gap within and across ASEAN economies is a critical step towards deepening economic integration and intra-ASEAN trade. From an agriculture perspective, quarantine agencies are at the forefront in agricultural trade. Hence, capacity building and training programs are integral to trade facilitation. Capacities need to be built along two fronts: technical (e.g., SPS and related scientific competencies) and procedural (e.g., inspections and certifications)
(AEC A.7, C.2; ASCC B.1, B.3,)

8.7. Strengths, Weakness, Opportunities, and Threats

In the process of identifying the development challenges facing ASEAN, a “strengths, weaknesses, opportunities-threats” (SWOT) analysis of the ASEAN crop agriculture sector was also undertaken for the purpose of getting a grip of the situation at hand from which to launch off plans. The analysis is in Table 8.

ASEAN’s major strengths include continuing robust economic growth, diversified export markets, open economies, appropriate natural resources and committed regional integration for a single market and for equitable economic growth. Cost of crop production is still low and ASEAN is a major producer of a number of economically important crops. The region’s main weaknesses include lack of human resource development, stagnating low productivity, lack of technology and infrastructure development, and low products quality. Hence value of exported agri-products is low. The sector is still highly dependent on FDI. On the other hand, opportunities are enormous because of its strategic position between 2 large economies – PRC and India that have an insatiable demand for food and raw ingredients for manufacturing. There is also a high potential for value-added product processing and technology introduction which in turns attracts FDI. ASEAN faces major threats of depleting natural resources and climate change. PRC and India at the same time are also competitors of agri-products. Market access for

[56] ERIA 2013. Standards Harmonization in ASEAN: Progress, Challenges and Moving Beyond 2015. ERIA-DP-2013-30

[57] FAO 2012, FAO Statistical Yearbook 2012. Part 2- Hunger dimensions

agricultural products is increasingly prohibitive because of stringent SPS and quality standards requirements, both international and private.

Table 10: SWOT Analysis of ASEAN Cooperation in Crops

SWOT Analysis of ASEAN Agriculture	
STRENGTHS	**WEAKNESSES**
✓ Robust economic growth ✓ Appropriate natural resources for agricultural production ✓ Committed regional integration and cooperation ✓ Low cost and high volume of agricultural production ✓ Diversified exports — by destination and product ✓ Adaptable open economies	✓ Limited natural resources for expansion ✓ Deficient safety and quality of products. ✓ Stagnating productivity ✓ Low value of agricultural production ✓ Dependence on FDI ✓ Coordination of regional development programs ✓ Lack of technology and infrastructure inputs ✓ Need for skill development
OPPORTUNITIES	**THREATS**
✓ Growing demand for agricultural products ✓ Strategic location in region ✓ Potential combined competitive ASEAN market ✓ Huge market potential, especially PRC and India ✓ Increasing opportunities to attract FDI ✓ Potential technology development for crop intensification ✓ Potential value-add agri-processing ✓ Trade in components for single production base ✓ Increasing trend for global value chains	✓ Rising competition from PRC and India ✓ Increasing demand for Standards compliance ✓ Competition by urbanization and industrialization for same resources ✓ Loss of cohesion/direction - competition rather than cooperation ✓ Negative impacts of climate change

9. Issues in ASEAN Cooperation

9.1. Work Scope of Sectoral Working Group

9.1.1. Scope

The work scope and the terms used in the terms of reference (TOR) of the ASWG on Crops (ASWGC) are general. Goals and objectives are unrelated to the ASEAN Community's vision and objectives. The same is true with the TOR for ATWGARD as well as AWGATE. Crop agriculture is undefined. As a result areas of strategic objectives, responsibility and accountability are unclear. Projects are decided bottom up and largely depend on the makeup of the members of the working groups and their expertise. If the present arrangement persists, there would be 2 outcomes. One, there would be immense overlaps in activities. Two, ASWGs for fear of overlaps, retreat to the narrow specialized areas of expertise. The TOR of ASWG Agricultural Cooperatives is more distinct. Although the ASWGAC covers similar areas it is from a development of farmers' socio-economic perspective as a cooperative organization.

The Crop Sector has evolved over the years into working group that focuses mainly on plant health regulatory matters and issues such SPS measures, horticulture quality standards and standards accreditation. The Sector's work is aligned mainly to enhancing intra-and extra-ASEAN trade and competitiveness of ASEAN crop products. The ASWGC as the TOR suggests is an endorsement rather than an executive body.

9.1.2. Gaps

As a result of the make-up of working groups, their general work scope and the expertise-bias approach in taking up projects, there is overlap in activities undertaken. There is also uncertainty in the demarcation of areas to cover in terms of working out projects to accomplish strategic thrusts. Working groups work in their silos and are unaware of the progress and work of other related working groups. There is an immense need to strengthen coordination amongst related working groups and create awareness of one-another's work, perhaps in the form of regular up-dates through forums or reports. Furthermore, in the current structures, ASWGs are also limited in addressing relevant new topics, such as climate change, as they feel bound to the mandates and areas of focus. For example it took over 8 months of discussions and presentations with ASWGC, AFCC and ATWGARD, to finally agree that the climate resilient network, which would operate under AFCC, would work together with ATWGARD and keep ASWGC informed of the progress.

The ASWGC should have a work plan for projects as well as project indicators in accordance with the Strategic Plan as part of a revised TOR (Article 3). Monitoring the progress of approved activities (TOR Article 5) should be recorded in a manner similar to a scorecard.

Frequent rotation of chairmanship, focal points and coordinators has also led to a lack of continuity in the focus, depth and management of some planned and ongoing projects, especially country – led initiatives.

9.2. Cross-Cutting and Emerging Issues

The demarcation of work scope and sectoral responsibility becomes more urgent with thematic issues fast changing the course of contemporary agriculture. The four emerging cross-cutting issues that the crop sector is involved or linked to are:

- sustainable management of natural resources (via AIFS),
- climate change adaptation and mitigation (via AFCC),
- bioenergy (via APTCS-FSBD) and
- food security (via AIFS).

Planning, programming, research, training, extension or technology transfer and implementation are part of a chain of activities to affect these themes across agriculture sector. Hence coordination and accountability are required for dealing with these cross-cutting issues. An overarching executive body with delegated AMAF authority, perhaps in the ASEAN Secretariat has to designate coordinating and accountability roles and responsibility. Leaving it to sectoral bodies and groups to cherry pick projects and activities especially for dealing with thematic issues would be inadequate in an era where results and timeline matter. The ASWGs and AMAF subsidiary bodies involved in crop-related thematic issues are indicated in Table B.2.

9.3. Sub-regional cooperation programmes

It is observed that there are many similar ASEAN Cooperation agricultural programmes either implemented or in the pipeline in sub-regional projects such as the Brunei-Indonesia-Malaysia-The Philippines East Asia Growth Area (BIMP-EAGA), Indonesia-Malaysia-Thailand Growth Triangle (IMT), the Singapore-Johor-Riau (SIJORI) zone and the Greater Mekong Subregion (GMS). A look at the BIMP-EAGA Blue print, 2012-2015 reveals strategies for food security, trade facilitation, sustainable management of critical ecosystems, climate change and adaptation and marketing and export development. These subregional cooperation and integration are aimed at poverty alleviation. They have improved infrastructure in the development of economic corridors and consequently the livelihood of the people especially in narrowing the economical divide in the region. But from an overall perspective and feedback, there is also an overlap and possible duplication of efforts in economic development and even in spreading thin efforts at national level.

9.4. Lack of private sector involvement

In the ASWGC there is lack of private sector participation and consultation in the setting of standards. The AEC is finally market driven by the private sector and their contribution is important to the smooth implementation of the standards. After the standards and guidelines are completed, there is no indication that their dissemination to the relevant market sectors is achieved. Private sector/ SMEs is also the engine of growth for market-driven agriculture. Hence private sector participation is critical to move towards a single ASEAN market and production base that is competitive regionally and globally. The proliferation of bilateral and sub-regional FTAs has created duplication and overlapping of Rules of Origin (RoOs) and other trade rules and regulations that would increase the transaction cost of doing business in the region, affecting SMEs adversely. It is necessary to create a conducive business environment through the provision of standardization of products and services, rules and regulations and a seamless market infrastructure in the region[58]. In 2013 *ASEAN-BAC Survey on ASEAN Competitiveness*, consultation with businesses and dissemination of information on AEC initiatives had been among the least satisfactory areas rated by businesses.

9.5. Country or Networking initiatives

Networking initiatives unlike donor partner sponsored projects are usually welcomed with minimum scrutiny. In-kind contributions from member states especially from the lead country purportedly drive the project. However, the format for project submission for approval is varied. They are tabled at SOM-AMAF meetings for in-principle approval. There are little indications of formal commitment, implementation milestones, project indicators, impact assessment and final follow-up upon completion. These projects invariably pale in comparison to donor sponsored projects in terms of achievements and systematic planning.

9.6. Partnership/cooperation arrangements

ASEAN has a growing number of international dialogue countries and regional groups - Australia, Canada, China, GCC, India, Japan, ROK, Russia, and USA as well as bilaterals, such as GIZ. There are also partnership cooperation with international organizations such as Asian Development Bank (ADB),

[58] Lim, H., and F. Kimura. 2010. The Internationalization of Small and Medium Enterprises in Regional and Global Value Chains. ADBI Working Paper 231.

FAO, OIE (World Organisation for Animal Health), WTO and the Southeast Asian Fisheries Development Center (SEAFDEC). In 2011, it is reported that about US$60 mil funding is from external funding[59] or about 4 times of internal funding. The external funding sources hence are vital to the sustenance of ASEAN projects. On the other hand, engaging dialogue partners spreads thin limited ASEAN Secretariat resources. Donor agencies have their own priorities and requirements. And most MOUs have broad scope and principles of engagement which have to be thrashed out over time through numerous rounds before a fruitful project finally surfaces.

[59] ADB 2012. ASEAN 2030 Toward a Borderless Economic Community — DRAFT HIGHLIGHTS

10. Recommendations

10.1. Priority areas for Crops cooperation and development, 2015-2020

From the outlook and challenges for the ASEAN, the 5 key priority areas for consideration are :

- Increase crop production and food security
- Trade facilitation to enhance competitiveness and economic community integration
- Enable sustainable crop agriculture production
- Increase the resilience of crop agriculture to climate change

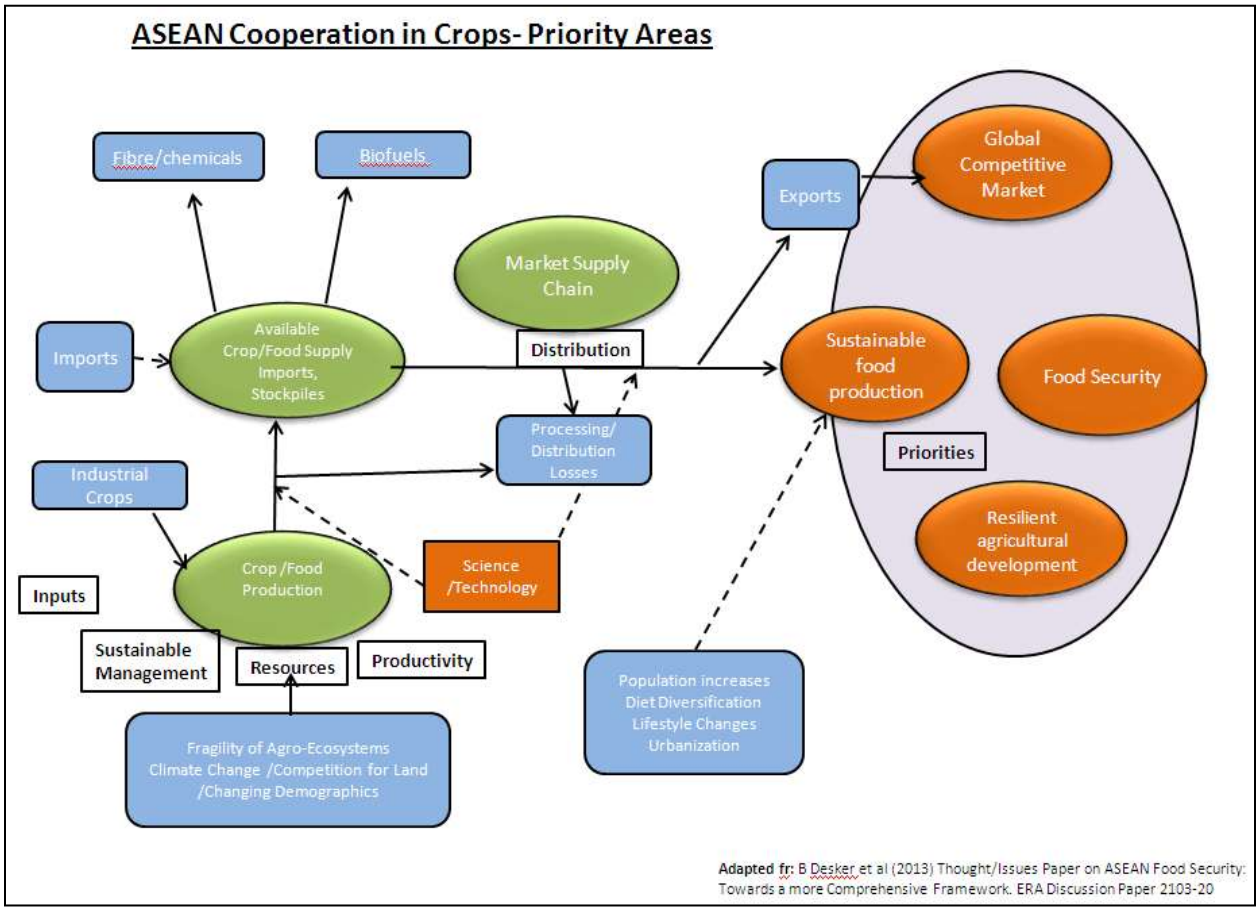
Undergirding these 4 priority areas is the 5th area – the immense need to accelerate diffusion and transfer of the enabler, technology innovation and R & D via collaborative research and strategic alliances with private sector and dialogue partners. This includes investments from both public and private sector. R & D is resource intensive. Hence there is a special need to link Public Private Engagement (PPE) into technology diffusion especially to make crop agriculture farming inclusive to small rural farm holdings that still contribute a substantial part to food security. One of the key pathways is through the value chain, both domestic and global. Market-driven and export–oriented farming juxtaposed with commercial incentives will stimulate productivity through innovation because the markets require high value and quality produce.

10.1.1. Increase crop production and food security

Food production, trade and food security are intricately linked.

- Increased production will require better access to basic agricultural inputs including improved and appropriate technology e.g. biotechnology, high yielding and quality seeds, and best and tried agronomic practices.
- As land become scarce, crop intensification and diversification are ways to increase production.
- Open and assured trade within the community for staples will enhance food security.
- Reducing losses and waste in production and consumption is the flip side of increased production. Food quality standards might have to accommodate this aspect without compromise to food safety. Such capacity needs to be built within the value chain of stakeholders – farmers, traders, processors, packagers, traders and retailers

Fig 9 :ASEAN Cooperation in Crops – Priority Areas



10.1.2. Trade facilitation to enhance competitiveness and economic community integration

The fundamental aspect of integration into a single market and production base is free flow of agricultural goods.

- Harmonized trade facilitation measures e.g. SPS, quality, GAP will reduce trade costs.
- Facilitate adoption and implementation of SPS, GAP (including organic agriculture) and quality guidelines and standards by applying the “ASEAN Minus X “ principle.
- Harmonization of SPS measures and food safety and horticulture quality standards should focus on products that have high intra and extra trade value to facilitate removal of NTMs. The focus has to be on higher hanging fruits including raw materials for agri-processing.
- A culture of private sector consultation and engagement is required to extract value and ensure impactful measures.
- The ASEAN Regional Diagnostic Network (ARDN) concept should be pursued to enhance SPS expertise in region through a regional network of expertise that includes private and public institutions of research. Ideally if an AMS could focus on one area of taxonomic expertise, together the region could harness the collective strength to deal with SPS issues for international market access and product competitiveness.

10.1.3. Enable sustainable and productive crop agriculture production

Sustainable development cannot be realized without food and nutrition security. Nonetheless, the transition has to be toward a platform that produces more with less.

- Enable increased productivity, diversification and commercialization of major economic and high value crops through improved and appropriate technology e.g. biotechnology, high yielding and quality seeds, and best and tested agronomic practices.
- However productivity and sustainable management of natural resources is a delicate balance especially for land-hungry industrial and non-food crops. Hence there is need to extend the focus of sustainable management of natural resources to industrial crops such as rubber, oil palm, bananas, sugar-cane, cassava, coffee, cocoa, tea and spices. These crops occupy a much larger area than food crops covered by AIFS and would have a greater impact, even transboundary, on the natural resources if mismanaged.
- There has to be a fundamental change in governance of agricultural land use to achieve sustainable natural resource development, management and conservation.
- Collaborative regional guidelines would be useful.
- Include small holding farms into value chain for rural development.

10.1.4. Increase the resilience of crop agriculture to climate change

Climate change is a becoming an increasing challenge to the agricultural sector in the ASEAN region. However, on the ground because of its nature, climate change issues are insufficiently impactful to be taken seriously by stakeholders. Although intricately linked, the reason is both climate change and agriculture are so context specific and local that they have to be addressed sufficiently at the regional level. Hence, communication is vital for buy-in to participate in the process of mitigating and adapting to climate change. The key thrusts would be:

- Make the public aware of the threats and ownership of negative impacts of climate change. Communication linkages have to far-reaching along the value chain.
- Continued assessment and monitoring of regional impacts of climate change
- Establish capacity to collect, integrate , analyse and disseminate information on climate change
- Improving institutional capacity for governance of climate change issues and scientific competencies in the area.
- Enhance the resilience of farmers to climate change and the focus of scaling up and sharing appropriate practices in AMS and the region.

10.2. Improving ASEAN Cooperation in crops

10.2.1. Coordination arrangement for ASEAN Cooperation in Crops

Coordinating and monitoring thematic issues cutting across multi-sectors horizontally is overwhelming as thematic initiatives increase. The thematic initiatives are listed in Table B.2. Included are also crop-related topics covered by other ASWGs and AMAF subsidiary bodies. Para 2.2 – ASEAN cooperation in Crops-interrelated Activities, details the related areas.

The argument for an overarching body to deal with cross-cutting issues is outlined in para 9.2. Perusing through the ASWGC reports, these annual two-day meetings essentially function to endorse project reports from Expert Working Groups(EWGs) and from AMSs that are leading donor or country initiatives. As the chair of the ASWG is rotated, there is little or no continuity for follow up or redress on outstanding issues. Every outstanding issue essentially becomes a new issue on the next year's agenda. At most times, the ASWGC's members are new to the meeting, too. The limited time resource at ASWGC meetings constrains dealing with substantive matters. The ASWG moves through the meeting agenda guided by the Secretariat. The stretched Secretariat at the same time serves numerous ASWGs under the auspices of AINRD. Hence they are purely administrative at ASWG level.

Therefore strategic plans approved at SOM- AMAF level takes time to cascade down to the implementation level. There is lacking an executive body to translate high level plans

downstream for implementation at sector level. Given the constraints there is the tendency for the ASWG to be reactive rather than proactive to pre-empt or plan initiatives in line with community's plan of action.

As the community progresses into the next phase of result-oriented integration, there is the need for increased responsibility and accountability from ASWGs to facilitate member countries in better balancing their national interests with growing regional responsibilities. The current weak human resource capabilities in the CLMV countries, together with weak policies, as well as institutional and legal frameworks, make it difficult for these countries to raise their productive capacities. These further constrain their capacity to make optimum use of foreign aid[60]. An overarching body would facilitate to mainstream IAI into crop sector activities. Understandably, setting up more groups or meetings appears to go against the grain of an organization already burgeoned with WGs. But what really counts is the amount of effective working man-hours involved in working out sectoral projects. That, rather than number of WGs, should be the yardstick for achieving more with less. Hence the following options are suggested for better and effective coordination in ASEAN cooperation in crops:

- Set up a Centre for Crops Agriculture

  This full-time staffed centre, patterned after Biodiversity, Cooperatives or Energy Centres is to facilitate coordination and cooperation among AMSs on crop agriculture development initiatives and programmes in line with ASEAN vision. The approach is one of regional decentralization. The Centre could be hosted by an AMS and reports to AMAF through the Secretariat. In building a new functional decentralized institution, the formation of a national champion of regional issues is encouraged. The approach would contribute toward ASEAN's overall development.[61] It will relieve the AINRD (Secretariat) of the coordinating role in technical and operational matters. AINRD could then focus on coordination within the AEC Department and with the APSCC Department on trade facilitation and socio-cultural issues such as gender, food security and poverty alleviation matters. External funding agencies could jump start the Centre with their financial assistance and expertise on proper governance and transparency. It will take the technical side of coordination and streamlining of projects from the Secretariat and leave them to deal with the political administrative issues. Aside from coordination across crop-related sectors, the Centre will plan for projects to fulfill relevant SPA objectives, develop a monitoring and evaluation framework to track progress with regard to the attainment of integration objectives, facilitate project implementation and assess the outcomes of programmes and projects. Armed with an overall perspective, the Centre with its technical expertise, would be able to streamline new projects and proposals for appropriate and relevant existing AWGs to take up. A scenario of a proliferation of task forces and working groups would be avoided as there is tendency for a new WG to be formed with each new project. The Centre would cover activities under the broad theme of crop agriculture including research, extension, cooperatives and agriculture product promotion.

- Set up a Strategic Planning Unit within AINRD

  Similar in function to the Centre above, the Unit, professionally staffed would deal with technical matters pertaining to crop agriculture. However coordination will still be centralized and hence has less flexibility.

- Set up within ASWGC adhoc horizontal and vertical committees

  The model is akin to that of CODEX Alimentarius Committees. EWGs could be restructured

[60] Richard Pomfret and Sanchita Basu (2013) Subregional Zones and ASEAN Economic Community in The ASEAN Economic Community : a work in progress. edited by Sanchita Basu, ISEAS

[61] ADB 2012. ASEAN 2030 Toward a Borderless Economic Community — DRAFT HIGHLIGHTS

into 2 types of WGs - crop specific issues (vertical) and multisectoral issues (horizontal). The downside is that of acquiring resource commitment for such meetings. Further a diver is needed.

- Restructure and redefine more specifically the scope of closely related working groups of ASWGC, ATWGARD AWGATE and Joint Committee on ASEAN Cooperation on Commodity Product Promotion on more specific areas to cover.

  The TORs of these WGs are general. They do not give specific direction as to areas of accountability and responsibility. Crops and areas of responsibility are not defined. For e.g. the Joint Committee for ASEAN Cooperation & Approaches on Commodity Product Promotion Scheme has several areas of overlap with ASWGC, ATWGARD and AWGATE on crop matters relating to technology transfer and R & D, harmonization of quality and food safety standards, GAP, and training and extension.

  The proposed division could be based on areas of disciplines e.g. regulatory & standards, R &D, training and extension, cooperatives, trade promotion. Because of a vertical divide, cross-sectoral issues would still require immense coordination. There would also be a major reorganization that might not be welcome especially in the case of Cooperatives, where a Centre had been established.

- Increased formal use of IT for communication and conferencing to minimize face to face meetings.

  To minimize number of meetings as well as enhance meeting outcomes and meet targets, deliberation before and after via electronic means such as email, skype and tele-conferencing should be implemented. It could be part of a connected ASEAN project that all AMSs have such a national facility at their capitals or provincial centres.

10.3. Sectoral Working Groups Forum on Crops

In view of the indistinct boundaries in crop-related initiatives, there should be a forum in the short term to demarcate areas of involvement in crop activities amongst ASWGC, ATWGARD, Joint Committee for ASEAN Cooperation & Approaches on Commodity Product Promotion Scheme, AWGATE and ASEAN Sectoral Working Group on Agricultural Cooperatives (AWGAC). Some of the AWGs like AWGAC and Joint Committee have strong private sector participation. The links with private sector could be utilized across the different AWGs. Further, it is an observation that where projects have a coordinator or coordinating unit e.g. AADCP – GAP, GIZ- GAP CC, they clearly facilitate project progression and implementation according to milestones and objectives. As an alternative to the above recommendation for ASEAN coordination in para 10.2.1 are the following:

- Review and revise the TORs of the various crop-related ASWGs, clearly outlining roles, areas of responsibility as well as accountability within the crop sector.
- Review the mandatory annual rotation of chairmanship for options to maintain continuity within the ASWG for purposes of future planning and follow up on outstanding matters. As observed, EWGs that had some continuity in the chair as well as WG membership were usually more purposeful in their achievements.
- Apply format/system of project submission of donor sponsored initiatives to country and networking initiatives.
- Develop a monitoring and evaluation framework to track progress with regard to the attainment of SPA-Crop objectives, and to assess the outcomes and impact of programmes and projects.
- Realign current focus to more crop-centric matters covering production and productivity of major and high value crops, crop intensification and diversification, dissemination of best agronomic practices, improving agribusiness value chains, minimizing post-harvest losses, facilitate adoption of appropriate technology, sustainable management of natural resources and climate change,

10.4. Sub-regional cooperation

To get more mileage out of projects initiated under sub-regional cooperation (BIMP-EAGA, IMT, SIJORI and GMS) and to minimize overlap, the suggestion is for these sub-regions to share experience and results of completed or on-going projects on a regular basis. Or even before projects are planned, there is mutual consultation on projects. At the national level it would also be a more efficient use of resources. The aim is to capitalise and synergise existing mechanisms and frameworks of cooperation. Integrating sub-regional cooperation may also provide valuable lessons to learn from and build on at the regional level. The GMS is driven mainly by foreign direct investments and SIJORI by private sector enterprises. These diverse approaches are a melting pot for ideas to bring integration to a higher level. The subregional programs can be therefore potential building blocks to support greater economic regionalism and to enhance ASEAN's overall economic competitiveness. Subregional programs and projects have to be formulated on the basis of their identification as key priority areas that address the needs of the CLMV and are consistent with AEC goals[62]. Given the development divide in ASEAN, subregional cooperation such as the GMS and others, have a significant role to assist ASEAN integration by developing the economy of the four CLMV countries. Subregional zones can be helpful in highlighting cross-border connectivity within ASEAN. ASEAN can play an overarching role of identifying and providing agreed norms and standards relevant to improved cross border connectivity and regional economic integration. Relevant identified key priority initiatives and/or areas in these subregional zones should be used as building blocks for regional integration initiatives towards narrowing the development divide.

10.5. Partnership and cooperation arrangements

Procedures for engagement of having increasingly number of partners to the fold need to be streamlined and refined including criteria for engagement and areas of engagement. As reiterated before, it takes resources and time to engage partners. Perhaps it would be more expedient to explore deeper and utilize the opportunities with the present set of partners than to continue spreading the net. However, it is appreciated that there are overriding political and diplomatic issues and project implementation presently depends largely on funding from external sources.

10.6. Project Funding

To speed project implementation especially those that are R & D and innovation in nature, there could be an ASEAN R & D Fund where project collaborators could bid. The Fund could set priorities and criteria each year for desired projects. The aim is to direct R &D and technology improvement to areas of most need in the region. The EU's Horizon 2020 Work Programme could be a model. Sources and arrangement for the funding could model after the ASEAN Development Fund (ADF). The bidding processes would also bring about PPE participation

ASEAN funding procedures are also lengthy. Plus the fact that ASWGC and SOM-AMAF meets only annually, the time from project inception to approval could be multiplied especially when revisions are required. The option for fast track project approval is to decentralize decision–making to the Secretariat once in principle approval is obtained.

[62] Richard Pomfret and Sanchita Basu (2013) Subregional Zones and ASEAN Economic Community in The ASEAN Economic Community : a work in progress. edited by Sanchita Basu, ISEAS

11. Way forward

11.1. Overview of current and future trends for ASEAN agriculture

A scan of the global and regional agriculture scene revealed that the major trends and issues prevailing in the next five years are :

- Increasing demand for food and a changing food consumption pattern
- Competing demands and diminishing quality and quantity of natural resources grows
- Crop productivity slows down
- Rising food price and volatility
- Prevalence of climate change and natural disasters
- Globalization and trade expansion

The outlook and impending drivers of ASEAN agriculture are:

- Demand for increasing food production and food security
- Sustainable agriculture production and competing use and depletion of natural resources
- Research and development and technology diffusion and absorption for crop productivity
- Climate change issues
- Trade liberalization, facilitation and integration

The 4 current strategic thrusts (STs) of the Crop Sector SPA (2011-2015) are :

- Enhancement of international competitiveness of ASEAN food and agricultural products/commodities;
- Enhancement of ASEAN cooperation and joint approaches on international and regional issues
- Development and acceleration of transfer and adoption of new technologies
- Enhancement of private sector involvement

To work out appropriate strategic thrusts, taking into account the TOR of the sector and the roles and responsibilities in the AIFS, AFCC and APTCS-FSBD frameworks/ programmes, the current crop sector's SPA's strategic directions were compared and aligned with the identified global and regional trends as well as the drivers behind ASEAN agriculture (Tables B.3 and B.4). From the tables, there was observed an apparent need to expand the current strategic thrusts. The expanded strategic thrusts include:

- Strengthening food security
- Sustainable management and utilization of resources
- Responding to climate change

11.2. ASEAN Cooperation in Crops, 2016-2020

In developing strategic directions beyond 2015, the Roadmap for the ASEAN Community (2009-2015) was considered to be still relevant for 2016-2020. Based on the vision and goals embedded in the AEC and ASCC Blueprints and taking into cognizance the outstanding work from the current ASEAN programmes and Crops' SPAs (2011-2015) and the priority areas outlined in the wake of challenges of ASEAN in the latter half of this decade, the SPA for the Crop Sector recommended for 2015-2020 is in Table B.5.

11.2.1. Recommendations for Crops' Strategic Plan of Action (2016-2020)

The GOAL for the ASEAN cooperation on crops is to be a productive, competitive, sustainable, resilient and inclusive industry sector that ensures and enables economic and equitable integration, food security, sustainable management of resources and protection from climate change.

The 6 strategic thrusts (ST) of the suggested SPA (2016-2020) (Table B.5) are :

- Enhancement of international competitiveness of ASEAN food and agricultural products/commodities to facilitate integration into a single market and production base
- Promotion and acceleration of transfer and adoption of new technologies for increased productivity and sustainable agriculture
- Enhancement of private sector involvement and international/ regional organization involvement to facilitate regional integration
- Strengthening food production and productivity
- Sustainable management and utilization of natural resources used by crop agriculture
- Responding to climate change

As there is an overlap in activities, the ST on – "Enhancement of ASEAN cooperation and joint approaches on international and regional issues", is suggested to be come under the ambit of the Joint Committee (JC) ASEAN Cooperation on Commodity Product Promotion. There will be a need for some coordination. But from the review of ASWGC's reports, deliberation on such issues was infrequent. Concurrently, the review also showed that the JC covered 10 agricultural products. Of these, 7 are major ASEAN agricultural crops, viz : cocoa, coconut, coffee, palm oil, pepper, cassava and tea. Besides joint promotion, the JC Meeting Reports and SPA-JC go as far as tackling issues related to these products on technology transfer and R & D, harmonization of quality and food safety standards, GAP, and even training and extension. Without major disruption of what the JC has been doing over the past years and especially when there is active private sector engagements from trading associations and clubs, it is suggested that the JC review some of the SPA initiatives that are downstream activities of product promotion and coordinate with ATWGARD, ASWGC and ASWGATE so that the work scope are clearly delineated in their 2016-2020 SPA. The current MoU under which the JC operates, expires in 2014. It is proposed that the Secretariat organize a special SPA meeting for the process.

However because of the recent AIFS, APTCS-FSBD and AFCC frameworks, 3 relevant Strategic Thrusts (STs) on food security, sustainable agriculture and climate change, are suggested to be included. As reiterated these STs are part of the ASWGC taking a more "crop-centric" role beyond trade facilitation. Except for the ST on climate change, all the STs are currently FAF's STs.

At the same time, the gender issue is suggested to be taken up by the ASWGAC (Table B.6). Even though ST on empowerment is directed at leadership of cooperatives, the gender issues could be expanded and AWGAC and *ASEAN* Centre for the Development of Agricultural Cooperatives (ACEDAC) are considered to be most appropriate bodies to bring it down to the rural development field level.

The fine line between adoption of technology and technology transfer would need to be resolved between ATWGARD, JC, ASWGC and ATWGATE. However minor overlaps are inevitable and should be acceptable as part and parcel of ASWGs' initiative and enterprise. It is suggested that ATWGATE focus on conducting workshops and facilitation of extension training to industry and farmers, perhaps in tandem with cooperatives. The scope would be on the downstream activity of technology transfer. Whereas, ATWGARD would focus on basic and high-end research collaborating with public and private R & D institutions, including universities and international and global research centres.

11.2.2. Strategic Objectives of Crops SPA, 2016-2020 (Table B.5)

<u>Strategic Thrust 1 : Enhancement of international competitiveness of ASEAN food and agricultural products/commodities to facilitate integration into a single market and production base. (AEC A7.38)</u>

The ST plays a primary role in ASEAN economic integration as well as integration into the global economy. Under this ST, are the following objectives :

- Improve trade facilitation
- Enhance long-term international competitiveness of food and agricultural products
- Accelerate harmonization of SPS standards
- Increase private sector involvement and cooperation
- Build SPS competencies
- Containment of pest and disease outbreaks
- Enhance role of trade in stabilizing food availability within a borderless economic community.

The objectives all converge around the overarching aim to ensure market access for ASEAN agricultural products that are globally competitive and there is free flow of ASEAN raw materials and products within the community for integration into a single market and production base.

Strategic Thrust 2 : Promotion and acceleration of transfer and adoption of new technologies for increased productivity and sustainable agriculture (AEC A7.39)

ST 2 undergirds the successful implementation of all crop strategic initiatives. Technology diffusion and absorption is the way forward for increased productivity and sustainable agriculture in view of stagnating productivity. The objectives for the crops sector are :

- Expand and deepen regional cooperation and collaboration in agriculture productivity
- Facilitate exchange of information and knowledge on best practices including human resource development.
- Increase private sector involvement and cooperation
- Build scientific competencies for technology adoption and transfer

The focus of the objective is not so much of conducting or developing R & D which should come under ATWGARD's ambit but technology exposure, introduction, access, transfer and adoption by stakeholders along the value chain.

Strategic Thrust 3: Enhancement of private sector and international/ regional organization involvement to facilitate regional integration (AEC A7.39)

ST3's aim is to inculcate a culture of private sector engagement which is a critical success factor for impactful, realistic and achievable initiatives. The main objectives are :

- Strategic alliances and joint approach with the private sectors and international/regional organizations.
- Encourage a culture for private sector engagement in trade facilitation and agri-supply/production value chain integration.

The overall objective is to engage private sector in growing the crop agriculture industry together in a win-win partnership as part of the regional integration efforts and narrowing the development divide.

Strategic Thrust 4 : Strengthening food production and productivity (ASCC B.3)

The crop sector dimension of ST4 is food production and productivity which bolster food security. The objectives are:

- Promote efficient and sustainable food production, food consumption, post-harvest practices & loss reduction
- Improve food security

- Accelerate development and implementation of GAP standards
- Advance agribusiness by improving value/supply chains and logistics
- Increase private sector involvement and cooperation
- Enhance role of open trade in stabilizing food availability within a borderless economic community
- Adopt technology to improve agricultural productivity, and production
- Promote diversification of food sources and scale up community-based food security initiatives
- Build competencies in food production

Strategic Thrust 5 : Sustainable management and utilization of natural resources used by crop agriculture. (ASCC D.8)

ST 5 is a D8 strategy under the ASCC. It appears to be an overlap with ST5. However the AIFS Strategic Thrust 4 is confined to food production. Crop agriculture's use of natural resources especially by industrial and cash crops, far exceeds that of food crops. Forest and fisheries have taken roles in sustainable management of the natural resources their sectors use. Hence depletion of natural resources is falling through the gap if crop sector does not undertake sustainable management of natural resources used by crop agriculture. The objectives are :

- Promote sustainable management of natural resources
- Reduction of negative impact of crop production on natural resources
- Optimisation of utilisation of land and other natural resources for crop production
- Monitor impact of high value and industrial crop production on natural resources
- Build competencies for improved sustainable land and water management and status monitoring
- Adoption of technical standards and methods for monitoring and assessment
- Generate public awareness on issues of sustainable management of natural resources

Strategic Thrust 6: Responding to climate change (ASCC D.10)

ST 6 is a D10 strategy under the ASCC addressing the emerging issue of climate change. AFCC is a comprehensive framework detailing the resource intensive stock-taking surveys and mitigation and adaption measures to be carried out. The Crop Sector is designated as the responsible body for crop agriculture in the multi-sectoral programme involving most sectoral bodies. The objectives are:

- Monitor impacts on and risks of climate change in vulnerable agricultural ecosystems
- Generate public awareness of climate change issues
- Facilitate exchange of R & D information and knowledge , best practices on adaptation and mitigation measures including human resource development.
- Encourage cooperation in implementation of integrated adaptation and mitigation strategies for agricultural production systems
- Build competencies in climate change science and technology
- Promote Private Sector Engagement and mobilisation of funding

11.2.3. Mainstreaming IAI into Strategic Objectives of Crops SPA, 2016-2020

The foot note to the SPA is that in achieving the aims of the IAI Work Plan 2 (AEC C2, ASCC F47), the suggested strategic initiatives of Work Plan 2 should be mainstreamed into the SPA. The SPA should consider accommodating IAI into their activities as a priority to narrow the development gap. The overarching objective is to achieve equitable economic development.

11.2.4. Strategic Plan of Action – Agriculture Cooperatives and Agriculture Training and Extension

Proposed SPAs for AWGAC and AWGATE are in Tables B.6 and B.7. Essentially 2 more STs are added to each SPA. They are to cater for the emerging issues of sustainable management of natural resources and climate change and the continuation of the existing Climate Resilient Network, supported by GAP-CC. These sectors work in different spheres. Hence although objectives might be similar, their approach and stakeholders might be different. Again, all this apparent aversion of overlap, points to the need of a coordinating body to directly orchestrate the initiatives towards the desired outcomes.

As part of imparting economic strength to Agriculture Cooperatives, the AWGAC could engage SMEs in the developing the supply value chain for cooperatives.

11.3. ASEAN coordination arrangement for cooperation in crops and crops-related matters.

Various ASWGs and AMAF subsidiary bodies cover common areas and subjects such as SPS, food security, food safety, climate change, bioenergy, R & D, etc. Current coordination rests with the AINRD, ASEAN Secretariat. ASWGs report on the progress of their work and submit and endorse proposals for submission to SOM-AMAF for approval.

However the observation is that the workload of the ASEAN Meetings is expanding as the ASEAN community progresses – new issues, new dialogue partners, etc. The introduction of the AEC Blueprint and other Blueprints have enlarged the work scope and mandated more sectoral bodies to implement their tasks. There is also increasing interests of non-ASEAN countries in the ASEAN integration efforts. All these developments can be and probably should be interpreted as positive changes. Yet, given the limited capacity of the relevant ministries of the AMSs as well as the ASEAN Secretariat, it becomes a serious challenge for ASEAN community building. Further, in the years ahead, there is a high possibility for the number of sectoral bodies and working groups to increase even more rather than decrease due to newly emerging agendas and the world's increasing interests in the ASEAN region[63]. The anomaly is that while ASEAN continues to embark on new and more ambitious initiatives e.g. climate change and increasing dialogue partnership, it is not mobilizing adequate resources or strengthening its structure of its institutions.

The options for strengthening cooperation in the crops sector are :

- set up a decentralized Crop Agriculture Centre that is hosted by an AMS
- expand the capacity of the AINRD with a Crop Agriculture Sector Coordinating Unit
- clarify the mandate, relationship and coordination of crop-related sub-sectoral bodies.
- implement IT and electronic means in-between ASWGs meetings to facilitate and shore up the decision-making and planning process, similar to a special ASWG meeting (3-6 months prior to a regular ASWG meeting).

These options have been elaborated in our earlier recommendations. The first option is preferred because it encourages an AMS to champion, own and drive the sector which is critical for the sector's success. In the main it is about strengthening the coordination with increased capacity. ASWGs, no matter how they are restructured, will only in a limited way be able to mitigate the current coordination weakness. The nature of ASWG meetings permits little room for manoeuvre. Unattended, this serious weakness will lead to lagging progress and a descending gloom of indifference to ASEAN community endeavours..

[63] ERIA 2012. ASEAN Economic Community Blueprint Mid-Term Review

11.4. Implementation Mechanism

11.4.1. Regional implementation

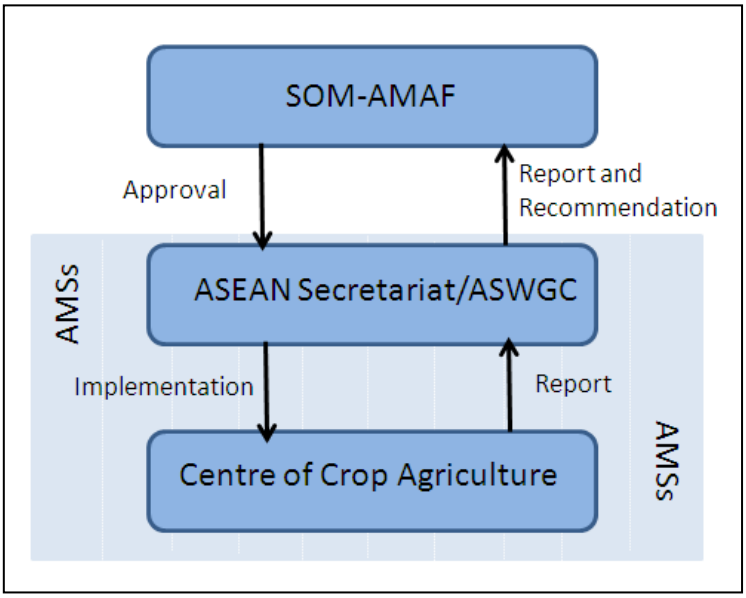
ASWGC has been established to plan and work out the initiatives in the SPA and coordinate implementation of the SPA initiatives. The Senior Officials Meeting (SOM) -AMAF is the main ASEAN body that oversees the overall ASEAN cooperation in food and agriculture, with the guidance of the ASEAN Ministers on Agriculture and Forestry (AMAF). Strategic initiatives and projects would have to be approved by SOM-AMAF. The organization of various sectoral working groups/ joint committees /expert working groups under AMAF is in Fig A.1.

Altogether, there are 1 Senior Officers Meeting, 1 Joint Committee, 6 Sectoral Working Groups, 2 Task Forces, 1 Working Groups, 1 Focal Point Body, 1 Board and 1 Steering Committee. In all there are 14 bodies reporting immediately to SOM-AMAF. Under each of the Sectoral Working Groups and the Senior Officers Meeting and Joint Committee are subsidiary technical experts working groups or task forces.

In this mechanism, the ASEAN Secretariat through AINRD acts as the overall coordinator and provides necessary assistance in all aspects to ensure successful undertaking of the cooperation programmes and projects. For collaborative projects involving partnership, consultation and cooperation arrangements, the Secretariat would initiate linkage and follow through with the necessary protocols with sectoral working groups, national focal points, relevant institutions, partners and donor agencies.

In our recommended setup to strengthen and effect coordination, the Centre of Crop Agriculture would be responsible to coordinate the technical aspects of SPA's project administration. Once a project is approved the Centre would take over project coordination including monitoring project implementation, facilitating its progress until completion and liaising with national authorities for implementation at national level. The Centre will report directly to ASWGC and the AINRD /Secretariat, who in turn would report to SOM-AMAF.

Fig 10 : Recommended Organization and Workflow in Crops Sector



11.4.2. National implementation

Respective AMS representatives on the ASWGC with the assistance of the Centre would inform their relevant government agencies of the AMAF agreed policies and measures to be implemented regionally. The government agencies will be responsible for overseeing the implementation and preparation of more detailed action plans for implementation at the national level. The progress of the implementation would be reported to the Centre for transmission to ASWGC and the Secretariat

Partnership, consultation and cooperation arrangements with the international organisations, donor agencies, private sector, industry associations and the wider community at national levels will also be actively sought where required to ensure participation of all stakeholders in the implementation process.

11.5. Monitoring and evaluation

The Economic Research Institute for ASEAN and East Asia (*ERIA*) Mid-Term Review (MTR) has advocated for a more elaborate scorecard system to monitor the achievements of the AEC at both the regional as well as the national level. The rationale behind is how impactful at the ground level are measures implemented and for all intents and purposes are they implemented accordingly. Hence there is much value in the suggestion. After all, a SPA without measurable targets is incomplete in and of itself. The indicators should not only be measurable or quantitative but the impact factor should be included. Qualitative measurements are subjective. The MTR goes further to have an additional Analytic Scorecard that assembles complementary information to the AEC scorecard.

11.6. Performance measures

Recognizing the importance of measurable outcomes, performance measurement is crucial. Some activity such as technology transfer, sustainability and climate change might be difficult to measure at national level. Having said that to collect, compile, analyse and report this information is an onerous commitment with political implications as well. Secondly, despite the evolution of the “ASEAN way” principle of programme implementation to integration by choice, the compliance issue from the vantage of no-binding rules has to be overcome by a political decision and will. In the crop sector, for example, apathetic non-compliance leads to elastic targets of SPA programmes. Without project indicators, progress will stall and slow down well-meaning efforts targeted at the integration of the ASEAN Community.

As an introductory phase it is recommended that output measurement such as number of farmers trained, number of workshops carried out, number of stakeholders, etc. be implemented. Down the road, when appropriate, balanced scorecard could be implemented on a sectoral-wide basis with the help of specialists.

In the crop sector, the recommendation is for every project submission whether donor funded or otherwise has to have project indicators. Again, the need for a Centre facility to follow up on compliance is essential. Delay in implementation is in multiples of 12 months as the ASWGC meets only annually.

11.6.1. Regional level

It is recommended that the monitoring on a scorecard basis be implemented at regional rather than at a national level as advocated by the MTR, at least at the beginning phase. Good project indicators would account for the use of resources and the impact of their outcomes on the participating community. Even so to obtain these indicators, participating AMSs have to be the source of the information.

11.6.2. National level

The MTR has suggested establishing an AEC coordination-cum-monitoring committee in each country. In doing so, they have also recognized that the suggestion is resource-intensive especially to ensure that it is sustainable. Hence they recommended for donor support. MTR’s

suggestions are AEC-focused.

At national level, the monitoring is in a general sense accounted for, if at regional level the project indicators are verifiable and strictly adhered to. The information for the project indicators is coming from the source where the measures are applied. Hence it is recommended that the monitoring and evaluation of project implementation be applied at regional level with proper and effective follow through.

11.7. Resource mobilization

ASWGC projects are implemented in 2 ways. One is under a networking arrangement, where cooperation is implemented through the focal point in each ASEAN Member States and utilises national funds. However in the crops sector programmes, these networking projects have limited success. AARNET for example, have to chop and change their project objectives from time to time to accommodate for lack of resources. The concept is excellent because ultimately ASEAN should progressively shoulder the main burden of the ASEAN's development funding. What is needed is a success story of networking arrangement to act as a model and template for networking projects.

The other is funding by donor ASEAN partners such as AADCP, GIZ and ASEAN Plus Partners. It is reported that donor partners provide about US$60 mil funding for major project implementation yearly. Although ASEAN has been able to win funds from its Dialogue Partners, these depend on the generosity of donors and their financial positions. Thus these sources are not always secure or sustainable as they are usually short-term to kick-start programmes. Funding can be direct or indirect by provision of training in human development capacity building.

As highlighted in IAI Work Plan, new, additional and innovative resource mobilization is a key aspect of future project implementation. The possible assistance and resources could come from the following sources: ASEAN; ASEAN Dialogue Partners and Sectoral Partners, and Development Partners (ASEAN Partners); regional and international financial institutions; and private sector, foundations, and non-governmental organizations (NGOs). However for Narrowing the Development Gap (NDG) efforts, the creation of an ASEAN Convergence Fund through voluntary contributions would be a more direct route to bridging the development divide — not only between countries but also within them. Substantial enlargement of the existing ASEAN Development Fund would be another way to develop a new fund promoting intraregional convergence.[64] ASEAN funding is currently based upon the principle of "equal budget contribution" by AMSs. It has hampered the ability to enlarge the budget as needed, because contributions from the smallest economies are limited. This might have to change if ASEAN is not to be wholly dependent on foreign funding. There are precedences in the financial sector. On the brighter side, subregional cooperation and arrangements have helped to improve region-wide connectivity and narrowing the development divide within ASEAN.[65]

11.8. Comments and Feedback on 2016-2020 Crop Sector Strategic Plan by 21st ASWGC

At 21st ASWGC held on 28-30 May 2014 in Siem Reap, Cambodia, the 6 Strategic Thrusts were presented to the Meeting. The Meeting commented and gave feedback on the following:

- Certification and accreditation of the ASEAN good agricultural practices and the development of MRA should be considered as part of the proposed Strategic Thrust 1.
- Elaboration on the concept of proposed setting up within ASWGC adhoc horizontal and vertical committees.
- Future activities should cover agro-processing along the value chain,
- Collaboration and coordination with other sub-sectors to address the cross cutting issues such as climate change, R & D etc.
- Consider including joint positions of AMSs for issues discussed in international fora such as

[64] ADB 2012. ASEAN 2030 Toward a Borderless Economic Community — DRAFT HIGHLIGHTS

[65] Richard Pomfret and Sanchita Basu Das(2013)Subregional Zones and ASEAN Economic Community. In ed Sanchita Basu Das et.al (2013) ASEAN Economic Community, A work in progress. ADB

IPPC as well as market access for agricultural commodities

The comments would be incorporated into the relevant parts of the plan. The Meeting also indicated their priority on the 6 proposed Strategic Thrusts as follows:

Table 11: Priority Scores on Proposed Strategic Thrusts (2016-2020) by 21st ASWGC

	Relevance	Impact	Implement ability	Total
1. Enhancement of international competitiveness of ASEAN food and agricultural products/commodities to facilitate integration into a single market and production base	3.68	3.52	2.86	3.35
2. Promotion and acceleration of transfer of new technologies	3.64	3.58	2.97	3.40
3. Strengthening food production and productivity	3.59	3.53	3.09	3.40
4. Sustainable management and utilization of natural resources	3.54	3.47	3.10	3.37
5. Responding to climate change	3.61	3.53	3.12	3.42
6. Enhancement of private sector and international /regional organization involvement	3.56	3.47	3.01	3.35
Note : Scale of 1-4 . 1=Nil, 2=Low, 3=Average, 4=High				

Scores were low for implementability and high on relevance and impact. Surprisingly, ST 5 (Climate change) was overall highest followed by ST 3 (Food production and productivity) and ST 2 (Technology transfer). In general, the high scores also indicate that the 6 STs are representative of the aspiration and future direction ASWGC would like to pursue. Overall the 6 STs received favourable feedback and endorsement from the 21st ASWGC.

Table A. 1 Employment in Agriculture (% of total employment)

	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012
Brunei Darussalam	...	2.5		...	...		...		...		...
Cambodia	...	81.4	73.7	60.3	72.3	72.3	72.3	72.3	72.3	71.3	71.1
Indonesia	55.9	44	45.3	44	42	41.2	40.3	39.7	38.3	35.9	35.1
Lao PDR		85.4		76.3	...			...	72.2	...	
Malaysia	26	20	16.7	14.6	14.6	14.8	14	13.5	13.6	11.5	12.6
Myanmar	65.6	64.1		...	...		...		...		...
Philippines	44.9	43.4	37.1	36	35.8	35.1	35.3	34.4	33.2	33	32.1
Singapore	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Thailand	63.3	46.7	44.2	38.6	39.7	39.5	39.7	39	38.2	38	38.9
Viet Nam	72.1	71.3	64.4	57.1	54.3	52.9	52.3	51.5	49.5	48.4	47.4
Source: ADB Econ Indicators 2013											

Table A. 2 :Agriculture Value Added (% of GDPa)

	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012
Brunei Darussalam	1.0	1.2	1.0	0.9	0.7	0.7	0.6	0.9	0.8	0.6	0.7
Cambodia	56.5	49.6	37.9	32.4	31.7	31.9	34.9	35.7	36.0	36.7	35.6
Indonesia	19.4	17.1	15.6	13.1	13.0	13.7	14.5	15.3	15.3	14.7	14.4
Lao PDR	61.2	55.0	48.5	36.7	32.4	33.4	32.2	32.5	30.6	28.9	27.6
Malaysia	15.0	12.7	8.3	8.4	8.7	10.1	10.1	9.3	10.5	12.0	10.2
Myanmar	57.3	60.0	57.2	46.7	43.9	43.3	40.3	38.1	36.9	32.5	30.5
Philippines	21.9	21.6	14.0	12.7	12.4	12.5	13.2	13.1	12.3	12.7	11.8
Singapore	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	10.0	9.1	8.5	9.2	9.4	9.4	10.1	9.8	10.5	11.4	...
Viet Nam	38.7	27.2	24.5	19.3	18.7	18.7	20.4	19.2	18.9	20.1	19.7
Source: ADB Econ Indicators 2013											

Table A. 3: South East Asia Population and Structure

	Population									Age composition	
	total		rural		urban		density	agricultural		between	over
								share of total		0-14	65+
	thousand	thousand	%	%	%	%	people/km2	%	%	%	%
	people	people									
	2000	2011	2000	2011	2000	2011	2010	2000	2010	2011	2011
South-Eastern Asia	522 813	599 091	61.7	55.3	38.3	44.7	136.5	49.3	43.1	26.9	5.7
Brunei Darussalam	327	406	28.8	24	71.2	76	75.7	0.6	0.3	25.9	3.7
Cambodia	12 447	14 305	81.4	80	18.6	20	80.1	69.9	65.9	31.2	3.9
Indonesia	213 395	242 326	58	49.3	42	50.7	132.4	44	37.3	26.7	5.6
Lao People's Democratic Republic	5 317	6 288	78	65.8	22	34.2	26.9	76.7	74.9	33.7	3.9
Malaysia	23 415	28 859	38	27.3	62	72.7	86.4	17.9	12	29.9	4.9
Myanmar	44 958	48 337	72.8	67.3	27.2	32.7	73.4	70.3	67.1	25.2	5.2
Philippines	77 310	94 852	52	51.1	48	48.9	312.8	39.5	33.5	35.1	3.7
Singapore	4 028	5 184	0	0	100	100	7252.4	0.1	0.1	16.8	9.4
Thailand	63 155	69 519	68.9	65.9	31.1	34.1	135.3	49	41.1	20.2	9.1
Timor-Leste+	830	1 176	75.7	71.7	24.3	28.3	76.8	81.2	78.3	45.7	3
Viet Nam	77 631	87 840	75.6	69	24.4	31	280.3	68.3	63.8	23.2	6

Source FAOSTAT Yearbook 2013

+ - 0.2% of the SE Asia pop.

Table A. 4 : ASEAN rice producers and their comparative productivity

	Rice							
	area		yield		production			
	total	p.a. growth	total	p.a. growth	total		p.a. growth	
	thousand ha 2010	% 2000-10	thousand hg/ha 2010	% 2000-10	thousand tonnes 2009	thousand tonnes 2010	% 1990-99	% 1999-2009
Republic of Korea	892	−1.8	69	0.2	7 023	6 136	−1.4	−1.6
China	30 117	−0.1	65	0.5	196 681	197 212	0.9	0.4
Viet Nam	7 489	−0.2	53	2.3	38 950	40 006	5.2	2.1
Japan	1 627	−0.8	52	−2.5	8 474	8 483	−1.2	−3.3
Indonesia	13 254	1.2	50	1.3	64 399	66 469	1.3	2.5
Myanmar	8 012	2.4	41	1.9	32 682	32 580	3.8	4.3
Philippines	4 354	0.8	36	1.7	16 266	15 772	2.2	2.4
Lao People's Democratic Republic	855	1.7	36	1.6	3 145	3 071	4.1	3.4
Malaysia	678	−0.3	36	1.7	2 511	2 465	1.6	1.4
India	42 862	−0.4	34	1.7	135 673	143 963	2.0	1.2
Cambodia	2 777	3.8	30	3.4	7 586	8 245	4.2	7.4
Thailand	12 120	2.1	29	1.2	32 116	35 584	1.6	3.2
World	161 762		43		685 094	701 128		
Source: FAO Stat Yearbook 2013								

Table A. 5 : ASEAN vegetable producers and their comparative productivity

	Vegetables (excluding melons)							
	area		yield		production			
	total	p.a. growth	total	p.a. growth	total		p.a. growth	
	thousand ha 2010	% 2000-10	thousand hg/ha 2010	% 2000-10	thousand tonnes 2009	thousand tonnes 2010	% 1990-99	% 1999-2009
Republic of Korea	268	-4.8	364	2.7	11269	9757	1.6	-2.2
Japan	407	-1.1	264	-0.6	11383	10746	-1.5	-1.7
China	23458	2.6	230	0.8	522686	539993	8.5	4.3
India	7256	2.9	138	0.5	90635	100405	4.0	3.3
Myanmar	378	3	137	1.5	4841	5195	5.0	4.5
VietNam	818	3.7	110	-0.4	9064	8976	6.7	3.3
Indonesia	1082	1.8	90	1.5	9620	9780	6.0	3.4
Philippines	718	2	88	0.4	5814	6299	1.5	2.4
Thailand	516	-1.8	74	1.3	3817	3812	2.7	-0.5
World	55598	2	188	1.6	1019114	1044380	5.3	3.3
Source: FAO Statistical Yearbook 2013								

Table A. 6 : Intra-Extra ASEAN Trade , 2004 -2013

	(in thousands US$)	2004	2004	2005	2005	2006	2006	2007	2007	2008	2008	2009	2009	2010	2010	2011	2011	2012	2012	2013	2013
HS Code	Agricultural Products	Intra	Extra	Intra	Extra	Intra	Extra	Intra	Extra	Intra	Extra	Intra	Extra	Intra	Extra	Intra	Extra	Intra	Extra	Intra	Extra
40	Rubber and articles thereof.	12530908	37201004	12558711	39890326	14277316	45142124	19863352	62960670	27169888	83363056	23641311	74313463	39786029	11989472 9	50524303	15205109 2	50758952	15265575 9	20831355	79863905
15	Animal/veg fats oils their cleavage products;	1991958	6618062	1639455	6038013	2008478	6905166	3015664	11547116	4564642	17881703	3378423	12734788	8416320	30710050	12772376	41539173	11179383	38081914	4782038	33296351
21	Miscellaneous edible preparations.	698951	1257153	839023	1447404	928045	1542386	1271084	1956861	1678169	2352157	1736396	2424799	2626482	3371781	3412953	4323356	4030734	4557742	2244571	2245804
19	Prep.of cereal, flour, starch/milk; pastrycooks'	831249	963446	969290	1097351	1144595	1228794	1412183	1660823	1750454	2219290	1772882	2351456	2642326	2908032	3170582	3425033	3897350	3658260	1905560	1531439
18	Cocoa and cocoa preparations.	525499	882772	528976	990507	661532	1316460	913411	1639532	1320926	2168781	1119095	1884671	2319355	3526445	2225290	3746577	1829430	3473024	1536046	2153905
24	Tobacco and manufactured tobacco substitutes	1072966	829035	983766	885527	971259	831489	1147970	1114953	1256348	1373275	1272815	1505050	2113933	2080078	2408173	2414404	2818826	2766567	1521496	1583298
03	Fish crustacean, mollusc other aquatic invert	1418176	5831973	1266121	6585320	1328510	7403899	1533586	8550809	1649371	9981543	1530891	9123077	2136166	12620395	2375156	14722840	2815069	14709241	1248568	4137320
17	Sugars and sugar confectionery.	837132	843357	814433	947048	720576	1326526	1223754	1763772	1369195	1924689	1338064	2531124	3123260	3615846	3841556	5788608	4042486	5473055	1181497	2963637
22	Beverages, spirits and vinegar.	824496	1388137	899613	1673888	1112970	1996017	1478260	2695491	1873829	3202565	1826340	2848183	2411282	3709958	3173240	4936509	3808853	5374080	1145761	1066687
10	Cereals	1158719	4087426	1252847	4098752	1630380	4068433	2948404	5612745	5831883	9333978	4067391	8796407	5362837	11628474	6097728	14720409	4166822	14247744	908246	5745622
09	Coffee, tea, matï and spices.	277905	1315207	261568	1346431	340365	1911715	553940	2785552	580635	3029170	534650	2727447	930395	4302348	1582771	6370893	1698402	7054426	794160	1968083
23	Residues waste from the food indust; prepr ani	399621	1761729	406996	2099580	478686	2443013	643775	3889115	729368	5535725	729207	5236020	1130400	8331896	1432602	9452813	1609075	11182790	618598	6411398
04	Dairy prod; birds' eggs; natural honey; edible pr	536096	1413148	591466	1733753	616987	1783403	906789	3199461	1071351	3694593	932115	2292281	1361801	4469527	1629246	5556441	1522287	5283740	498299	3468651

	(in thousands US$)	2004	2004	2005	2005	2006	2006	2007	2007	2008	2008	2009	2009	2010	2010	2011	2011	2012	2012	2013	2013
HS Code	Agricultural Products	Intra	Extra	Intra	Extra	Intra	Extra	Intra	Extra	Intra	Extra	Intra	Extra	Intra	Extra	Intra	Extra	Intra	Extra	Intra	Extra
08	Edible fruit and nuts; peel of citrus fruit or me	322258	1266659	366491	1485725	399007	1486624	465642	2623637	545504	3282792	567859	3230019	930513	4391593	1256098	6294521	1583898	6547003	471934	2771640
07	Edible vegetables and certain roots and tubers.	327488	1130484	343351	1156433	380826	1454292	408347	1767282	487003	1713132	491130	2130626	993690	3540977	937035	3544194	1051103	3761353	433212	1439808
11	Prod.mill.indust; malt; starches; inulin; wheat g	226629	625300	261691	620397	360156	777947	412144	1183909	508357	1492723	461107	1457634	812771	2367230	1171271	2748850	1453511	2905337	428778	769416
01	Live animals	240676	102119	294327	94670	285563	119797	354986	122129	497439	126742	524409	133764	630546	628036	640822	513261	633809	490335	298466	464067
16	Prep of meat, fish or crustaceans, molluscs etc	262411	3306505	279255	3905590	302857	4610079	377433	5237636	505369	6893285	472440	6528055	561905	7974278	720072	9737038	852770	10302162	237840	1843137
20	Prep of vegetable, fruit, nuts or other parts of	193979	1392063	198053	1500812	205510	1796085	280599	2384757	390423	2729199	371093	2523436	437899	3131818	561117	3741862	643235	3692112	213275	1279151
12	Oil seed, oleagi fruits; miscell grain, seed, fru	190608	1021417	177709	949111	196600	854513	252119	1332587	245133	2003264	204188	1531169	411511	3157516	521336	4432540	423805	4825489	159789	2278716
02	Meat and edible meat offal	60558	711892	41348	726034	55683	761754	90905	1229832	115283	1642156	96111	1466680	134491	2263058	234982	2639986	312888	2751964	74021	1672232
06	Live tree other plant; bulb, root; cut flowers	51615	160811	53490	196837	59928	207938	70504	247141	90425	268620	91283	279296	121919	344038	146021	395965	154250	419423	48490	128314
13	Lac; gums, resins other vegetable saps extrac	29211	119377	33779	130436	36178	149822	48222	230412	52577	299264	46541	290982	62622	411844	71178	497502	92174	608250	44426	425870
14	Vegetable plaiting materials; vegetable products	21206	36002	21592	35911	22650	37502	27081	40717	32755	44306	54724	110827	84081	121933	100085	160305	101985	95646	22933	76164
05	Products of animal origin, nes or included.	31502	136931	34071	144797	29974	128470	26547	144401	23450	170105	22156	175671	29523	287576	42610	348011	36807	394099	13353	143195

Source : WITS Database

Table A. 7 : Intra- ASEAN Trade and % of ASEAN Trade to World, 2004 -2013

	(in thousands US$)	Intra	To World	Intra	To World	Intra	To World	Intra	To World	Intra	To World	Intra	To World	Intra	To World	Intra	To World	Intra	To World	Intra	To World
HS Code	Agricultural Products	2004	%	2005	%	2006	%	2007	%	2008	%	2009	%	2010	%	2011	%	2012	%	2013	%
40	Rubber and articles thereof.	12530908	25.2	12558711	23.9	14277316	24.0	19863352	24.0	27169888	24.6	23641311	24.1	39786029	24.9	50524303	24.9	50758952	25.0	20831355	20.7
15	Animal/veg fats oils their cleavage products;	1991958	23.1	1639455	21.4	2008478	22.5	3015664	20.7	4564642	20.3	3378423	21.0	8416320	21.5	12772376	23.5	11179383	22.7	4782038	12.6
21	Miscellaneous edible preparations.	698951	35.7	839023	36.7	928045	37.6	1271084	39.4	1678169	41.6	1736396	41.7	2626482	43.8	3412953	44.1	4030734	46.9	2244571	50.0
19	Prep.of cereal, flour, starch/milk; pastrycooks'	831249	46.3	969290	46.9	1144595	48.2	1412183	46.0	1750454	44.1	1772882	43.0	2642326	47.6	3170582	48.1	3897350	51.6	1905560	55.4
18	Cocoa and cocoa preparations.	525499	37.3	528976	34.8	661532	33.4	913411	35.8	1320926	37.9	1119095	37.3	2319355	39.7	2225290	37.3	1829430	34.5	1536046	41.6
24	Tobacco and manufactured tobacco substitutes	1072966	56.4	983766	52.6	971259	53.9	1147970	50.7	1256348	47.8	1272815	45.8	2113933	50.4	2408173	49.9	2818826	50.5	1521496	49.0
03	Fish crustacean, mollusc other aquatic invert	1418176	19.6	1266121	16.1	1328510	15.2	1533586	15.2	1649371	14.2	1530891	14.4	2136166	14.5	2375156	13.9	2815069	16.1	1248568	23.2
17	Sugars and sugar confectionery.	837132	49.8	814433	46.2	720576	35.2	1223754	41.0	1369195	41.6	1338064	34.6	3123260	46.3	3841556	39.9	4042486	42.5	1181497	28.5
22	Beverages, spirits and vinegar.	824496	37.3	899613	35.0	1112970	35.8	1478260	35.4	1873829	36.9	1826340	39.1	2411282	39.4	3173240	39.1	3808853	41.5	1145761	51.8
10	Cereals	1158719	22.1	1252847	23.4	1630380	28.6	2948404	34.4	5831883	38.5	4067391	31.6	5362837	31.6	6097728	29.3	4166822	22.6	908246	13.6
09	Coffee, tea, matï and spices.	277905	17.4	261568	16.3	340365	15.1	553940	16.6	580635	16.1	534650	16.4	930395	17.8	1582771	19.9	1698402	19.4	794160	28.8
23	Residues waste from the food indust; prepr ani	399621	18.5	406996	16.2	478686	16.4	643775	14.2	729368	11.6	729207	12.2	1130400	11.9	1432602	13.2	1609075	12.6	618598	8.8
04	Dairy prod; birds' eggs; natural honey; edible pr	536096	27.5	591466	25.4	616987	25.7	906789	22.1	1071351	22.5	932115	28.9	1361801	23.4	1629246	22.7	1522287	22.4	498299	12.6

	(in thusands US$)	Intra	To World	Intra	To World	Intra	To World	Intra	To World	Intra	To World	Intra	To World	Intra	To World	Intra	To World	Intra	To World	Intra	To World
08	Edible fruit and nuts; peel of citrus fruit or me	322258	20.3	366491	19.8	399007	21.2	465642	15.1	545504	14.2	567859	15.0	930513	17.5	1256098	16.6	1583898	19.5	471934	14.5
07	Edible vegetables and certain roots and tubers.	327488	22.5	343351	22.9	380826	20.8	408347	18.8	487003	22.1	491130	18.7	993690	21.9	937035	20.9	1051103	21.8	433212	23.1
11	Prod.mill.indust; malt; starches; inulin; wheat g	226629	26.6	261691	29.7	360156	31.6	412144	25.8	508357	25.4	461107	24.0	812771	25.6	1171271	29.9	1453511	33.3	428778	35.8
01	Live animals	240676	70.2	294327	75.7	285563	70.4	354986	74.4	497439	79.7	524409	79.7	630546	50.1	640822	55.5	633809	56.4	298466	39.1
16	Prep of meat, fish or crustaceans, molluscs etc	262411	7.4	279255	6.7	302857	6.2	377433	6.7	505369	6.8	472440	6.7	561905	6.6	720072	6.9	852770	7.6	237840	11.4
20	Prep of vegetable, fruit, nuts or other parts of	193979	12.2	198053	11.7	205510	10.3	280599	10.5	390423	12.5	371093	12.8	437899	12.3	561117	13.0	643235	14.8	213275	14.3
12	Oil seed, oleagi fruits; miscell grain, seed, fru	190608	15.7	177709	15.8	196600	18.7	252119	15.9	245133	10.9	204188	11.8	411511	11.5	521336	10.5	423805	8.1	159789	6.6
02	Meat and edible meat offal	60558	7.8	41348	5.4	55683	6.8	90905	6.9	115283	6.6	96111	6.1	134491	5.6	234982	8.2	312888	10.2	74021	4.2
06	Live tree other plant; bulb, root; cut flowers	51615	24.3	53490	21.4	59928	22.4	70504	22.2	90425	25.2	91283	24.6	121919	26.2	146021	26.9	154250	26.9	48490	27.4
13	Lac; gums, resins other vegetable saps extrac	29211	19.7	33779	20.6	36178	19.5	48222	17.3	52577	14.9	46541	13.8	62622	13.2	71178	12.5	92174	13.2	44426	9.4
14	Vegetable plaiting materials; vegetable products	21206	37.1	21592	37.5	22650	37.7	27081	39.9	32755	42.5	54724	33.1	84081	40.8	100085	38.4	101985	51.6	22933	23.1
05	Products of animal origin, nes or included.	31502	18.7	34071	19.0	29974	18.9	26547	15.5	23450	12.1	22156	11.2	29523	9.3	42610	10.9	36807	8.5	13353	8.5

Source : WITS Database

Table A. 8 : Production in tonnes of Major Crops in ASEAN, 2003 -2012

	2003		2004		2005		2006		2007		2008		2009		2010		2011		2012	
Agric Products	in tonnes	% world's	in tonnes	% world's	in tonnes	% world's	in tonnes	% world's	in tonnes	% world's	in tonnes	% world's	in tonnes	% world's	in tonnes	% world's	in tonnes	% world's	in tonnes	% world's
Rice, paddy	162169695	27.7	167175284	27.6	173430923	27.4	177312723	27.7	184703764	28.2	192519330	28.1	197656132	28.8	204192461	29.0	202843437	28.0	217070887	30.2
Sugar cane	154899043	11.2	149393604	11.1	133572324	10.1	134526631	9.5	150200168	9.3	160799666	9.3	152673826	9.0	150951611	8.8	179671205	9.9	184331845	10.1
Cassava	45699014	23.7	48956065	24.0	45482497	22.0	54711098	24.5	59698134	26.2	62269266	26.7	66863170	28.1	61987628	25.5	67550432	25.7	67709340	25.8
Oil palm	24718469	86.2	25687427	85.4	27668268	85.7	34466674	87.4	34614559	87.1	36899990	87.1	38366834	87.4	38133237	87.5	41977520	88.0	44155030	88.0
Maize	24110130	3.7	25714168	3.5	27257108	3.8	27387293	3.9	30589150	3.9	35030942	4.2	36991730	4.5	37389851	4.4	37610660	4.2	40028931	4.6
VegetablesMelons	29672632	3.4	30676065	3.5	30724902	3.4	31157730	3.3	32403005	3.4	32255550	3.2	34582363	3.4	35721167	3.4	36601221	3.4	37731271	3.4
Coconuts	34465816	63.6	34829516	63.3	37062671	64.5	35937346	62.1	38321717	62.0	36967076	61.3	38118939	62.2	37014841	61.5	36050129	61.7	37304324	62.1
Bananas	13593237	18.9	14027240	18.4	15170222	18.9	15518329	18.1	16818275	18.3	18208326	18.9	18951665	18.9	18593603	17.6	19113174	18.0	19486224	19.1
Rubber, natural	6163779	75.3	6828473	76.4	7034459	76.3	7747573	77.6	7808268	77.0	7905346	77.3	7358842	75.4	7720320	75.0	8388573	76.1	8734087	76.3
Citrus Fruit	3790665	3.5	4429951	3.9	4906541	4.4	5510113	4.7	5531153	4.8	5189851	4.1	4688965	3.7	4364643	3.4	4025638	3.1	3863526	2.9
Coffee, green	1688419	23.8	1791435	23.1	1705651	23.0	1880753	23.4	2140545	26.3	1970457	23.4	1962738.62	25.1	2003050	23.8	2121171	25.2	2193545	24.9
Soy beans	1315503	0.7	1449900	0.7	1682955	0.8	1517773	0.7	1398556	0.6	1564748	0.7	1767301	0.8	1809336	0.7	1652547	0.6	1539034	0.6
Cocoa beans	738541	19.9	731919	18.0	783539	19.4	807835	18.8	781355	20.0	837520	19.6	833650	19.8	866062	20.0	722421	15.4	945576	18.9
Tea	344641	10.6	367313	10.7	379521	10.4	384006	10.4	405485	10.2	428136	10.2	444256	10.4	467429	10.2	478554	10.3	492354	10.2
Spices (cloves, pepper, mace)	433825	54.8	413676	52.6	430119	53.3	419749	51.4	460590	54.7	470693	57.0	489253	58.2	483910	58.1	476115	57.3	485870	57.2
Tobacco	441108	7.3	391774	5.9	395659	5.9	385799	5.8	359779	5.8	371324	5.6	385503	5.5	383623	5.6	466662	6.3	478754	6.4

Source : FAOSTAT , 2013

Table A. 9 : ASEAN Imports of major agricultural commodities, 2002 - 2011

(value in thousands US$)

Agricultural Products	2002		2003		2004		2005		2006		2007		2008		2009		2010		2011	
	in US$ (000)	% of World	in US$ (000)	% of World	in US$ (000)	% of World	in US$ (000)	% of World	in US$ (000)	% of World	in US$ (000)	% of World	in US$ (000)	% of World	in US$ (000)	% of World	in US$ (000)	% of World	in US$ (000)	% of World
Agricult.Products,Total	20124876	4.3	21491808	3.9	25320712	4.0	27745694	4.1	31310199	4.2	40218231	4.4	52428557	4.7	60492321	5.5	47810585	4.8	79477609	5.9
Fodder Feeding stuff	1845796	8.1	2183136	8.5	2652659	8.5	2879041	9.4	3127049	9.4	4187144	9.7	5760110	10.1	6470432	11.4	5803462	11.1	7340737	11.1
Fruit Vegetables	1810241	2.2	1911975	1.9	2353299	2.0	2055789	1.9	2795744	2.1	3332244	2.1	3963892	2.2	4321565	2.6	5274942	2.9	6540337	3.1
Oil, palm	392656	5.5	514982	5.4	901926	7.6	602109	5.2	823159	5.9	964504	5.2	1685911	5.7	2288135	7.7	1539710	6.0	3829560	9.1
Sugar,Total	653240	6.2	748578	6.6	679829	5.5	1120800	7.0	1352209	6.3	1750079	8.7	1115776	5.4	2845611	9.5	1621890	7.0	3404089	8.7
Soybeans	893274	7.3	1041015	6.0	1236509	6.3	1000680	5.3	892850	5.0	1345085	5.1	2079394	4.7	1675016	4.6	2131290	4.9	3332174	6.5
Rice	843952	12.0	748597	9.3	932972	9.1	702487	7.3	1103507	9.7	1641475	11.7	3233864	14.2	2023065	10.1	2732712	13.5	2852789	12.5
Tobacco	1681729	7.5	1367010	5.6	1657302	5.7	1511633	5.5	1613175	5.4	1764811	5.4	2156611	6.2	2232051	6.2	2315074	6.0	2810937	6.3
Maize	502703	4.5	501672	4.0	578851	4.0	476280	3.5	829679	5.1	966792	3.9	1003519	3.1	1125199	4.9	1668859	6.4	2361305	6.5
Cocoa, beans	266279	7.2	454029	8.7	466939	9.7	558954	11.1	860278	16.4	1036242	16.5	1532597	19.4	1106981	12.7	1428788	14.7	1410696	13.0
Rubber, natural	191598	29.4	257996	28.8	294107	23.6	300992	23.9	370673	19.7	430159	20.4	734730	27.4	794243	39.0	1014001	35.1	1155299	30.5
Coffee, green	42059	0.7	27141	0.4	43257	0.6	90650	0.9	113429	1.0	239672	1.7	218170	1.3	172152	1.1	225902	1.2	384968	1.4
Oil, coconut	65940	7.8	73710	7.1	133526	9.7	163897	10.7	123891	8.3	176248	9.7	250333	9.2	255425	10.0	135764	7.8	335459	8.9
Tea	37861	1.3	36009	1.2	43537	1.4	51964	1.6	75466	2.1	74282	1.8	72514	1.4	80326	1.6	100545	1.8	121463	1.8
Cashew nuts, total	9618	0.9	9717	0.8	18411	1.0	15265	1.0	21202	1.1	23843	1.2	40374	1.5	37910	1.5	54881	2.1	81355	2.1
Coconuts	3541	5.0	3733	4.8	4303	5.3	6606	6.6	12222	11.3	11695	9.0	13771	9.4	14354	9.7	17240	10.9	58604	18.7
Cassava dried	603	0.2	1525	0.4	1655	0.2	3291	0.4	446	0.1	2096	0.2	4117	0.4	18034	1.6	15562	1.1	37991	2.4
Bananas	13189	0.2	13065	0.2	12112	0.2	12933	0.2	14341	0.2	15273	0.2	19892	0.2	20017	0.2	23336	0.2	24933	0.2

Source : FAOSTAT 2014

Table A. 10 : ASEAN Exports of major agricultural commodities, 2002 - 2011

(value in thousands US$)

Agricultural Products	2002		2003		2004		2005		2006		2007		2008		2009		2010		2011	
	in US$ (000)	% of World	in US$ (000)	% of World	in US$ (000)	% of World	in US$ (000)	% of World	in US$ (000)	% of World	in US$ (000)	% of World	in US$ (000)	% of World	in US$ (000)	% of World	in US$ (000)	% of World	in US$ (000)	% of World
Agricult.Products ,Total	28592458	6.5	34373005	6.5	41193951	6.8	44011870	6.7	53800599	7.5	67553675	7.7	95094718	8.9	77219841	8.1	104803632	9.7	141925800	10.8
Oil, palm	6046044	88.2	7868158	86.6	9111134	85.2	8817146	85.3	10795266	85.0	16411071	84.5	25773013	84.9	19917101	85.2	26197492	87.6	35338254	87.1
Fruit Vegetables	3385816	4.5	3833204	4.2	4182844	4.1	4723452	4.2	5689820	4.6	6388735	4.3	7587395	4.5	7769730	4.8	8525372	4.8	10714048	5.3
Rice	2458728	36.9	2608017	36.6	3697556	41.3	3811904	39.7	3897309	37.0	5081987	37.0	9079304	45.2	7812306	40.9	8654096	43.8	10428245	45.0
Sugar,Total	853239	8.5	1118537	10.6	999160	8.7	900074	6.3	965942	4.8	1589295	8.7	1701331	9.0	2087906	9.5	2588790	8.7	4397091	11.9
Coffee, green	567147	11.1	782655	13.7	966751	13.5	1281863	13.2	1860458	16.3	2612463	19.2	3161842	19.1	2581046	18.0	2726732	15.2	3902194	14.4
Rubber, natural	412744	82.3	669510	82.8	853666	86.1	875139	82.9	1369176	81.3	1409951	74.0	1533862	75.1	1289389	84.5	2075236	85.1	2774080	82.7
Oil, coconut	563755	82.0	749701	80.6	960521	78.2	1202108	81.5	953195	81.3	1442249	84.8	2004791	80.6	1108492	77.5	1987209	83.3	2643508	80.9
Fodder Feeding stuff	630032	3.0	725549	3.0	822672	3.0	894034	3.2	1026072	3.4	1443843	3.7	1807553	3.5	1419763	2.8	1807077	3.3	2304979	3.7
Tobacco	1194194	5.9	1009066	4.6	1148198	4.8	1226249	4.7	1243925	4.6	1442961	4.9	1615652	4.9	1729209	5.2	2016092	5.9	2273703	6.0
Cassava dried	226120	79.7	308589	81.7	462403	83.8	405676	85.9	589843	91.9	755769	85.9	633774	79.8	1205627	93.9	1418066	94.5	1972349	95.2
Cashew nuts, total	251829	23.6	328986	29.4	492874	30.7	578104	31.2	565909	32.2	732717	36.5	998388	37.1	933168	37.6	1212381	44.0	1562258	37.6
Cocoa, beans	556817	14.1	440528	10.1	393039	8.9	483776	11.0	642067	13.6	660320	13.3	873724	14.6	1138792	14.3	1298525	15.9	711719	7.5
Bananas	321575	7.5	345249	7.4	344188	6.9	374572	6.7	421305	7.3	417995	6.3	423852	5.6	377998	4.7	339107	4.2	528882	5.9
Tea	207433	7.2	166373	5.7	220595	6.7	228916	6.4	255208	6.8	269558	6.5	319740	5.8	367127	6.8	396233	6.2	394951	6.0
Maize	57663	0.6	63397	0.6	198695	1.7	50480	0.5	96734	0.7	162972	0.8	337170	1.3	361408	1.8	189252	0.8	241168	0.7
Coconuts	29953	48.5	24391	43.8	23627	38.7	42144	47.7	53186	53.5	56104	57.4	72882	55.6	64961	51.1	82133	54.3	154717	61.9
Soybeans	14750	0.1	14115	0.1	17984	0.1	21967	0.1	21785	0.1	29838	0.1	36117	0.1	51003	0.2	31385	0.1	41258	0.1

Table A. 11 : ASEAN Non-Tariff Measures (NTMs)

Source : ASEAN NTM Register

S/N	HS Code	HS Description	No. of countries	Import Value in 2006 (US$)		No. of countries with NTMs (no trade value)	Total No. of countries with NTMs
				from ASEAN	from World		
1	0701	Potatoes, fresh or chilled.	5	4,771,994	50,364,807	3	8
2	0703	Onions, shallots, garlic, leeks and other alliaceous vegetables, fresh or chilled.	4	88,185,487	360,648,781	3	7
3	1006	Rice.	3	393,734,391	413,031,062	3	6
4	8010	Other fruit, fresh.	3	59,339,374	65,965,345	3	6
5	0801	Coconuts, Brazil nuts and cashew nuts, fresh or dried, whether or not shelled or peeled.	4	56,356,114	60,535,253	2	6
6	0901	Coffee, whether or not roasted or decaffeinated; coffee husks and skins; coffee substitutes containing coffee in any proportion.	4	55,295,358	72,133,425	2	6
7	0713	Dried leguminous vegetables, shelled, whether or not skinned or split.	3	35,891,216	65,726,834	3	6
8	1207	Other oil seeds and oleaginous fruits, whether or not broken.	3	27,787,403	40,021,112	3	6
9	0709	Other vegetables, fresh or chilled.	3	12,366,376	30,627,736	3	6
10	0804	Dates, figs, pineapples, avocados, guavas, mangoes and mangosteens, fresh or dried.	3	10,223,285	36,257,087	3	6
11	1201	Soya beans, whether or not broken.	4	8,755,094	865,821,846	2	6
12	0805	Citrus fruit, fresh or dried.	3	8,115,848	127,835,662	3	6
13	0813	Fruit, dried, other than that of headings 08.01 to 08.06; mixtures of nuts or dried fruit of this Chapter.	4	7,963,991	13,276,497	2	6
14	1203	Copra.	4	6,581,679	8,763,819	2	6
15	1209	Seeds, fruit and spores, of a kind used for sowing.	4	6,424,354	27,176,234	2	6
16	0714	Manioc, arrowroot, salep, Jerusalem artichokes, sweet potatoes and similar roots and tubers with high starch or inulin content, fresh, chilled, frozen or dried, whether or not sliced or in the form of pellets; sago pith.	3	4,290,551	7,041,965	3	6
17	0704	Cabbages, cauliflowers, kohlrabi, kale and similar edible brassicas, fresh or chilled.	3	3,404,894	49,550,766	3	6
18	0707	Cucumbers and gherkins, fresh or chilled.	3	2,265,658	2,345,261	3	6

S/N	HS Code	HS Description	No. of countries	Import Value in 2006 (US$)		No. of countries with NTMs (no trade value)	Total No. of countries with NTMs
19	0602	Other live plants (including their roots), cuttings and slips; mushroom spawn.	3	1,331,823	4,362,136	3	6
20	0808	Apples, pears and quinces, fresh.	3	1,095,972	200,987,782	3	6
21	0702	Tomatoes, fresh or chilled.	3	992,728	2,105,212	3	6
22	0708	Leguminous vegetables, shelled or unshelled, fresh or chilled.	3	967,890	9,734,464	3	6
23	0705	Lettuce (Lactuca sativa) and chicory (Cichorium spp.), fresh or chilled.	3	589,319	8,956,604	3	6
24	0806	Grapes, fresh or dried.	3	560,307	67,722,331	3	6
25	0603	Cut flowers and flower buds of a kind suitable for bouquets or for ornamental purposes, fresh, dried, dyed, bleached, impregnated or otherwise prepared.	3	550,878	3,299,858	3	6
26	0710	Vegetables (uncooked or cooked by steaming or boiling in water), frozen.	3	549,590	33,429,936	3	6
27	0706	Carrots, turnips, salad beetroot, salsify, celeriac, radishes and similar edible roots, fresh or chilled.	3	467,872	35,070,850	3	6
28	0807	Melons (including watermelons) and papaws (papayas), fresh.	3	411,199	2,880,629	3	6
29	0604	Foliage, branches and other parts of plants, without flowers or flower buds, and grasses, mosses and lichens, being goods of a kind suitable for bouquets or ornamental purposes, fresh, dried, dyed, bleached, impregnated or otherwise prepared.	3	310,428	673,324	3	6
30	0803	Bananas, including plantains, fresh or dried.	3	167,869	275,398	3	6
31	0601	Bulbs, tubers, tuberous roots, corms, crowns and rhizomes, dormant, in growth or in flower, chicory plants and roots other than roots of heading 12.12.	3	75,522	4,727,316	3	6
32	0809	Apricots, cherries, peaches (including nectarines), plums and sloes, fresh.	3	32,991	3,852,498	3	6
33	1005	Maize (corn).	4	89,852,794	733,146,485	1	5
34	0904	Pepper of the genus Piper; dried or crushed or ground fruits of the genus Capsicum or the genus Pimenta.	3	46,502,564	109,755,690	2	5
35	2402	Cigars, cheroots, cigarillos and cigarettes, of tobacco or tobacco substitutes.	2	41,462,320	109,051,582	3	5
36	0902	Tea, whether or not flavoured.	3	13,601,522	26,397,505	2	5
37	1702	Other sugars, including chemically pure lactose, maltose, glucose and fructose, in solid form; sugar syrups not containing added flavouring or colouring matter; artificial honey, whether or not mixed with natural honey; caramel.	3	10,088,112	96,426,505	2	5

S/N	HS Code	HS Description	No. of countries	Import Value in 2006 (US$)		No. of countries with NTMs (no trade value)	Total No. of countries with NTMs
38	1212	Locust beans, seaweeds and other algae, sugar beet and sugar cane, fresh, chilled, frozen or dried, whether or not ground; fruit stones and kernels and other vegetable products (including unroasted chicory roots of the variety Cichorium intybus sativum) of a kind used primarily for human consumption, not elsewhere specified or included.	3	8,199,108	14,664,135	2	5
39	1202	Ground-nuts, not roasted or otherwise cooked, whether or not shelled or broken.	3	6,917,513	81,945,053	2	5
40	0907	Cloves (whole fruit, cloves and stems).	3	2,256,797	3,090,165	2	5
41	1206	Sunflower seeds, whether or not broken	3	671,993	6,829,057	2	5
42	0802	Other nuts, fresh or dried, whether or not shelled or peeled.	3	347,387	18,284,444	2	5
43	1208	Flours and meals of oil seeds or oleaginous fruits, other than those of mustard.	3	339,103	8,389,377	2	5
44	0811	Fruit and nuts, uncooked or cooked by steaming or boiling in water, frozen, whether or not containing added sugar or other sweetening matter.	3	316,811	1,618,007	2	5
45	0712	Dried vegetables, whole, cut, sliced, broken or in powder, but not further prepared.	2	264,125	13,577,680	3	5
46	0711	Vegetables provisionally preserved (for example, by sulphur dioxide gas, in brine, in sulphur water or in other preservative solutions), but unsuitable in that state for immediate consumption.	2	220,599	1,044,541	3	5
47	1214	Swedes, mangolds, fodder roots, hay, lucerne (alfalfa), clover, sainfoin, forage kale, lupines, vetches and similar forage products, whether or not in the form of pellets.	3	23,015	1,951,012	2	5
48	1210	Hop cones, fresh or dried, whether or not ground, powdered or in the form of pellets; lupulin.	3	19,736	1,135,182	2	5
49	1204	Linseed, whether or not broken	3	14,557	113,163	2	5
50	1205	Rape or colza seeds, whether or not broken.	3	0	273,472	2	5
51	1511	Palm oil and its fractions, whether or not refined but not chemically modified.	2	284,010,581	286,968,265	2	4
52	1701	Cane or beet sugar and chemically pure sucrose, in solid form.	3	148,110,100	1,012,810,589	1	4
53	2401	Unmanufactured tobacco; tobacco refuse.	2	20,069,691	253,982,724	2	4
54	1507	Soya-bean oil and its fractions, whether or not refined, but not chemically modified.	3	10,667,774	57,291,290	1	4
55	1401	Packing material of plant origin (for bamboo and gunny sacks)	2	3,696,575	4,910,212	2	4
56	1517	Margarine, edible mixtures or preparations of animal or vegetable fat or oils or of fractions of different fats or oils of this Chapter, other than edible fats or oils or their fractions of heading 15.16.	2	2,873,611	12,156,135	2	4
57	0906	Cinnamon and cinnamon-tree flowers.	2	827,609	1,096,031	2	4

S/N	HS Code	HS Description	No. of countries	Import Value in 2006 (US$)		No. of countries with NTMs (no trade value)	Total No. of countries with NTMs
58	0909	Seeds of anise, badian, fennel, coriander, cumin or caraway; juniper berries.	2	331,704	16,992,115	2	4
59	1211	Plants and parts of plants(including seeds and fruit), of a kind used primarily in perfumery, in pharmacy, or for insecticidal, fungicidal or similar purposes, fresh or dried, whether or not cut, crushed or powdered.	2	216,019	5,328,173	2	4
60	0812	Fruit and nuts, provisionally preserved (for example, by sulphur dioxide gas, in brine, in sulphur water or in other preservative solutions), but unsuitable in that state for immediate consumption.	2	74,488	188,355	2	4
61	1213	Cereal straw and husks, unprepared, whether or not chopped, ground, pressed or in the form of pellets.	2	22,920	323,269	2	4
62	0905	Vanilla.	2	4,359	211,152	2	4
63	0814	Peel of citrus fruit or melons (including watermelons), fresh, frozen, dried, or provisionally preserved in brine, in sulphur water or in other preservative solutions.	2	0	9,328	2	4
64	1513	Coconut (copra), palm kernel or babassu oil and fractions thereof, whether or not refined, but not chemically modified.	2	230,310,002	233,844,947	1	3
65	1516	Animal or vegetable fats and oils and their fractions, partly or wholly hydrogenated, inter-esterified, re-esterified or laidinised, whether or not refined, but not further prepared.	2	55,519,206	60,191,253	1	3
66	1704	Sugar confectionery (including white chocolate), not containing cocoa.	3	33,216,611	69,277,318	0	3
67	1001	Wheat and meslin.	2	12,400,578	1,088,150,959	1	3
68	1515	Other fixed vegetable fats and oils (including jojoba oil) and their fractions, whether or not refined, but not chemically modified.	2	4,739,628	27,500,461	1	3
69	0908	Nutmeg, mace and cardamoms.	2	2,186,063	2,991,359	1	3
70	1518	Animal or vegetable fats and oils and their fractions, boiled, oxidized, dehydrated, sulphurised, blown, polymerised by heat in vacuum or in inert gas, or otherwise chemically modified, excluding those of heading 15.16; inedible mixtures or preparations o	2	2,056,631	11,931,973	1	3
71	1404	Municipal waste and Vegelation/plants waste (for example branches, stems, skins, husks, shells)	1	1,790,313	2,994,500	2	3
72	1703	Molasses resulting from the extraction or refining of sugar.	3	1,277,982	8,859,634	0	3
73	0910	Ginger, saffron turmeric (curcuma), thyme, bay leaves, curry and other spices.	1	942,305	15,760,248	2	3
74	1512	Sunflower-seeds, safflower or cotton-seed oil and fractions thereof, whether or not refined, but not chemically modified.	2	530,390	50,851,847	1	3
75	1514	Rape, colza or mustard oil and fractions thereof, whether or not refined, but not chemically modified.	2	256,634	18,186,397	1	3

S/N	HS Code	HS Description	No. of countries	Import Value in 2006 (US$)		No. of countries with NTMs (no trade value)	Total No. of countries with NTMs
76	1521	Vegetable waxes	1	142,687	653,759	2	3
77	1003	Barley.	2	121,656	905,067	1	3
78	1509	Olive oil and its fractions, whether or not refined but not chemically modified.	2	109,510	4,361,847	1	3
79	1508	Ground-nut oil and its fractions, whether or not refined, but not chemically modified.	2	79,684	2,050,871	1	3
80	1510	Other oils and their fractions, obtained solely from olives, whether or not refined, but not chemically modified, including blends of these oils or fractions with oils or fractions of heading 15.09.	2	541	64,373	1	3
81	0903	Maté.	1	0	39,093	2	3
82	1506	Animal or vegetables fats and oils and their cleavage products; prepared edible fats	2	0	386,762	1	3
83	1801	Cocoa beans, whole or broken, raw or roasted.	2	364,081,817	698,816,116	0	2
84	1806	Chocolate and other food preparations containing cocoa.	2	30,048,532	74,139,047	0	2
85	2008	Fruit, nuts and other edible parts of plants, otherwise prepared or preserved, whether or not containing added sugar or other sweetening matter or spirit, not elsewhere specified or included.	2	10,220,255	34,980,033	0	2
86	1805	Cocoa powder, not containing added sugar or other sweetening matter.	2	7,669,137	9,085,977	0	2
87	2009	Fruit juices (including grape must) and vegetable juices, unfermented and not containing added spirit, whether or not containing added sugar or other sweetening matter.	2	4,935,197	32,481,346	0	2
88	1802	Cocoa shells, husks, skins and other cocoa waste.	2	3,155,510	4,942,635	0	2
89	2005	Other vegetables prepared or preserved otherwise than by vinegar or acetic acid, not frozen, other than products of heading 20.06.	2	2,666,844	16,935,712	0	2
90	1803	Cocoa paste, whether or not defatted.	2	1,998,691	2,716,889	0	2
91	2007	Jams, fruit jellies, marmalades, fruit or nut Jams, fruit jellies, marmalades, fruit or nut purée and fruit or nut pastes, obtained by cooking, whether or not containing added sugar or other sweetening matter.	2	1,788,110	10,966,585	0	2
92	2004	Other vegetables prepared or preserved otherwise than by vinegar or acetic acid, frozen, other than products of heading 20.06.	2	1,264,562	15,784,449	0	2
93	1804	Cocoa butter, fat and oil.	2	626,500	963,456	0	2
94	2003	Mushrooms and truffles, prepared or preserved otherwise than by vinegar or acetic acid.	2	497,970	5,226,394	0	2
95	2006	Vegetables, fruit, nuts, fruit-peel and other parts of plants,preserved by sugar (drained, glacé or crystallised)	2	376,296	2,898,370	0	2
96	2002	Tomatoes prepared or preserved otherwise than by vinegar or acetic acid.	2	152,883	13,494,564	0	2

S/N	HS Code	HS Description	No. of countries	Import Value in 2006 (US$)		No. of countries with NTMs (no trade value)	Total No. of countries with NTMs
97	2001	Vegetables, fruit, nuts and other edible parts of plants, prepared or preserved by vinegar or acetic acid.	2	131,490	810,936	0	2
98	1520	Animal or vegetables fats and oils and their cleavage products; prepared edible fats	1	68,344	92,183	1	2
99	1002	Rye.	1	0	25,777	1	2
100	1004	Oats.	1	0	942,679	1	2
101	1007	Grain sorghum.	1	0	31,951	1	2
102	1008	Buckwheat, millet and canary seed; other cereals.	1	0	1,383,102	1	2
103	4016	Rags, plastics, papers or filters contaminated with scheduled wastes	1	32,929,374	127,108,429	0	1
104	1522	Palm-based residue	1	291,550	349,999	0	1
105	4004	Rubber of latex wastes or sludges containing organic solvents or heavy metals	1	239,693	459,488	0	1
		Total value		2,300,684,118	8,208,801,308		

Table B. 1: MATRIX OF ACTIVITES AND ACHIEVEMENTS AGAINST STRATEGIC THRUSTS OF CROP SECTOR, 2013

Table B.1 : MATRIX OF ACTIVITES AND ACHIEVEMENTS AGAINST STRATEGIC THRUSTS OF CROP SECTOR, 2013		
Strategic thrust	**Main Action Programmes**	**Activities undertaken**
Enhancement of international competitiveness of ASEAN food and agricultural products/commodities;	Monitoring of the implementation of the CEPT Scheme for AFTA for agricultural and forest products Intensification of cooperation in production and processing technology development and transfer and enhancement of development, harmonization and adoption of quality standards for products. o Harmonization of phytosanitary measures for crop products o Enhancement of compliance to WTO/SPS requirements for market access and competitiveness. o Strengthening national frameworks for Pest Risk Analysis (PRA). o Biosecurity planning. o Harmonization of Maximum Residue Limits (MRLs) of Pesticides among ASEAN Countries. o ASEAN Standards for Horticultural Produce and other Food Crops. o ASEAN-Crops Sectoral Working Group Website o ASEAN Plant Health Cooperation Network (Malaysia's Initiative) o Replacement of methyl bromide for fumigation – (EWG PS) o Electronic Phytosanitary certification o Regulation of movement of biocontrol agents	Establish Good Agricultural Practice for crop products with significant trade/trade potential Harmonization of Pesticide MRLs Pesticides database Guidelines for ASEAN Nursery Certification for export to facilitate intra-ASEAN trade in plants Harmonisation of national standards with international standard Harmonisation of national standards for quarantine inspection and sampling procedures with international standards of of phytosanitary measures Harmonize Sanitary and Phytosanitary (SPS) measures for crops products with significant trade / trade potential Establish ASEAN Regional Diagnostic Network (ARDN Harmonisation and Implementation of ASEAN GAP (Food Safety Module) Development of the ASEAN Guidelines for registration, trade and use of biological plant protection products

Table B.1 : MATRIX OF ACTIVITES AND ACHIEVEMENTS AGAINST STRATEGIC THRUSTS OF CROP SECTOR, 2013

Strategic thrust	Main Action Programmes	Activities undertaken
Enhancement of ASEAN cooperation and joint approaches on international and regional issues;	Strengthening Joint Positions in Addressing Non-trade Issues at International Fora to Protect the Interest of ASEAN Member Countries. o Pursuing common positions on international commodity issues. Identification of emerging issues and problems affecting trade in ASEAN products and formulate joint strategies/positions to enhance ASEAN's competitive posture and to sustain the expansion of ASEAN's exports to international markets	Identify and discuss issues related to crops in the EWG PS and EWG MRLs in order to have a joint strategy/position in international / regional fora.
Development and acceleration of transfer and adoption of new technologies;	Conduct of collaborative training and workshop to develop new/ improved technology in agricultural production, post harvest and processing activities and sharing of research results and available technology. o Conduct and participate in the training and workshop related to crops sub-sectors Identification of improved production/ post-harvest technologies available in the region and elsewhere for possible adoption in ASEAN Member Countries. o Implementation of Regional cooperation to enhance vegetable research and development in ASEAN region	ASEAN Biocontrol for Sustainable Agrifood Systems Project trainings and workshops Training with AWGATE on crops production. Workshop with ATWGARD on GAP and Organic Agriculture has been initiated. Collaboration with AFCC on the conduct of the Project "Production System Approach for Sustainable Productivity and Enhanced Resilience to Climate Change" has been initiated. Regional Symposium: High Value Vegetables in Southeast Asia: Production, Supply and Demand (SEAVEG 2014), 25 – 28 Feb 2014, Bangkok (AARNET) Expert Consultation on Vegetable Research and Development Priorities in Southeast Asia, March 2013, Bangkok (AARNET) Vegetable R&D priorities for ASEAN has been identified as: i) Germplasm conservation, gene-mining and plant breeding, and ii) Crop management, postharvest, marketing and nutrition.

Table B.1 : MATRIX OF ACTIVITES AND ACHIEVEMENTS AGAINST STRATEGIC THRUSTS OF CROP SECTOR, 2013		
Strategic thrust	**Main Action Programmes**	**Activities undertaken**
Enhancement of private sector involvement;	Continuous consultation with the private sector at all meetings of the ASWGC, particularly with regard to trade issues in international and regional fora. o Inviting the private sector to participate in meetings of working group, where relevant.	Advanced Pest Risk Analysis Workshop organized with Croplife Asia (association) in 2013 in Bekasi, Indonesia. Public-Private Workshop on Agricultural Productivity Enhancing Innovations, Technologies and Practices organised with the support from MARKET Project at the national and regional levels. ASEAN Biocontrol for Sustainable Agrifood Systems Project implemented with private sector participation.

Table B. 2

Strategic thrust	Programmes/Frameworks	AMAF Sectors Involved	Overlap Areas	Recommendations
Strengthening food security (AEC	**ASEAN INTEGRATED FOOD SECURITY (AIFS) FRAMEWORK**	ASWGC, ASWGFi, ,ASWGL, ACEDAC/ASWGAC,AMSs, AFSRB, EAERR , ATFFS, SOM-AMAF, AFSIS	Transfer and adoption of new technologies.	**Coordinating and monitoring thematic issues cutting across multi-sectors horizontally is overwhelming as thematic initiatives increase. The options are :** **1. Set up a Centre for Crops Agriculture** **The full-time staffed centre, patterned after Biodiversity or Energy Centres is to facilitate coordination and cooperation among AMS on crop agriculture development initiatives and programmes in line with ASEAN vision. This approach for regional decentralization in building a new functional institution would also be important to create national champions of regional issues and contribute to ASEAN's overall development. It will relieve the Secretariat of the coordinating role of technical and operational matters. The Centre could be hosted by a AMS and line of reporting to AMAF is through the Secretariat.** **2. Set up a Strategic Planning Unit within AINRD** **Similar in function to the Centre above, The Unit , professionally staffed would deal with technical matters pertaining to crop agriculture.** **3. Set up within ASWGC adhoc horizontal and vertical committees** **The model is akin to that of CODEX. EWGs could be restructured to 2 types of WGs - crop specific issues (vertical) and multisectoral issues (horizontal)** **4. Restructure and redefine more specifically the scope of closely related working groups of ASWGC, ATWGARD AWGATE and Joint Committee ASEAN Cooperation on Commodity Product Promotion on coverage areas.** **The TORs of these WGs are general. They do not give direction as to areas of accountability and responsibility. The divide could be based on areas of disciplines eg regulatory & standards, R &D, training and extension, cooperatives, trade promotion. Because of a vertical divide, cross-secttoral issues would still require immense coordination.**
	ASEAN PLUS THREE COMPREHENSIVE STRATEGY ON FOOD SECURITY AND BIOENERGY DEVELOPMENT (APTCS-FSBD) FRAMEWORK	Relevant ASEAN Sectoral Working Groups (ASWGC?), ATWGARD	R & D for new and renewable energy source. implications of biofuel production to food and energy security	
Enhancing international competitiveness	**ASEAN Trade in Goods Agreement (Chap 8)**	ASEAN SPS Contact Point, ASWGC, Joint Committee ASEAN Cooperation on Commodity Product Promotion	Capacity Building, Harmonization of SPS and quality standards, CEPT issues	
Development and acceleration of new technologies	**A7 (39) FAF Crop- related Programmes, AFCC, AIFS,**	ATWGARD, AWGATE, ASWGC Joint Committee ASEAN Cooperation on Commodity Product Promotion	R& D projects on crops(eg AARNET), capacity building	
Responding to Climate Change and impacts (ASCC D.10)	**ASEAN Multi-Sectoral Framework on Climate Change: Agriculture and Forestry Towards Food Security (AFCC)**	AFCC Ad Hoc Steering Committee ASWGC, ASWGFi, ,ASWGL, ASOF	Adaptation and mitigation of agricultural production systems	
Sustainable management of natural resources (ASCC D.8)	**AIFS, APTC-FSBD**	ATWGARD, ASWGC, Joint Committee ASEAN Cooperation on Commodity Product Promotion	Balance of sustainable development of food and fuel crop production and utilization of natural resources	

Table B. 3: Alignment of strategic thrusts of Crop Sector SPA with global issues in food and agriculture

Table B.3: Alignment of strategic thrusts of Crop Sector SPA with global issues in food and agriculture							
Global trends & drivers	**Reviewed Strategic Thrusts of Crop Sector**						
	Strengthening food security	**Enhancing international competitiveness***	**Joint approaches in international fora***	**Development and acceleration of new technologies***	**Enhancement private sector involvement***	**Sustainable management and utilization of resources**	**Responding to Climate change**
Increasing demand for food and a changing food consumption pattern	As demand for food increases as ASEAN population grows, food production need to increase.and food security enhanced	Open and conducive trade in ASEAN community will meet food security needs for staples.		Increased production and nutrition security will come from increase yields with new varieties and productivity through new technology	Investment in food production and R & D to enhance food security. Strengthen development of agricultural cooperatives and farmers' organisations to enhance their resilience	Increased production will intensify use of natural resources that need s to be sustainably managed	Climate change will impact food production, security food availability, food accessibility, food utilization and stability
Competing demands and diminishing quality and quantity of natural resources	With competing needs from higher value crops, optimisation of utilisation of land and other natural resources for food production is required esp with higher return crops	Promotion of sustainable agriculture products	Joint positions on food security at regional and international meetings	Productive use of natural resources with technology accompanied by infrastructure inputs e g irrigation	Smallholding farms are stewards of nature resource base.	Competing agriculture needs require balanced and sustainable utilization of natural resources as they deplete.	Climate change adaptation and mitigation measures will minimize impact
Decreasing crop productivity	Adoption of new technologies to raise productivity			Science and technology solutions are critical to advance crop agriculture productivity and losses	Private sector and industry involvement for transfer and investment in technology to raise productivity and value chain	Renewal of natural resources	Climate friendly agriculture
Stagnating global trade liberalization		Implement trade facilitation to reduce trade cost for ASEAN international competitiveness	Joint ASEAN approaches for a common stand on trade issues to secure further liberalization and advantageous positions in international fora such as the WTO, CODEX, IPPC	Technologies are vital to ensure international competitiveness in agriculture	Private sector and industry involvement are necessary to implement, review and accelerate liberalization		

Table B.3: Alignment of strategic thrusts of Crop Sector SPA with global issues in food and agriculture							
Global trends & drivers	**Reviewed Strategic Thrusts of Crop Sector**						
	Strengthening food security	**Enhancing international competitiveness***	**Joint approaches in international fora***	**Development and acceleration of new technologies***	**Enhancement private sector involvement***	**Sustainable management and utilization of resources**	**Responding to Climate change**
Volatile and increasing food prices	Operationalise regional food emergency relief arrangements and stockpile	Short term needs for rice met through assured and open trade as part single market	Joint ASEAN approaches for a common stand on global food prices	Food security information systems to effectively forecast, plan and monitor supplies and utilization for basic food commodities, including sharp rise of food prices.			Climate change and natural disasters reduce s food production and destabilize supply and prices
Climate change and disaster prevalence	Food security measures to respond to climate change to enhance sustainable development and strengthen livelihoods		Joint positions on climate change issues and food security at regional and international meetings	Technologies to monitor land use and land-use changes		Optimized utilization of natural resources retard degradation of natural resources and GHG emissions	

* Current Crop Sector Strategic Thrusts

Table B. 4: Alignment of strategic thrusts of Crop Sector SPA with ASEAN challenges, trends and developments

Table B.4: Alignment of strategic thrusts of Crop Sector SPA with ASEAN challenges, trends and developments							
ASEAN challenges & trends	**Reviewed Strategic Thrusts of the Crop Sector**						
	Strengthening food security	**Enhancing international competitiveness***	**Joint approaches in international fora***	**Development and acceleration of new technologies***	**Enhancement private sector involvement***	**Sustainable management and utilization of resources**	**Responding to Climate change**
Importance of food supply	As agriculture remains an important source of employment and GDP, food security remain fundamental	Global competitiveness given 25% of trade is agriculture related and is a lead producer of oil palm, rubber, coconut, rice	Common stand and action on trade issues and marketing to expand agricultural exports.	New technologies required to spearhead agriculture sector's productivity vs manufacturing.	Small farms contribute significant role to food security. Encourage greater investment in food and agro-based industry.	Sustainable use of natural resources as land for agriculture use is declining	Monitor impact of climate change on vulnerable agro-ecosystems
Sustainable agriculture production	Promote efficient and sustainable food production, food consumption, post-harvest practices & loss reduction	Strengthen capacity building for adoption and implementation of international standards for food safety, quality assurance, certification, Good Agricultural Practices (GAP) in the ASEAN region	Promote efficient and sustainable marketing and trade.	Promote agricultural innovation including research and development on improving productivity and agricultural production	Promote the development of supply chain system	Promote cooperation in combating land and water deterioration for sustainable land and water management as these resources are under significant stress Optimisation of utilisation of land and other natural resources for food production	Develop strategies to enhance capacity for adaptation , low GHG emissions to address climate change
Technology diffusion and absorption for crop productivity	Promote the adoption of new technologies at farm -level	Scientific competencies to for harmonizing and certifying quality and safety standards as agro- production become export-oriented.		Promote collaborative research and technology transfer in agricultural products.	Integrating supply chains including smallholding family farms with trading networks under public-private partnerships.	Promote alternative approaches and practices for sustainable food security.	Promote and facilitate exchange of R & D information and knowledge , best practices on adaptation and mitigation measures including human resource development.

Table B.4: Alignment of strategic thrusts of Crop Sector SPA with ASEAN challenges, trends and developments							
ASEAN challenges & trends	**Reviewed Strategic Thrusts of the Crop Sector**						
	Strengthening food security	**Enhancing international competitiveness***	**Joint approaches in international fora***	**Development and acceleration of new technologies***	**Enhancement private sector involvement***	**Sustainable management and utilization of resources**	**Responding to Climate change**
Food security	Develop regional food security reserve initiatives and mechanisms. Extending the commodity scope of buffer stockpile to highly speculative commodities	Enhance role of trade in stabilizing food availability within a borderless economic community.	Joint positions on food security at regional and international meetings	Promote research to improve agricultural productivity, biotechnology and production	Engagement in food and agro-based industry development	Review impact of high value and bio-fuel crops on food security	Monitor impacts on and risks of climate change for food security
Climate change issues	Assess the implications for food security		Encourage joint efforts and common positions in addressing climate issues	Capacity building on adaptation and mitigation strategies/ options continues. Share and exchange knowledge, technology, experiences and best practice on integrated adaptation and mitigation options at national and ASEAN levels	Encourage the participation of local government, private sector, non-governmental organizations, and community to engage in a dialogue to address and promote awareness of the impacts of climate change		Monitor the impacts of climate change on and risks for crop agriculture
Integration into one market and production base	Enhance role of trade in stabilizing food availability by removal of NTBs	Strengthen capacity building for adoption of international standards for food safety and quality assurance and certification systems	Joint ASEAN approaches for a common stand on trade issues to secure further liberalization and advantageous positions in international fora such as the WTO, CODEX, IPPC Integration into global economy and participation into global supply networks	Promote ICT for seamless connectivity for trade facilitation and sharing R & D knowledge and information	Engagement of private sector in developing mechanisms for feedback and identifying NTBs, their monitoring and elimination including expertise and training support		Develop a harmonized "green growth strategy" to ensure natural resource protection while promoting agriculture development.

Table B.4: Alignment of strategic thrusts of Crop Sector SPA with ASEAN challenges, trends and developments							
ASEAN challenges & trends	**Reviewed Strategic Thrusts of the Crop Sector**						
	Strengthening food security	**Enhancing international competitiveness***	**Joint approaches in international fora***	**Development and acceleration of new technologies***	**Enhancement private sector involvement***	**Sustainable management and utilization of resources**	**Responding to Climate change**
Narrowing the development gap	Support capacity building to strengthen national food security programmes, including management of national food stockpiles, planning of potential land use for agriculture, and technical support for preparing national food balance sheet.	Need to accelerate capacity building in trade facilitation measures	Integration of subregional frameworks of GMS, BIMP-EAGA, IMT-GT , BIMSTEC into ASEAN community	Need to accelerate convergence with acceleration of technology transfer and absorption in CLM countries	Establish strategic alliances and joint approaches with the private sectors in promoting food safety, investment and joint venture opportunities, promotion of agricultural products and market access in each CLMV country	Build capacity for natural resources protection and conservation	Institutional technical capacity to assess the impact of climate change on biodiversity, water resources, climate related disasters such as floods and fires, and draw up adaptation and mitigation plans
Upgrading of agricultural sector	Diversifying from traditional to higher-value crops with development of profitable agriculture with higher labour costs	Global trade competitiveness through global value chains in transforming agriculture sector to market-oriented agri-business		Promote diversification of food sources and scale up community-based food security initiatives through technology.	Formation of local value chains and complementarities by creating a robust local supplier base and expanding ancillary services.	Urbanization and Social changes. in family structure and the role of women	

* Current Crop Sector Strategic Thrusts

Table B. 5 : Suggestions in accordance with Crop Sector Strategic Thrusts, 2016 - 2020

Table B.5 : Suggestions in accordance with Crop Sector Strategic Thrusts, 2016-2020		
Strategic Thrusts in Crops	**Suggested Strategic Objectives**	**Suggested initiatives**
1. Enhancement of international competitiveness of ASEAN food and agricultural products/commodities to facilitate integration into a single market and production base	• Improve trade facilitation • Enhance long-term international competitiveness of food and agricultural products • Accelerate harmonization of SPS standards • Increase private sector involvement and cooperation • Build SPS competencies • Containment of pest and disease outbreaks • Enhance role of trade in stabilizing food availability within a borderless economic community	
2. Promotion and acceleration of transfer of new technologies for increased productivity and sustainable agriculture	• Expand and deepen regional cooperation and collaboration in agriculture productivity • Facilitate exchange of information and knowledge on best practices including human resource development. • Increase private sector and international/ regional organization involvement and cooperation • Build scientific competencies for technology adoption and transfer	

Table B.5 : Suggestions in accordance with Crop Sector Strategic Thrusts, 2016-2020		
Strategic Thrusts in Crops	**Suggested Strategic Objectives**	**Suggested initiatives**
3. Strengthening food production and productivity	• Promote efficient and sustainable food production, food consumption, post-harvest practices & loss reduction • Improve food security • Accelerate development and implementation of GAP standards • Advance agribusiness by improving value/supply chains and logistics • Increase private sector involvement and cooperation • Enhance role of open trade in stabilizing food availability within a borderless economic community • Adopt technology to improve agricultural productivity, and production • Promote diversification of food sources and scale up community-based food security initiatives • Build competencies in food production	
4. Sustainable management and utilization of natural resources used by crop agriculture	• Promote sustainable management of natural resources • Reduction of negative impact of crop production on natural resources • Optimisation of utilisation of land and other natural resources for crop production • Monitor impact of high value and industrial crop production on natural resources • Build competencies for improved sustainable land and water management and status monitoring • Adoption of technical standards and methods for monitoring and assessment • Generate public awareness on issues of sustainable management of natural resources	•

Table B.5 : Suggestions in accordance with Crop Sector Strategic Thrusts, 2016-2020		
Strategic Thrusts in Crops	**Suggested Strategic Objectives**	**Suggested initiatives**
5. Responding to climate change	• Monitor impacts on and risks of climate change in vulnerable agricultural ecosystems • Generate public awareness of climate change issues • Facilitate exchange of R & D information and knowledge , best practices on adaptation and mitigation measures including human resource development. • Encourage cooperation in implementation of integrated adaptation and mitigation strategies for agricultural production systems • Build competencies in climate change science and technology	
6. Enhancement of private sector *and international /regional organization* involvement	• Strategic alliances and joint approach with the private sectors to facilitate regional integration and connectivity • Encourage a culture for private sector engagement in trade facilitation and agri-supply and production value chain integration.	•

Table B. 6: Suggestions in accordance with Agriculture Cooperatives Strategic Thrusts, 2016-2020

Strategic Thrusts Cooperatives	Suggested Objectives	Suggested initiatives
1.Strengthening food security	• Strengthening the Food Marketing System of Agricultural Cooperatives for Enhancing Food Security in ASEAN • Empowerment of personnel and leaders of agricultural cooperatives • Advance agribusiness by improving supply chains and logistics • Adopt technology to improve agricultural productivity, and production • Promote diversification of food sources and scale up community-based food security initiatives • Promote diversification of food sources and scale up community-based food security initiatives • Capacity building	•
2.Development and acceleration of new technologies	• Exposure to appropriate technology to improve agricultural productivity, and production in small farm holdingst • Improve livelihood of smallholder farmers	•
3. Enhancement of private sector involvement	• Establishment of strategic alliances among agricultural cooperatives in ASEAN • ASEAN Cooperatives Business Forum	•

Strategic Thrusts Cooperatives	Suggested Objectives	Suggested initiatives
4.Sustainable management and utilization of natural resources	• Promote sustainable management of natural resources • Reduction of negative impact of crop production on natural resources • Generate public awareness on issues of sustainable management of natural resources	•
5.Responding to climate change	• Generate public awareness of climate change issues • Encourage cooperation in implementation of integrated adaptation and mitigation strategies for agricultural production systems	•

Table B. 7: Suggestions in accordance with Agriculture Training and Extension Strategic Thrusts, 2016-2020

Strategic Thrusts Training & Extension	Suggested Objectives	Suggested initiatives
1. Promotion and acceleration of new technologies	• Promote cooperation, joint approaches and technology transfer with international and regional organizations and private sector	•
2. Sustainable management and utilization of natural resources	• Promote sustainable management of natural resources • Reduction of negative impact of crop production on natural resources • Generate public awareness on issues of sustainable management of natural resources	•
3. Responding to climate change	• Generate public awareness of climate change issues • Encourage cooperation in implementation of integrated adaptation and mitigation strategies for agricultural production systems	•

Table B. 8: STRATEGIC PLAN OF ACTION (SPA) FOR THE ASEAN COOPERATION IN CROPS 2011-2015

SECTOR : AGRICULTURE
SUB-SECTOR : CROPS
RESPONSIBLE WORKING GROUP : SECTORAL WORKING GROUP ON CROPS

STRATEGIC THRUST 2 : ENHANCEMENT OF INTERNATIONAL COMPETITIVENESS OF ASEAN FOOD AND AGRICULTURAL PRODUCTS/ COMMODITIES

ACTION PROGRAMME	ACTIVITIES	SUB-ACTIVITIES	WORK SCHEDULE	STATUS
1. Enhancement of intra- and extra-ASEAN trade and long-term competitiveness of ASEAN's food and agricultural products /commodities.	1.1 Monitoring of the Implementation of the CEPT Scheme for AFTA for crop products.			
	1.2 Intensification of cooperation in production and processing technology development and transfer and enhancement of development, harmonization and adoption of quality standards for products through:			
	1.2.1 Harmonization of phytosanitary measures for crop products - (**EWG-PS)**	i. Compilation and comparative analysis of endemic pest lists for selected crops. • Rice-milled (Malaysia) • Citrus- fruit (Brunei Darussalam) • Potato- tuber for consumption (Thailand) • Mango-fruit (Indonesia) • Dendrobium orchids – cut flower (Singapore) • Durian - fruit (Indonesia) • Banana - fruit (Malaysia) • Oil palm (Malaysia) • Corn (Indonesia)	31/12/2010	The compilation of endemic pest list for these commodities had been completed. - Rice milled - potato tuber for consumption - Dendrobium orchids cut flower, - Paddy - banana fruit - oil palm The compilation of endemic pest list for the following commodities are in progress.

ACTION PROGRAMME	ACTIVITIES	SUB-ACTIVITIES	WORK SCHEDULE	STATUS
		• Paddy (Viet Nam) • Coffee bean for consumption (Indonesia)		- Mango fruit - Durian fruit - Corn seed - Coffee bean for consumption
		ii. Development of importation procedures. • Rice-milled (Malaysia) • Citrus- fruit (Brunei Darussalam) • Potato- tuber for consumption (Thailand) • Mango-fruit (Indonesia) • Dendrobium orchids – cut flower (Singapore) • Durian - fruit (Indonesia) • Banana - fruit (Malaysia) • Oil palm (Malaysia) • Corn (Indonesia) • Paddy (Viet Nam) • Coffee bean for consumption (Indonesia	31/12/2010	The following Importation Guidelines had been developed and endorsed by AMAF i. Rice-milled (30th AMAF-2008) ii. Dendrobium Cut Flowers (32nd AMAF- 2010) iii. Potato tuber for consumption (33rd AMAF- 2011). iv. Dendrobium orchids cut flower (34th AMAF -2012) v. Paddy (34th AMAF -2012) vi. banana fruit (34th AMAF -2012) vii. oil palm (34th AMAF -2012) The draft Importation Guidelines for Citrus fruit is under finalization for possible submission to AMAF in 2013. The drafts Importation Guidelines for Mango fruit, Durian fruit, Corn seed, and Coffee bean for consumption are under consideration, pending the refinement of the PRAs.
	1.2.2 Enhancement of compliance to WTO/SPS requirements for market access and competitiveness. – **(EWG**	i. Revision of quarantine/ endemic pest lists through surveys according to ISPM	2011-2015	Translation of SPS Agreement had been completed in Indonesia, and Vietnam language and still

ACTION PROGRAMME	ACTIVITIES	SUB-ACTIVITIES	WORK SCHEDULE	STATUS
	PS)	standards.		underway for Lao, Thailand and Cambodia languages. (under SPSCBP)
		ii. Rehabilitation/ development of biological collections and databases to underpin pest lists. iii. Capacity building and ASEAN cooperation in pest diagnostics and identifications. iv. Regional protocols for pest surveys.		
	1.2.3 Strengthening national frameworks for Pest Risk Analysis (PRA). – **(EWG PS)**	i. Capacity building in PRA. ii. Development of shared database of pest information and PRAs on exotic pest threats.	2011-2015	Cooperation with the Croplife Asia is being initiated on capacity building on PRA.
	1.2.4 Biosecurity planning. – **(EWG PS)** *(Lead Country: Malaysia)*	i. Compilation of an ASEAN list of common exotic pest threats and potential invasive alien species, including comprehensive biological data and intervention strategies. ii. ASEAN cooperation in contingency planning incursion management and emergency response procedures.	2011-2015	The activities will be discussed in the 16th EWG PS Meeting.
	1.2.5 Harmonisation of national standards	i. Harmonisation of national	31/12/2011	The AMSs are in the process of

ACTION PROGRAMME	ACTIVITIES	SUB-ACTIVITIES	WORK SCHEDULE	STATUS
	with international standard – **(EWG PS)**	standards with IPPC standard		harmonizing their national standards with IPPC standards No. 6,7,10,12,13,15,17,19,20,23, 24,25,28 and,31. Lao PDR has completed the translation of ISPM No. 1-24 into the Lao language and in the progress of translation the rest ISPMs by October 2013. Viet Nam had translated ISPM no. 1 – 24 into Vietnam language and is now in the process of translating ISPM no 25-34. Cambodia had translated and published ISPM 5, 6, 7, 8 and 17 into Cambodia language.
	1.2.6 Harmonization of Maximum Residue Limits (MRLs) of Pesticides among ASEAN Countries. – **(EWG MRLs)**	i. Harmonisation of MRLs for identified pesticides. ii. Implementation and review of the endorsed harmonized MRLs.	31/12/2015	On-going. As of Sep 2013 the status of the ASEAN MRLs: Endorsed: 788, replaced: 13, deleted: 57
	1.2.7 ASEAN Standards for Horticultural Produce *and other Food Crops.* (Philippines' Initiative) - **(TF MASHP)**	i. Establishment of ASEAN Standards for horticultural produce and other food crops.	31/12/2015	On-going. Since 2006, the following ASEAN Standards had been endorsed 1) Mango, 2) Pineapple, 3) Durian, 4) Papaya, 5) Pumelo, 6) Rambutan, 7) Guava, 8) Lansium, 9) Mandarin, 10) Mangosteen, 11) Watermelon, 12) Young Coconut, 13) Banana, 14) Garlic, 15) Shallot, 16) Jackfruit, 17) Cucumber, 18) Melon, 19) Salacca, 20) Okra, 21) Cashew Kernels, 22) Sweet Pepper, 23)

ACTION PROGRAMME	ACTIVITIES	SUB-ACTIVITIES	WORK SCHEDULE	STATUS
		ii. Develop a concept paper to draft organic agriculture standards for crops to be included in the list of commodities of standardization.		Onion, 24) Chilli Peppers, 25) Wax apple, 26) Chico (Sapodilla) 27) Eggplant, 28) Pumpkin, 29) Sweet Corn. Special Task Force on the ASEAN Standard for Organic Agriculture was established, with the task: i) to formulate the draft ASEAN Standards for Organic Agriculture (Crop Production), and ii) to identify plan/initiative to support its promotion and implementation. Its 1st Meeting was held on 8-9 April 2013 I Bandar Seri Begawan.
	1.2.8 ASEAN-Crops Sectoral Working Group Website	Review and Monitor the established Crops related website . i. Study The establishment of centralized operated crops related website	2011-2015	Establishment of an integrated website on Crops is being discussed. To explore possible fundings from dialogue partners for the integrated website. The information on ASEAN Pesticide Database Network will be transferred to the interim Crop website under ASEAN Web.
	1.2.9 ASEAN Plant Health Cooperation Network (Malaysia's Initiative) **– (EWG PS)** (http://agrolink.moa.my.pqnet/aphcn	i. Capacity Building ii. ASEAN Regional Diagnostic Network (ARDN)	2011-2015	ASEAN Regional Diagnostic Network (ARDN) had been endorsed by the SpecSOM-32nd AMAF, August 2010, Bandar Seri Begawan. The ARDN project consist 3 major components: (i) establishment of an ARDN, ii) communication plan; and (iii) enhancing essential diagnostic tools and skills.

ACTION PROGRAMME	ACTIVITIES	SUB-ACTIVITIES	WORK SCHEDULE	STATUS
				Some activities under component 3 are implemented under AANZFTA – ECWP. The Activities includes: i) training for "front-line" identifiers, ii) training for diagnostic specialists, and iii) diagnostic support – procurement of several equipments. The project proposal on Taxonomic capacity building to support market access for agricultural trade in the ASEAN region had been submitted to JAIF in March 2012. The proposal is under consideration of Japan.
	1.2.10 Replacement of methyl bromide for fumigation – (EWG PS) (Lead country: Philippines)	i. Compilation of alternatives to replace methyl bromide ii. Confirmatory test for these alternatives	2011-2015	Philippines had presented the strength and problems of MB and introduced ECO2FUME and VAPORPH3OS as possible and sustainable alternative fumigants for PQ treatment in the 14th Meeting of EWG PS. Philippines continue to take the lead in the exercise to conduct study on the possible replacement of Methyl Bromide for fumigation.
	1.2.11 Regulation of movement of biocontrol agent **– (EWG-PS)** (Lead country: Indonesia)	i. Stock-taking/inventory and submission of different bio-control agents.. . ii. Analysis of common principles and practices covering biocontrol regulations by AMSs. iii. Formulate a protocol	2011-2015	Brunei Darussalam has no guidelines specifically for BCA. Brunei Darussalam only have common procedure and regulation for importation and exportation, namely Law CHAPTER 43: AGRICULTURAL PESTS AND NOXIOUS PLANTS ACT Section 24 (1) (F) Revised

ACTION PROGRAMME	ACTIVITIES	SUB-ACTIVITIES	WORK SCHEDULE	STATUS
		agreed upon by AMSs regarding regulation of movement of biocontrol agents.		Edition 1984. Thailand has submitted related regulation on the importation of BC during the 14th EWG PS Meeting. The BC is prohibited article under the Ministry's Notification. Singapore has submitted the regulations related to BC. Indonesia has been tasked to work closely with the ABC Project Team under ASEAN-German collaboration on this issue to ensure complementarity & coherence.
	1.2.12 Electronic Phytosanitary certification **– (EWG-PS)** (Lead country: Indonesia)	i. Develop a concept paper on Electronic Phytosanitary certification. ii. share information on various efforts/activities done regarding E-Phytosanitary certification.	2011-2015	Indonesia will come up with a comprehensive concept paper on e-phytosanitary certification.
	1.2.2 Guidelines for ASEAN Nursery Certification for export to facilitate intra-ASEAN trade in plants **– (EWG PS)** (Lead country: Singapore)	i. Formation of Adhoc Technical Panel to review or redraft Draft Guidelines and Checklist to be led by Singapore. (Annex 4: Terms of Reference for Technical Panel) ii. Completion of review of Draft	June 2012	The Guideline and the audit check list for ASEAN Nursery Certification Scheme for Export has been edorsed by 34th AMAF in September 2013..

ACTION PROGRAMME	ACTIVITIES	SUB-ACTIVITIES	WORK SCHEDULE	STATUS
		Guidelines and Checklist by Technical Panel. iii. Country consultation on 2nd Draft Guidelines and Audit Checklist reviewed or redrafted by Technical Panel iv. Completion of country consultation of 2nd Draft Guidelines and Checklist by Technical Panel v. Compilation of substantive comments on the 2nd Draft Guidelines and Audit Checklist by Singapore vi. Final review of 3rd Draft Guidelines and Audit Checklist by Technical Panel vii. Submission of final version of Guidelines and Audit Checklist to EWG – PS 2012 for endorsement viii. Initiation of bilateral arrangement between interested ASEAN Member States.		
	1.2.3 Harmonisation and Implementation of ASEAN GAP (Food Safety Module) – **(EWG ASEAN GAP**)	i. Implementation of Strategic Plan on Sustaining the Development of ASEAN GAP ii. AADCP II: Global	2011-2015	On-going. On going

ACTION PROGRAMME	ACTIVITIES	SUB-ACTIVITIES	WORK SCHEDULE	STATUS
		Recognistion of Quality Assurance Systems for ASEAN Fruits and Vegetables (ASEAN GAP)		
		iii. ASEAN Postharvest Horticulture Network Website (APHNet)		The Website for promotion and increase public awareness on the ASEAN GAP has been established and managed by the DOA Thailand. The website, named as the ASEAN Postharvest Horticulture Network (APHNet) can be accessed at www.APHNET.org.

STRATEGIC THRUST 3 : ENHANCEMENT OF ASEAN COOPERATION AND JOINT APPROACHES IN INTERNATIONAL AND REGIONAL ISSUES

ACTION PROGRAMME	ACTIVITIES	SUB-ACTIVITIES	WORK SCHEDULE	STATUS
1. Strengthening Joint Positions in Addressing Non-trade Issues at International Fora to Protect the Interest of ASEAN Member Countries.	1.1 Coordinating and strengthening joint positions on international and regional fora and organizations such as WTO, FAO, APEC, Codex and ASEAN Dialogue Partners. 1.1 Pursuing common positions on international commodity issues.	i. Identify and discuss issues related to crops in the EWG PS in order to have a joint strategy/position in international / regional fora.		

STRATEGIC THRUST 4 : DEVELOPMENT, ACCELERATION OF TRANSFER AND ADOPTION OF NEW TECHNOLOGIES

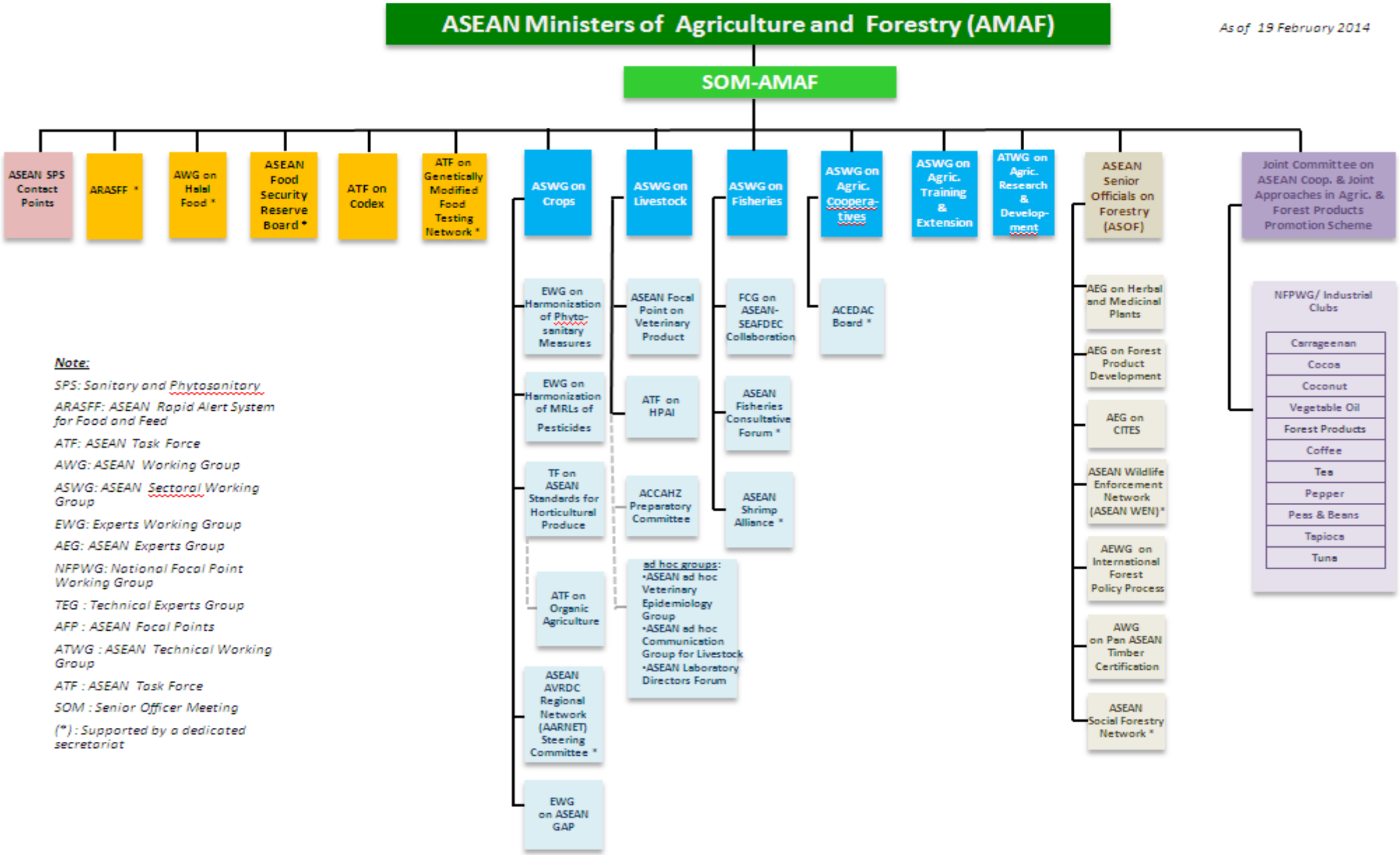
ACTION PROGRAMME	ACTIVITIES	SUB-ACTIVITIES	WORK SCHEDULE	STATUS
1. Conduct of collaborative training and workshop to develop new/ improved technology in agricultural production, postharvest and processing activities.	1.1 Identification of improved production/ post-harvest technologies available in the region and elsewhere for possible adoption in ASEAN Member Countries.	1.1 Conduct and participate in the training and workshop related to crops sub-sectors.	2011-2015	Trainings and workshops carried out under the ASEAN Biocontrol for Sustainable Agrifood Systems Project. Collaboration with other ASWGs such as AWGATE to be undertaken in the area of training on crops production. Collaboration with other ATWGARD on the conduct of a Workshop on GAP and Organic Agriculture has been initiated. Collaboration with AFCC on the conduct of the Project "Production System Approach for Sustainable Productivity and Enhanced Resilience to Climate Change" has been initiated. The Project Proposal on the Seminar for the implementation of GAP has been prepared under the EWG GAP for submission to Donor funding. Regional Symposium: High Value Vegetables in Southeast Asia: Production, Supply and Demand (SEAVEG 2014), 25 – 28 Feb 2014, Bangkok (AARNET) Expert Consultation on Vegetable Research and Development Priorities in Southeast Asia, March 2013, Bangkok (AARNET)

ACTION PROGRAMME	ACTIVITIES	SUB-ACTIVITIES	WORK SCHEDULE	STATUS
	1.2 Implementation of Regional cooperation to enhance vegetable research and development in ASEAN region	• ASEAN –AVRDC Regional Network for Vegetable Research and Development (AARNET).	2011-2015	On-going Vegetable R&D priorities for ASEAN has been agreed on the following areas: i) Germplasm conservation, gene-mining and plant breeding, and ii) Crop management, postharvest, marketing and nutrition.

STRATEGIC THRUST 5 : ENHANCEMENT OF PRIVATE SECTOR INVOLVEMENT

ACTION PROGRAMME	ACTIVITIES	SUB-ACTIVITIES	WORK SCHEDULE	STATUS
1. Continuous consultation with the private sector at all meetings of the ASWGC, particularly with regard to trade issues in international and regional fora.	1.1 Inviting the private sector to participate in meetings of working group, where relevant.			The Croplife Asia will organis the Advanced Pest Risk Analysis Workshop in September 2013 in Bekasi, Indonesia. Public-Private Workshop on Agricultural Productivity Enhancing Innovations, Technologies and Practices will be organised with the support from MARKET Project at the national and regional levels. ASEAN Biocontrol for Sustainable Agrifood Systems Project is being implemented, involving the private sectors.

Fig A. 1:Organization Structure of ASEAN Cooperation in Food Agriculture and Forestry



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