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Agriculture restructuring: Towards higher global competitiveness and food security

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*Paper prepared for presentation at the “Ethics, Efficiency and Food Security” The Crawford
Fund 2014 Annual Parliamentary Conference, Parliament House Canberra ACT, Australia
26-28 August 2014*

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Abstract



Ensuring food security is not merely an economic or humanitarian activity: it also actively contributes to national and global socio-political stability. During the last 25 years of implementing its Renovation Policy, Vietnam has achieved national food security, actively contributing to the goals of eliminating hunger, alleviating poverty, and ensuring regional and global food security. Vietnam is changing from a net food importer to an exporter of many agricultural commodities. However, Vietnam is an agriculture-based economy with more than 70% of its population engaged in agriculture. A very high proportion of many of the commodities it produces are exported: 25% of its rice production, 90% of coffee, rubber, cashew nut and cassava, and 95% of black pepper. Any fluctuation on the international market can adversely affect its agricultural industries. Difficulties and challenges will face the country in the years to come: rapid population growth; decreasing farm areas and water resources; natural disasters, floods, droughts; decreasing levels of investment in agricultural production; barriers to agricultural international trade; low incomes of the poor, reducing their access to food; food demand increasing for other purposes, including the production of bio-energy; and climate change. Vietnam's agriculture restructuring policy aims at higher competitiveness and ensuring food security in the context of climate change. Efforts are focused on policies to stabilise the area of land devoted to rice cultivation; increasing investment in water management infrastructure; and promotion of mechanisation in rice production and processing. It will apply scientific and technological advances to varietal improvement; natural resource management; pest and disease control; and post-harvest technologies. It will also re-organise the institutional set up for agricultural production, linking production with processing and marketing. This will raise the incomes of rice growers, modernise rural life and enhance farmers' livelihoods. At the same time, it will actively seek to mitigate the impacts of climate change, especially of rising sea levels. With sound policies to guarantee its national food security, Vietnam is ready to cooperate with its neighbours, share its experiences in agricultural development with the international community; and actively contribute to ensuring food security globally. Halving the proportion of people suffering from hunger by 2015 is one of the eight Millennium Development Goals agreed to by many nations more than a decade ago. With many difficulties and challenges still facing food security, achieving this goal will require the effort of every nation, and especially active support from developed countries and international organisations. This demands coordinated action at regional levels as well as on a global scale.

Vietnam has an agriculture-based economy, though agriculture accounts for only 22% of Vietnam’s total gross domestic product (GDP). More than 70% of the population is engaged in this sector, and most of the country is devoted to growing food crops, with rice accounting for more than 7.8 million hectares of harvested area (Figure 1).

Agriculture in our country is a very open sector, so a big share of many products is produced for export (Table 1). For rice, about 23% of the total production is for export, and for coffee, rubber, cashews and black pepper that percentage is 92–99%. Table 1 shows rubber and pepper at over 100% for export because some stock has been held back waiting for better prices than were received in previous years. In the case of cashew nuts, we import quantities from India and other countries to do their processing, so we export more than we produce.

Agriculture is the only industry sector in Vietnam to provide a surplus in the import–export balance, so it supports the national economy. As Figure 2 shows, the agriculture trade balance is positive, and below it the national trade balance is negative. According to records, Vietnam has been exporting rice since 1861, though there was an interruption of about 50 years for a range of reasons. Rice export ensured not only poverty alleviation but also food security.

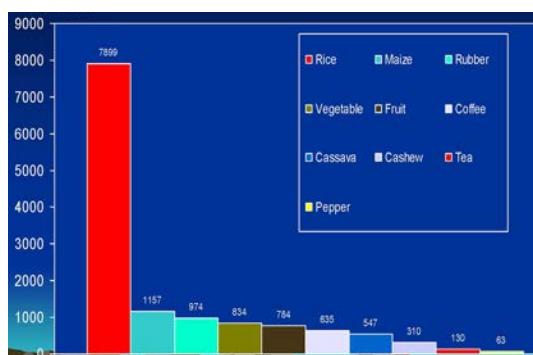


Figure 1. Planted areas of main crops in Vietnam, in ‘000 hectares. Left–right: rice, maize, rubber, vegetables, fruit, coffee, cassava, cashews, tea, pepper. Source: Ministry of Agriculture and Rural Development (MARD) 2014.

Table 1. Crop production and export in Vietnam in 2013. Source: MARD 2014.

Crops	Production 1000 tons	Export, 1000 tons	% Export
Milled Rice	28,649	6,653	23.2
Coffee	1,322	1,308	98.9
Rubber	935	1,090	116.6
Tea	187	142	75.9
Cashew	285	264	92.6
Pepper	123	134	108.9
Cassava	9,740	3,142	32.2

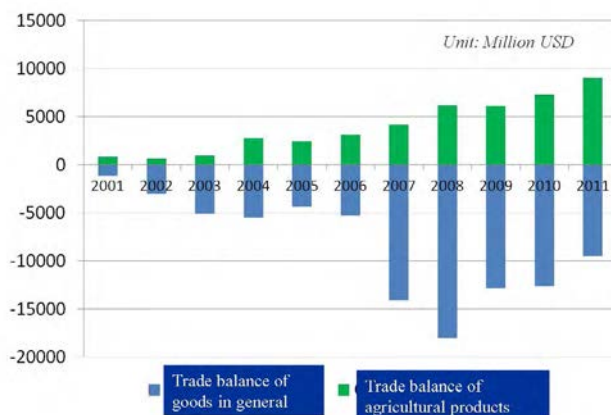


Figure 2. Vietnam's estimated trade balance, 2001–2011, in million US\$. Goods in general = blue, below 0. Agricultural products = green, above 0. Source: Institute of Policy & Strategy for Agriculture & Rural Development (IPSARD) 2013, based on data from the General Statistics Office of Vietnam (GSO) and MARD.

Our national food security indicators have improved since 1990. The proportion of the population that is undernourished has been reduced from 31% in the early 1990s down to 9% now. However, dietary energy supply has also improved very quickly, from 2090 kilocalories per person per day in 1990–92 to now around 2700 kilocalories per person per day, which is too high for good health. In Vietnam 70% of people's calories come from rice, and a big number of people are overweight. In other countries, especially developed ones, the percentage of energy (calories) derived from carbohydrate should be less than 40–50%; that would be a good balance.

Success in agriculture

What defines success in agriculture? We think the most important indicator of success for Vietnam is its change from net food importer to top exporter of many commodities – rice, coffee, rubber, pepper, cashew nuts, tea, cassava (Table 1) and also catfish, shrimps and wooden products.

Of the many possible reasons for this success we consider three to be key. The first is policy renovation. In Vietnam, land is allocated to a farmer and the farmer's household as a key production unit. This system has functioned very well for the last 25–30 years, though now it is becoming a limiting factor – a barrier to large-scale commodity production.

The second reason is increased investment, mainly in improving irrigation and drainage systems. Over the last 20 years in the Mekong River delta (the biggest rice bowl) we have doubled the area of paddy land – from 2 million to 4 million hectares.

The third reason is the strengthening of science and technology. We have focused strongly on crop improvement, developing new varieties and breeds.

Challenges and shortcomings

There are many challenges and shortcomings for agriculture. One major factor restricting Vietnam is the limited agricultural land. The world average is 1.2 hectares per person but our country has only 0.104 hectares per person. Having land allocated in such small areas limits large-scale production.

A second challenge is population pressure: we had 90 million people in 2013. Vietnam ranks 14th in the world in population but only 65th in natural area.

Another challenge is our quantity-oriented production. In the past we have worked hard to overcome the food deficit, so most of our agricultural policy supports quantitative production. Table 2 shows some key crops for which production has increased very fast over the last 25 years. Rice production has nearly tripled, corn production has increased by close to ten times and coffee and rubber by more than ten times. Most crops have increased in productivity. There was a rush towards intensification, and a lot of fertilisers were applied to improve productivity. At the same time we had to use a lot of pesticide.

Fourthly, we have food security at national level but not at household level. Even though Vietnam exports rice we still have a large population of undernourished people. There is some interesting research on the food security indexes of ASEAN countries. Table 3 shows that countries importing grain and not producing any rice, such as Singapore, Brunei and Malaysia, have very high food security indexes. Rice producing countries such as Thailand and Vietnam are

Table 2. Quantitative production in Vietnam, 1986–2012. (US Dept of Agriculture Statistics)

Crops	Area increased by	Prod. increased by
Rice	1.35 times	2.73 times
Corn	2.8	8.4
Coffee	8.7	12.7
Rubber	2.5	17.0
Tea	2.0	6.8
Cassava	1.7	3.4
Sugarcane	1.6	3.8

Table 3. ASEAN security index scores (1–5). Source: Silbergliitt (2013).

Country	Food	Water	Energy
Singapore	4.0	3.4	4.5
Brunei	3.5	3.0	4.0
Malaysia	3.2	3.4	4.0
Thailand	3.0	2.2	4.0
Vietnam	2.4	1.8	1.5
Indonesia	2.3	2.6	2.5
Phillipines	2.3	2.2	1.5
Myanmar	2.0	2.2	3.0
Laos	1.8	2.6	2.0
Cambodia	1.6	1.6	3.0

exporting grain but in a poor situation in terms of food security because many people still do not have access to food. This shows that food security does not depend on quantity of food produced but instead on food accessibility.

Fifth, the reductions in export prices in recent years are a problem. Most of our products are for export and their success depends on international markets; fluctuations in international prices have negative impacts on our agriculture (see Tables 4a,b). High post-harvest losses and high production costs are also big challenges.

Sixth, we have relatively low investment in agriculture. Even though agriculture provides 22% of national GDP, the total investment in this sector is reducing. It is now less than 6%.

The last challenge in this list is climate-change impact. According to the World Bank, Vietnam is among the five countries most likely to be affected by climate change, and we have the worst scenario in relation to sea level rise (Figure 3). Vietnam ranks 2nd in the world in terms of land area that could have impacts from flooding, and 1st in the world in terms of the proportion of our population likely to be affected by flooding because of sea level rise.

Restructuring


How should restructuring of agriculture be directed so as to meet future food security needs? Common goals are:

- every decade ensuring that production grows by 20% to ensure food security at household and national levels, gradually shifting from food security to nutrition security;
- poverty is reduced by 20%; and
- greenhouse gas emissions are reduced by 20%.

Table 4. (a) Declines in export prices for rice, rubber and coffee between 2011 and 2013 (from MARD reports 2014) contribute to (b) the falling growth of agricultural GDP since 1995 (data from GSO and MARD).

	2011	2012	2013
Rice	514	461 (- 10.3% vs 2011)	410 (- 11.1% vs 2012)
Rubber	3,954	2,792 (- 29.4% vs 2011)	2,356 (- 15.6% vs 2012)
Coffee	2,047	2,122 (+ 3.7% vs 2011)	1,500 (- 29.3% vs 2012)

Periods	%
1995-2000	4.01
2001-2005	3.83
2006-2010	3.30
2013	2.80



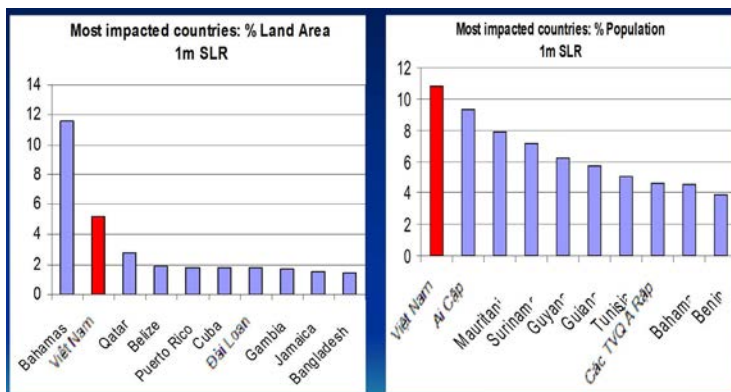


Figure 3. Likely impacts of climate change and 1-metre sea level rise in Vietnam (red bar) and other countries, according to the World Bank.

A higher profit from farming and higher income for farmers should be among the top priorities, shifting from an export-driven to a farmer-income-driven approach because we tend to forget about farmers’ incomes. Harmonising agriculture–industry rural–urban development also needs attention.

To achieve these goals, Vietnam can adopt several strategies. First, sector restructuring with emphasis on high-value-added products and deep processing. It is not fair that one cup of coffee in a five-star hotel costs the same as about 2 kilograms of coffee beans – which can produce 140 cups of coffee. This return does not come to the coffee growers unless we do the deep processing with appropriate technology, and have our own brand names. Most of our coffee is commercialised under international brand names. So, instead of exports being worth US\$3 billion we could have exports worth up to US\$50 billion or US\$60 billion if we invest more in processing.

Other effective strategies would include a focus on science and technology, narrowing the gaps between achieved yields and potential yields (e.g. Figure 4), reducing post-harvest losses, and improving infrastructure. Enterprise-oriented development, instead of small-scale household-oriented development, can improve the effectiveness of agricultural production, through investment, land accumulation, contract farming, marketing, and international integration.

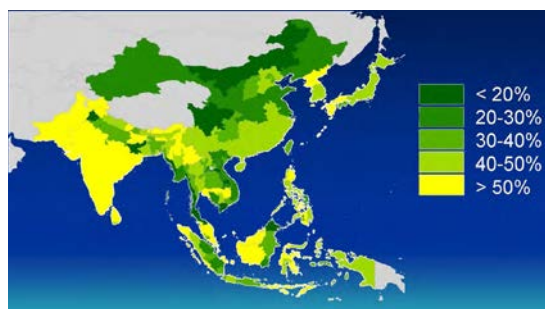


Figure 4. Rice yield-gaps in Asia. Map by A. Nelson, IRRI. Source: Dobermann (2012).

Research contributes to greater productivity. Assessment of ACIAR's returns on investment¹ found that 130 ACIAR-funded projects returned a benefit–cost ratio of approximately 84 : 1 in 2010 and 2011. That means, every dollar spent on research delivered \$84 in return, a very impressive figure. In China, science and technology's contribution to agricultural development was 51% in 2009, through improvements in fertilisers, varieties, plant protection and mechanisation.

Finally, analysis by CCAFS, the Research Program on Climate Change, Agriculture and Food Security, of which I am a member, has defined a safe space for food security (Figure 5). We can enlarge it by minimising the negative impact of climate change, by changing the pattern of the food consumption, including reducing food waste, and by maximising climate-smart production of food.

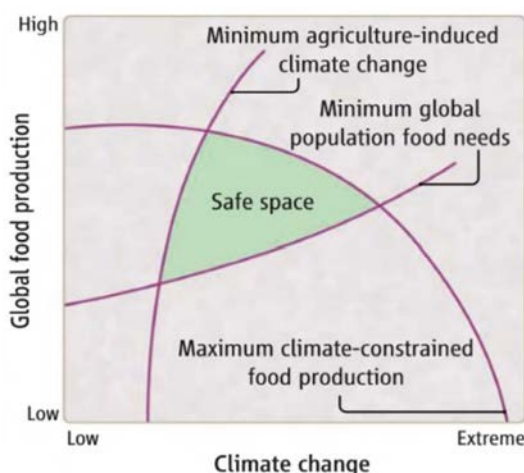


Figure 5. Result of analysis of global food production when constrained by climate change (CCAFS 2011).

Summary

To summarise, agriculture should be considered as a socio-economic sector, not purely as an economic one, because agriculture ensures not only food security, improving farmers' income, but also sustains social and in some cases political sustainability. Thus, higher investment in agriculture will bring worthy rewards.

We should shift from quantitative production to qualitative, from food security to nutrient security and farmer-income-oriented policy.

We need to pay as much attention to agricultural and rural sectors as to urban and other sectors, because otherwise the rural and agricultural sectors are overlooked.

We need to seek higher investment and expertise from the private sector, especially from international research and development organisations in developed countries, such as ACIAR and CGIAR's Centers. Along with the

¹ as reported at <<http://aciarc.gov.au/content/returns-aciarc-investment>>

policy and technical measures already mentioned, capacity building is vital; for example through training young agricultural scientists. In developing countries most agricultural scientists come from farming families, but fewer and fewer young people want to work in agriculture and that is an unfortunate trend.

We also need stronger voices in some sensitive issues such as cross-border use of natural resources, environment pollution, food safety, genetically modified crops, and unfair trade.

References

- CCAFS (2011). Achieving food security in the face of climate change: Summary for policy makers from the Commission on Sustainable Agriculture and Climate Change. <<http://ccafs.cgiar.org/publications/achieving-food-security-face-climate-change-summary-policy-makers-commission#.VLINqSvF-P8>>
- Dobermann A. (2012). Future directions in rice breeding. Trends in Rice Research to Overcome Stresses in a Context of Climate Change. Hanoi, 6 September 2012. <<http://atin-vietnam.com/Library/Download/Dobermann%20future%20directions%20rice%20breeding.pdf>>
- Silberglitt R. (2013). The ASEAN energy–food–water nexus. Symposium on Integrated Foresight for Sustainable Economic Development and Eco-Resilience in ASEAN Countries. Thailand, 1–2 October 2013. Via <www.apecforesight.org/index.php?>

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Ambassador Allaster Cox presenting the Crawford Fund Medal to Dr Nguyen Van Bo in March 2011.