

**RESEARCH
ARTICLE**

Promoting Sustainable Agriculture Production and Products in the Asia and Pacific Region

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Various forms of sustainable agriculture have been promoted in the Asia and Pacific region, with organic agriculture constituting the single most important form. There is a commonality in the way sustainable agriculture has been defined, but often these definitions miss nuances such as its relation to climate change. Several sustainable agriculture indicators have been proposed, but with limited application on the ground. So far, certification has been the major method of promoting sustainable agriculture, but this approach has several limitations. Certification-based market access for poor and marginal farmers has been a major issue and there is a need to adopt non-certification means of promoting products from these farmers. Identifying a common set of sustainable agriculture indicators could help in operationalizing, harmonizing and promoting sustainable agriculture concepts on the ground. Existing sustainable agriculture indicators need to be improved with respect to social, climate change and biodiversity dimensions to bring more products into the gamut of sustainable agriculture.

Background

Agriculture contributes a significant proportion of the national gross domestic product (GDP) of the Asia and Pacific region (APR), although its share has been declining over the years because of economic structural changes. Between 1999 and 2009, expansion of the agricultural area in the APR was insignificant. Farmland decreased in Australia, New Zealand, the Republic of Korea and Japan, Samoa, China and India, while it increased in countries such as Fiji, Malaysia, Papua New Guinea, Vanuatu, Viet Nam, the Philippines, Bangladesh, Bhutan, Pakistan, Indonesia and Thailand (FAOSTAT, 2015). These trends are largely due to increasing pressure on and competition for agricultural land from urbanization, industrial growth and transportation. As a result of intensive farming practices, growing pressure on agricultural ecosystems is leading to land degradation, soil erosion and loss of soil fertility. Land scarcity is a challenge in India and China (FAO, 2014) and erosion is prevalent in some parts of India and regions to the north of China.

By region, East Asia followed by South and South-West Asia are the heaviest users of fertilizers at 445 kg/ha and 150.38 kg/ha, respectively. Pesticide use, in terms of active ingredient, however, has decreased in China, India, the Republic of Korea, Japan and Viet Nam over the past decade, while it increased in countries such as Thailand, Australia, New Zealand and Pakistan (FAOSTAT, 2015). There is increasing farm mechanization in crop production in the APR, although mechanization itself remains limited. While India and Japan possess the largest number of tractors in the region, at over 2 million, Indonesia records the use of only 4,000 (FAO, 2014). In addition to these trends, the region is also experiencing rapid change in dietary patterns towards consumption of meat products, which puts further pressure on agricultural land for the supply of animal feed and fodder.

These trends are putting increasing pressure on agricultural sustainability. Arresting these trends is of paramount importance for the region to develop sustainably, especially in terms of food and nutritional

security. Countries in the APR have promoted several policies and programmes for sustainable agriculture, but these are often uncoordinated. However, with the advent of global frameworks such as Sustainable Development Goals (SDGs), which are comprehensive, there is even more impetus for developing sustainable agriculture. Identifying appropriate indicators could help achieve this.

Definition of sustainable agriculture

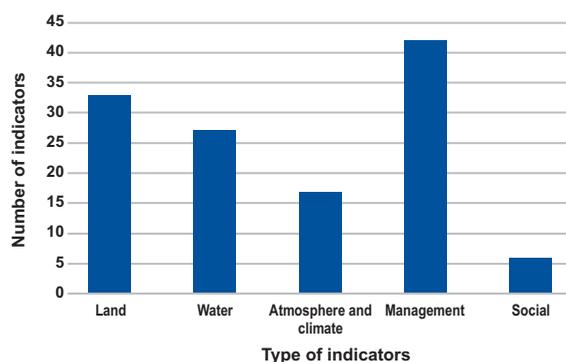
FAO defines sustainable development in the context of agriculture as “the management and conservation of the natural resource base, and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations. Such sustainable development (in the agriculture, forestry, and fisheries sectors) conserves land, water, plant and animal genetic resources, is environmentally non-degrading, technologically appropriate, economically viable and socially acceptable” (Corsin, Funge-Smith, & Clausen, 2007). Stephen R. Gliessman defines sustainable agriculture as “a whole-systems approach to food, feed and fibre production that balances environmental soundness, social equity, and economic viability among all sectors of the public, including international and intergenerational peoples. Inherent in this definition is the idea that sustainability must be extended not only globally but indefinitely in time, and to all living organisms including humans” (Stephen, 1998). The Sustainable Agriculture Initiative Platform defines it as “the efficient production of safe, high quality agricultural products, in a way that protects and improves the natural environment, the social and economic conditions of farmers, their employees and local communities, and safeguards the health and welfare of all farmed species” (Sustainable Agriculture Initiative Platform, 2010). These definitions call for the preservation of the natural resource base, they consider the food security of current and future generations, emphasize economic and environmental well-being, and advocate systems and ecological approaches. While some definitions focus on food production alone, others go beyond production and cover the ‘farm to bin’ concept, as in the case of the definition given by the Sustainable Agriculture Initiative Platform. The difference is that such definitions extend the benefits of sustainable agriculture to the well-being of consumers and call for efficient food supply chains that minimize food waste and uphold food security, and climate

change adaptation and mitigation goals. Most sustainable agriculture definitions do not explicitly mention climate change. However, climate-smart agriculture could be understood as an extended form of sustainable agriculture that could help address climate change issues upfront (CCAFS, 2016)

Indicators for sustainable agriculture

Several indicators have been proposed for sustainable agriculture and products (Figure 1). Christen and O'Halloranetholtz (2012) opined that any sustainable development indicators for agriculture should satisfy a set of criteria including scale of observation, transparency of how the indicators will be used, cost of collecting the data and the scale at which the indicators will be used (e.g. farm or regional level, etc.) (Christen and O'Halloranetholtz, 2012).

Figure 1. Number of sustainable agriculture indicators proposed in the literature¹



Reyter *et al.* (2014) grouped these indicators into policy, practice and performance indicators covering water, climate change, land conversion, soil health and pollution but clearly excluding economic and social dimensions (Reyter, Hanson & Henninger, 2014). Their review indicated that most indicators are either irregularly collected or are not proximate enough to environmental sustainability, and are less relevant to policy decision-making, especially in the areas of water, climate change and nutrient use. While the indicators proposed by Reyter *et al.* (2014) and Christen and O'Halloranetholtz (2012) constitute a mix of macro and micro indicators, OECD-proposed indicators constitute mostly macro indicators appropriate for policy decision-making at the national level (OECD, 2013). In addition to these indicators, the SDGs include a number of indicators that are applicable to promoting sustainable agriculture and filling the gaps in the

¹ (Christen and O'Halloranetholtz, 2012; OECD, 2013; Reyter, Hanson and Henninger, 2014)

Dear Palawija readers,

Ensuring the sustainability of agricultural systems has become a critical need in view of a rising global population and emerging challenges, such as land degradation and climate change. In this context, organic agriculture is receiving increasing attention across the world, including in the Asia-Pacific region, where a number of research organizations have studied or reviewed the potential of organic agriculture. The role of certification standards and mechanisms in promoting sustainable and/or organic agriculture is also attracting greater scrutiny and analysis.

This issue of Palawija Forum shares two articles on the topic of certification, with particular reference to the Asia-Pacific region. The article entitled “Promoting sustainable agriculture production and products in the Asia and Pacific Region” by S.V.R.K. Prabhakar and Daisuke Sano of the Institute for Global Environmental Strategies (IGES), Japan, with contributions from CAPSA, highlights the role of organic agriculture certification in promoting sustainable agriculture in the region.

Astrid Offermans of the International Centre for Integrated Assessment and Sustainable Development (ICIS), Maastricht University, the Netherlands, in her article entitled “Sustainability certification in Indonesia: the road towards sustainability?” discusses the impact of certification schemes on smallholder farmers in Indonesia.

A success story on Thailand's carbon footprint labelling programme for agri-products as a tool for leading Thailand's transition to a low carbon economy is presented in this issue.

Information on the 2016 edition of *The World of Organic Agriculture* is also shared. The book provides a comprehensive review of recent developments in organic agriculture globally.

We hope you enjoy reading this issue and we welcome your feedback and contributions for future issues of this Forum.

Editor

social area
(http://uncapsa.org/palawija/pn1608_Table-A.pdf).

Gaining access to sustainable agriculture markets

In the APR, the speed of change in food consumption habits along with rapid economic development and increased disposable income has far outpaced the speed with which the agricultural producers could catch up, leading to marginalization of some producers in developing countries. Agricultural producers who have been producing for subsistence and those who have recently been exploring market opportunities for greater profits do not have the capacity to produce for these emerging markets. Small and marginal farmers, in particular, are left out of these emerging value-added food markets. These producers need to build capacity to reach the level of quality that consumers demand in the rich and niche emerging urban markets in APR.

Initiatives for providing market access to small and marginal farmers in developing countries have focused on building appropriate infrastructure, such as transportation, storage facilities, processing, credit, information, and health and education services (Maximo, 2011). Other market access instruments have focused on reducing market risks and transaction costs through innovative institutional support mechanisms (Table 1). Several institutions and programmes funded by donor agencies and non-governmental organizations (NGOs) are facilitating new and innovative measures of increasing market access for farmers in the region. These measures are often isolated and are not well supported by national initiatives; hence, there is still a large proportion of farmers who can benefit from market access. Sustainable agriculture products could provide a means of gaining market access, as health-conscious urban consumers are growing in the region. Government initiatives lack focus on gaining market competitiveness, which is achieved by

product specialization, quality control and targeting niche markets. This has been the focus of initiatives led by NGOs and bi- and multilateral agencies. Product certification has played a significant role in such approaches.

important means of operationalizing sustainable agriculture, keeping in view the consumers safety and preferences. There are, however, both pros and cons. Pros include the ability of producers to access to markets where such standards are

Table 1. Ways in which market access has been improved in some of the countries in the Asia and Pacific region

Country	Market access examples	Reference
Cambodia	Farmer–supermarket linkages, community cooperatives, training and capacity-building	Dalton (2006); Food and Agriculture Organization (2016)
China	Farmer–supermarket linkages, farmer associations, training and capacity-building	APAARI (2008)
India	Contract farming, self-help groups, cooperatives, farmers markets, subsidies for investment in market infrastructure, information technology	APAARI (2008); Praveen (2014)
Indonesia	Farmer field schools, participatory market chain approaches, contracts between farmers and market chain partners, capacity-building of farmers, farmer groups and farmer–private sector partnerships	AUSAID (2006); Shepherd, (2006); Food and Agriculture Organization (2016)
Papua New Guinea	Farmer–private sector linkages, CODEX marketing standards, infrastructure improvement, Fairtrade certification schemes (also applicable in many other Pacific countries)	Martin and Jagadish (2011); IFAD (2014); Wickramasinghe (2015)
Philippines	Developing enterprises around special food produce, capacity-building, technological infusion, farmers cooperatives, farmer–trader linkages	APAARI (2008); Food and Agriculture Organization (2016)
Samoa	Fairtrade certification, capacity-building, market linkages	Fairtrade (2016)
Thailand	Farmer to trader linkages, private sector linkages, and leadership of lead farmers	Food and Agriculture Organization (2016)

Source: Authors

Certification for promoting sustainable agriculture

Organic agriculture remains the single largest form of sustainable agriculture being promoted globally today. Applying the concepts of sustainability to practical production and consumption contexts has led to focused approaches, such as organic agriculture. There are several organic certification standards that offer a perspective on sustainable agriculture. Most of these agricultural standards have sustainability as a basis, though they may vary in the definition they adopt. These standards and the indicators used therein support an idea that sustainable agriculture need not be left to concepts alone, but can be translated into practical applications.

Detailed discussion on certification is beyond the scope of this paper. Certification can provide an

enforced, price premiums, capacity-building of producers and stakeholders in the supply chain in all aspects of food quality, reduction in food loss due to improved capacity and support services, increased consumer confidence and a better ability to create brand equity among the consumers and markets. However, enforcing certification as a means of promoting sustainable agriculture could alienate small and marginal producers who cannot afford or technically comply with formal certification schemes. This is where Fairtrade is helping by improving the market access through product certification. This is achieved through organizing small-scale farmers into groups, building their capacity to produce quality goods and linking them with the markets through the marketing of Fairtrade certified produce (Fairtrade, 2016). Through this initiative, in 2015, Fairtrade was able to link nearly 40,000 smallholder farmers in the Pacific region alone.

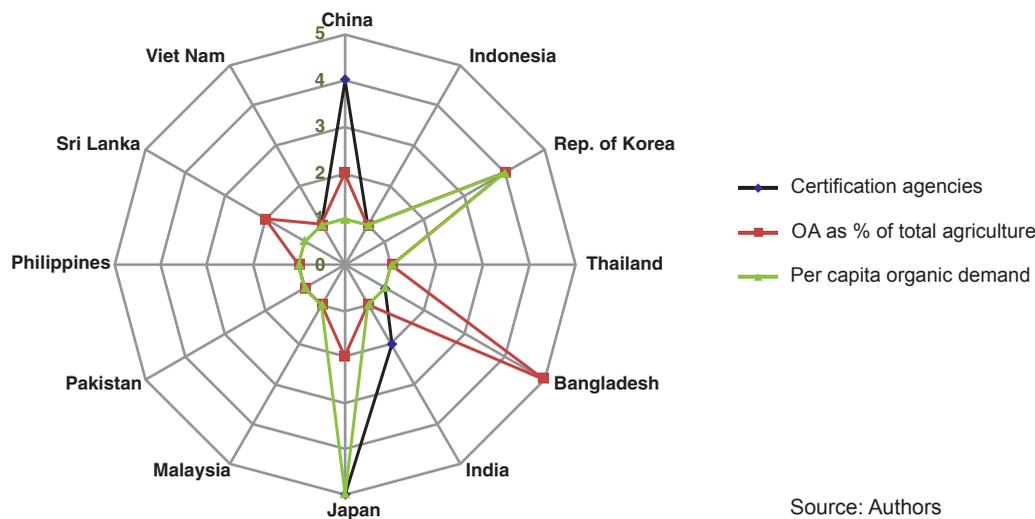
Several forms of organic agriculture certifications are being issued in the region (http://uncapsa.org/palawija/pn1608_Table-B.pdf) and countries vary in their capacity to provide certification for sustainable agriculture production (see Figure 2 for the current capacity). It is apparent that Japan, the Republic of Korea and China have largest number of certification agencies. Certified organic agriculture in APR is yet to make significant progress in terms of its share of the total agricultural area. There is high demand for organic produce in the Republic of Korea, while certified organic agriculture as a percentage of total agricultural area is highest in Bangladesh. Lack of harmonization in certification schemes and higher prices in comparison to conventional agricultural products have fragmented the market and reduced the potential to promote sustainable agriculture to a large extent.

Asian Nations (ASEAN) leads the way in terms of regional cooperation for promoting sustainable agriculture, there is large potential for other subregions to follow suit. Small steps have been made in the South Asian Association for Regional Cooperation (SAARC) in developing a SAARC Agriculture Vision 2020 and SAARC Regional Coordinated Programme on Agroforestry. The SAARC Agriculture Vision 2020, in particular, talks about the need to develop a region-wide agriculture standard to promote agricultural exports and regional cooperation in areas of food security, safety and natural resource conservation, with a focus on local contexts.

Challenges and tasks for future

Promoting sustainable agriculture requires operationalizing sustainable agricultural principles

Figure 2. Capacity of certified organic agriculture in selected countries in Asia and Pacific region



Source: Authors

Certification agencies: 1=10-20; 2=20-30; 3=30-40; 4=40-50; 5=>50. Organic agriculture (OA) as percentage of total agriculture: 1=0-0.4; 2=0.4-0.8; 3=0.8-1.2; 4=1.2-1.6; 5=>2.0. Per capita organic demand (million US\$): 1=0-5; 2=5-10; 3=10-15; 4=15-20; 5=>20.

Experience from existing regional/international efforts

Sustainable agriculture has been widely promoted from cooperatives at the local level to cooperation and partnerships among independent producer associations at regional and international levels (Table 2). These partnerships have significantly contributed to the capacity-building of producers. They were able to influence governments to promote sustainable agriculture policies. They also connected smallholder farmers to emerging markets through technology transfer, capacity-building, product specialization and public-private partnerships. While the Association of Southeast

on the ground, and product certification has been a major approach. The current means of accessing emerging food markets through structured certification programmes works very well for affluent farmers and farmers who have good access to extension and credit facilities. However, small-scale and marginal farmers, who use few or no market inputs in agricultural production and whose agricultural produce can be relatively free of harmful chemicals, are yet to gain market access with high-value and high-quality agricultural products. This can be achieved through proper identification of these farmers, targeted capacity-building to help them comply with necessary standards or practices and connections to

Table 2. Major partnership efforts to promote sustainable agriculture in the Asia and Pacific region

Partnership initiative	Nature and scope	Reference
New Vision for Agriculture (NVA)	A country partnership that is market driven for sustainable agricultural development, developed by the World Economic Forum	(World Economic Forum, 2015; World Economic Forum, 2016)
Rainforest Alliance	Support for smallholder farmers, private sector and Governments in Viet Nam and Indonesia	(Rainforest Alliance, 2016)
Asian Farmers' Association for Sustainable Rural Development (AFA)	Regional alliance of national federations of small-scale farmers for the benefit of small farmers, working towards a vision of self-reliance and prosperity	(Asian Farmers' Association for Sustainable Rural Development, 2016)
Grow Asia	A platform of multi-stakeholder partnerships working to transform agriculture in South-East Asia in partnership with World Economic Forum and ASEAN	(Grow Asia, 2016)
ASEAN and Japan Cooperation in Food, Agriculture and Forestry	A partnership that aims to improve the agricultural food security information systems and human resource development	(ASEAN, 2014)
ASEAN Food Industries Human Resource Development Association (AFH)	A private sector partner providing opportunities in advanced learning for ASEAN students in sustainability aspects of the food industry	(AFH, 2014)
Leveraging business in ASEAN for food security and sustainable agriculture (LAB)	A partnership that seeks to optimize the contribution of businesses towards the realization of ASEAN Strategic Plan of Action on Food Security	(ASEAN CSR Network, 2014)
SAARC Regional Coordinated Programme on Agroforestry (SARCOPA)	Based on the SAARC Resolution on Agroforestry, SARCOPA aims to promote agroforestry in the SAARC countries through building the related capacity, technical cooperation and establishing demonstrations and related guidelines and codes	(SAARC, 2016)

appropriate market channels and specific consumers in urban areas. Such an approach could open up new markets for these producers at national and regional levels, leading to economic well-being and poverty reduction.

Sustainable agriculture indicators have been discussed in the literature, but have not been well implemented in practice. There is a need for further research on how these indicators can be combined to produce a meaningful measure for farm- and policy-level decision-making. There are no known examples of using sustainable agriculture indicators in a systematic manner at these levels. Research is needed to show how best to improve these indicators for promoting sustainable agriculture. The main challenge remains agreeing on a common purpose and set of indicators that is applicable from farm to higher administrative levels. While most existing sustainable agriculture certifications aim at operationalizing these indicators, they only use a fraction of the

sustainable agriculture indicators that could be chosen, leaving many out of the sustainability assessment. Most importantly, the existing certifications often emphasize crop-management indicators and place less importance on social indicators or emerging environmental concerns, such as climate change or biodiversity, preventing farmers from obtaining certification.

Agricultural producers in the Asia and Pacific are heterogeneous in terms of their economic capacity and agricultural production skills, and improving their access to emerging sustainable agriculture markets cannot be done through a blanket approaches and policies. There is a need for targeted policies and capacity-building initiatives that are well integrated into the existing agricultural extension systems of the countries, rather than stand-alone systems.

(List of references can be made available upon request)