

Regional Overview of Agricultural Mechanization

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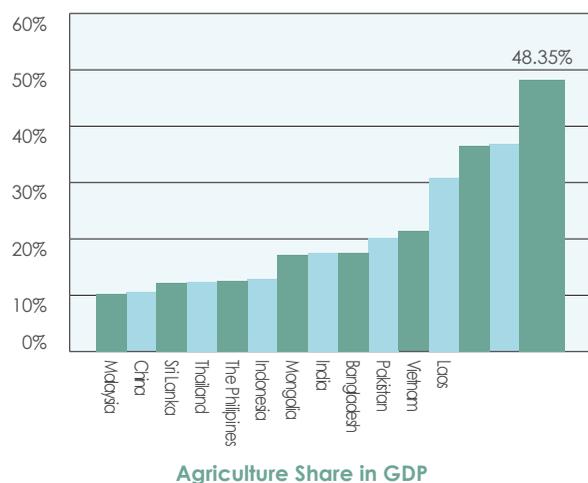


Mr. Zhao Bing has been the Head of the Centre for Sustainable Agricultural Mechanization (CSAM), a regional institution of ESCAP, since December 2012. Previous to that he worked for 5 years as Deputy Director of the Centre of International Cooperation and Service of the Chinese Ministry of Agriculture, coordinating and leading the design and implementation of bilateral and multilateral international cooperation projects, including the South-South Cooperation programme under China-FAO Trust Fund, the science and technology exchange programmes with the United States and Australia and NGO-related work. During the same period, he has also co-directed the preparation for the establishment of the Asian-Pacific Centre of the International Potato Centre (CIP). During 1999-2007, as an Alternate Representative, he worked in the Chinese Permanent Representation to the UN Agencies in Rome, a diplomatic mission to FAO, WFP and IFAD. Before that, he was a programme officer in the Department of International Cooperation in the Chinese Ministry of Agriculture, primarily dealing with Asian and African affairs. Mr. Zhao has a BA degree in international studies and a Master's degree in international business law from the University of Rome 'La Sapienza' in Italy. He's now a doctorate candidate of the Third University of Rome in the area of food safety.

The Asian and Pacific Region in UN speak usually include the 62 members/associate members of ESCAP. The focus of this overview, though, is on the more active member countries (15 circa) of the Centre for Sustainable Agricultural Mechanization, a group of countries of different nature but most of which are LIFDCs (low-income food-deficit countries).

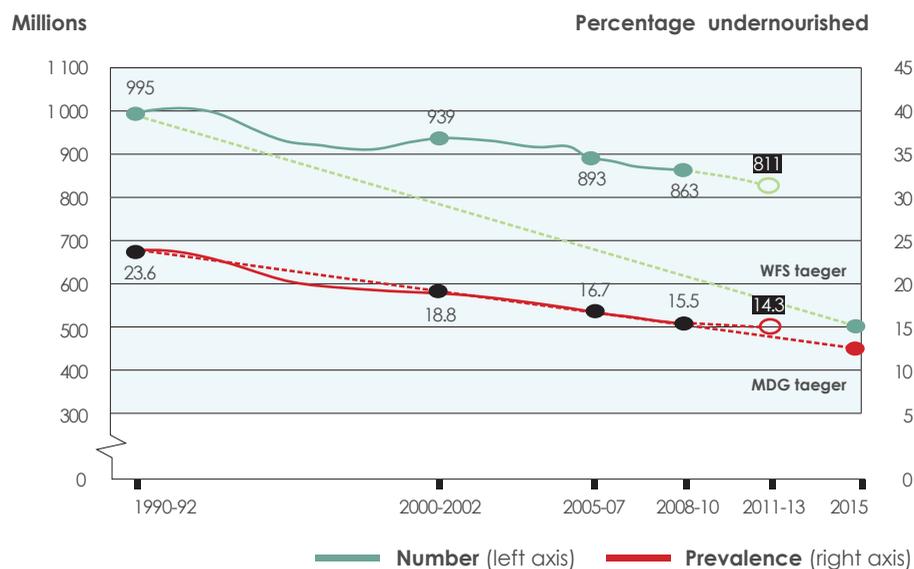
Traditionally agricultural countries, though agriculture's share in their GDPs showing a decreasing trend, it still represents important part of national economies. The diagram below shows the share of agriculture in GDP

of some countries in Asia and the Pacific.

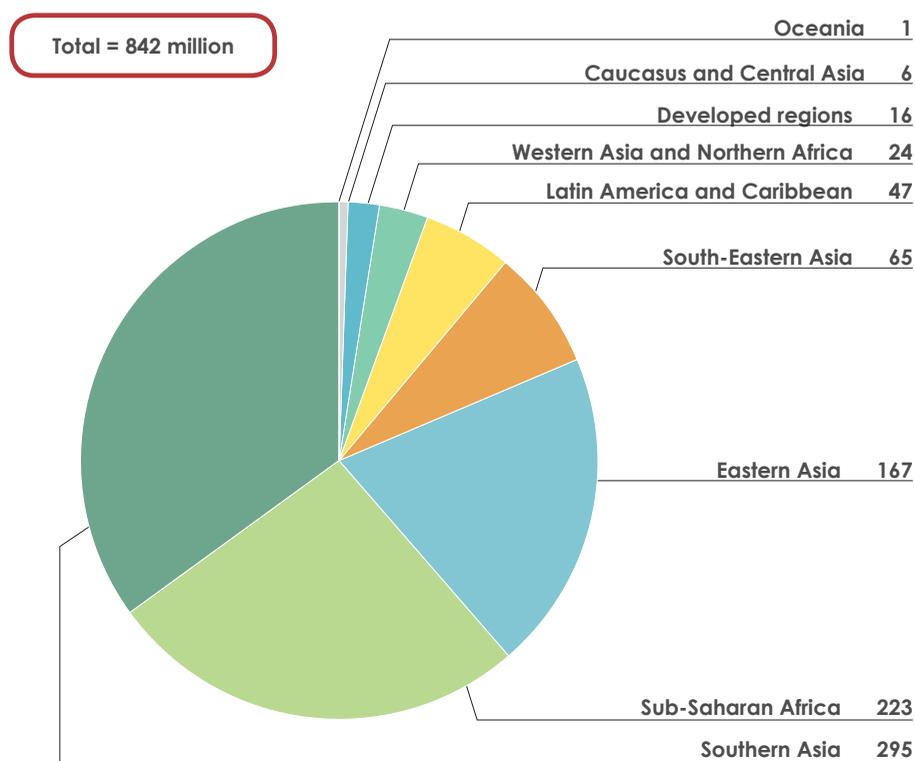


Food security remains a major concern of many countries in this region. And Asia and the Pacific still homes the majority of world undernourished people as showed below.

Undernourishment in the developing regions

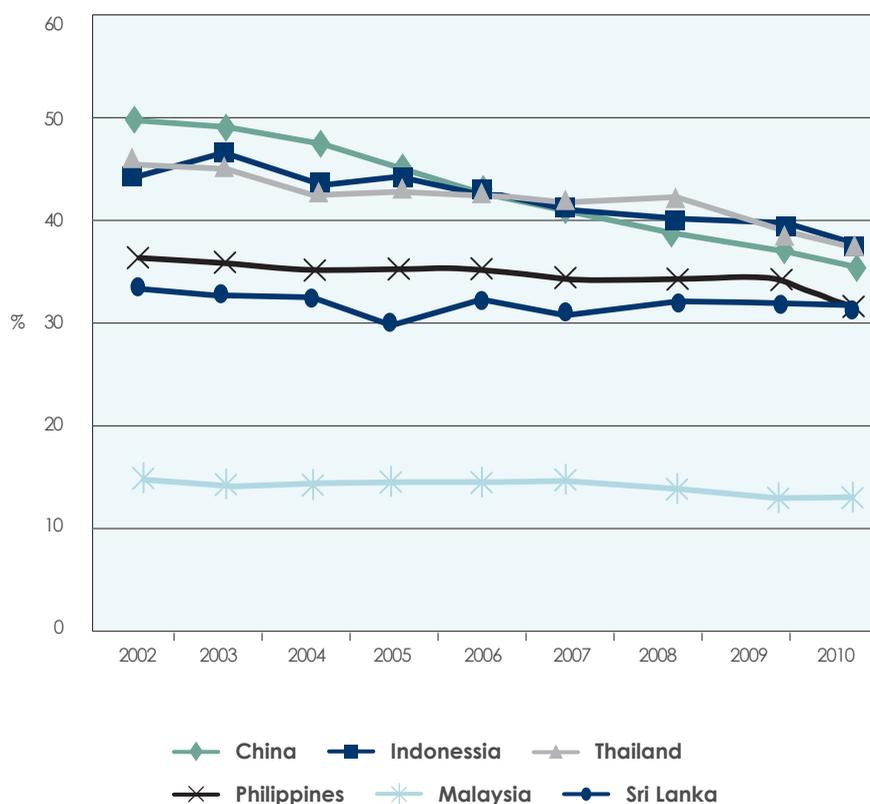


Undernourishment in 2011-13, by region (millions)



In addition, the region is also experiencing increasing urbanization and decreasing share of rural labour amid dynamic social-economic development. The chart below illustrates the declining share of employment in agriculture between 2002 and 2010 in some countries of the region.

Employment in agriculture (% of total employment)



The development of agricultural mechanization in the region is going through the following 4 trends:

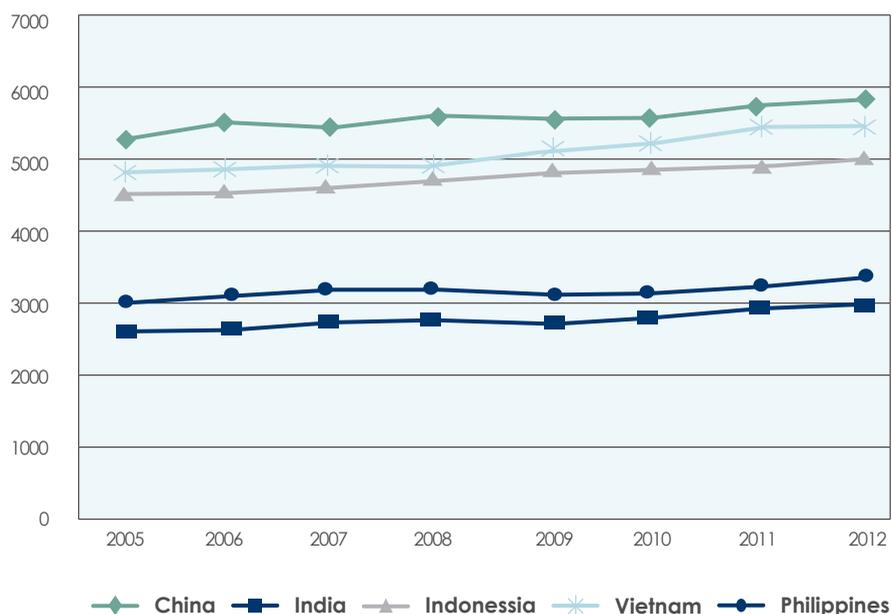
1 \ Generally, the region is seeing an increased mechanization levels.

Many countries witnessed remarkable growth in mechanization, for example, China's power availability per hectare reached 3.56 kw in 2011 and its 'overall mechanization rate' raised from 35% in 2004 to 57% in 2012; India's power availability has also achieved steady growth from 1.05 kw/ha in 1995/96 to 1.7 kw/ha in 2011/12; Bangladesh from 0.4 kw/ha in 1990 to 1.17 kw/ha in 2007. In Cambodia, the number of tractors increased more than 2 folds during 2006 to 2012, while its harvesters increased fifteen folds. And total tractors registered in Nepal increased from around

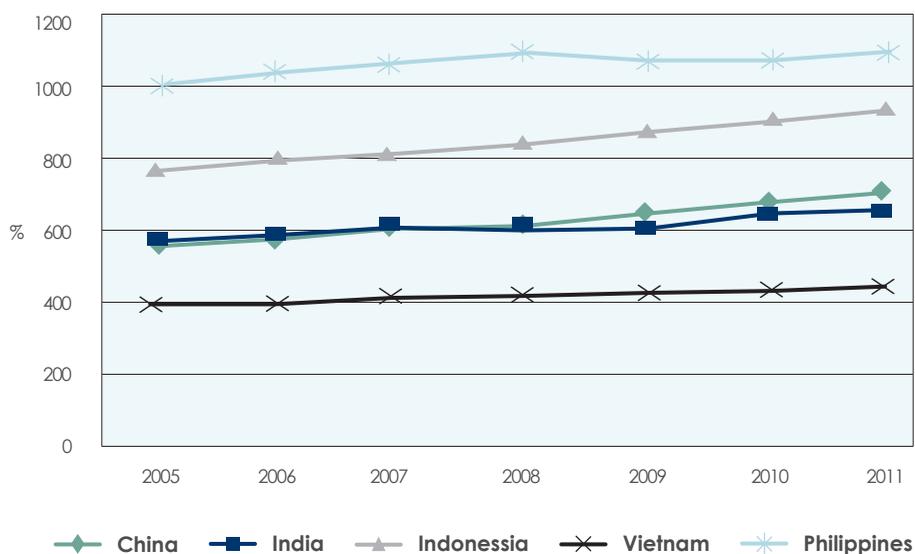
30,000 units in 2003 to nearly 70,000 in 2012. Vietnam's total agricultural horsepower more than doubled during the first decade of this century.

As a result, the agricultural productivity gains in line with increased mechanization as showed below.

Cereal yield (kg per hectare)



Agriculture value added per worker (constant 2005 US\$)



2 \ However, the growth has been unevenly distributed.

For instance, mechanized rice harvesting is rather uncommon in Indonesia. Yet the unbalance is not only across border but also among different districts within the same country, like in India, the power availability in Orissa was only 0.60 kw/ha in 2001, compared with 3.5 kw/ha in Punjab.

Big gaps also exist among different crops, for example wheat harvesting in China was 91% mechanized while that of cotton only 5.7% in 2011; and among different stages of production too, for example close to 70% of rice is harvested by machines while the mechanization rate of rice planting is only 26%, also in China.

India has been a tractor exporting country since 1980s and now about 10% of its tractors are exported; China became the world leading agricultural machinery producer in 2012, producing over 2 million tractors and 1 million harvesting machinery per year. Local production of power tillers, seeders, hand and foot sprayers, threshers and millers, among other more sophisticated machines and implements, is becoming very common in most countries.

3 \ Increased volume of trade and investment in the agricultural machinery industry.

The contributing factors of the positive trends above of agricultural mechanization in the region cover: policies and strategies implemented; subsidies/credit/taxation (import duties, tax on industry); research and development efforts; targeted extension service; larger holdings in some countries (cooperatives and land lease); and specialized services (more accessibility and affordability to farmers through custom hiring/leasing).

In terms of the future trends and outlook of agricultural mechanization, the region is seeing: great potentials and opportunities to mechanize, likely boosted by government initiatives and policies given its comparatively low level of mechanization; greater need for adaptable machinery and implements for diversified agro-climate zones and topographies; the need to tackle environmental concerns, including through conservation agriculture; improved efficiency of utilization, for example through custom hiring or larger holdings; better trade-off of safety, quality and affordability; stronger public-private partnership; and greater scope for regional cooperation in policy assistance, information sharing, collaborative R&D, harmonization of standards, capacity building and trade and investment facilitation.

As a regional institute of UNESCAP, CSAM's vision is to achieve production gains, improved rural livelihood and poverty alleviation through sustainable agricultural mechanization for a more resilient, inclusive and sustainable Asia and the Pacific. The

objectives of the Centre are to enhance technical cooperation among the members and associate members of ESCAP as well as other interested member States of the United Nations, through extensive exchange of information and sharing of knowledge and promotion of research and development and agro-enterprise development in the areas of sustainable agricultural mechanization and technology for the attainment of the internationally agreed development goals, including the Millennium Development Goals, in the region. Through analysis of the new circumstances faced the region, profound understanding of its strengths, synthesis of good practices and experiences in the past, and in line with its mandate and vision, CSAM recast itself of five strategic functions as follows:

- serving as a regional forum for regular policy dialogues;
- becoming a data and information hub;
- serving as a recognized reference point for standards and protocols;
- strengthening its role as the Center for capacity building; and
- facilitating regional agro-business development and trade.