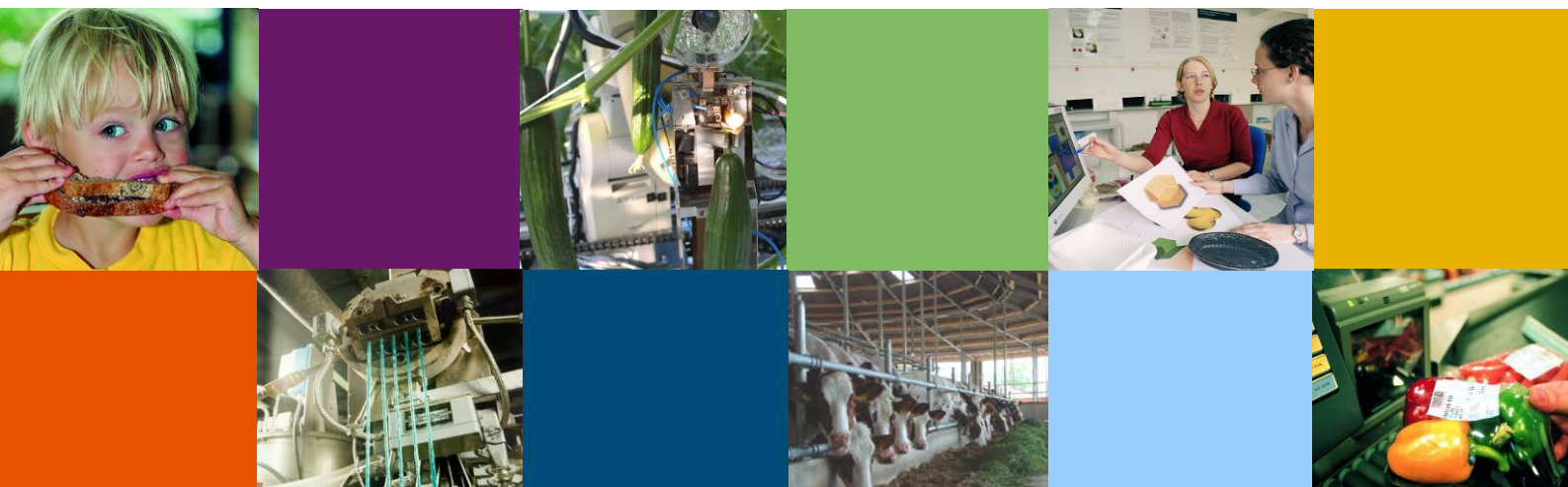




# Opportunities for agro chain development in Cambodia

Auke Schripsema and Jan Broeze

Report 1643



## Colophon

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Wageningen UR Food & Biobased Research  
P.O. Box 17  
NL-6700 AA Wageningen  
Tel: +31 (0)317 480 084  
E-mail: [info.fbr@wur.nl](mailto:info.fbr@wur.nl)  
Internet: [www.wageningenur.nl/en/fbr](http://www.wageningenur.nl/en/fbr)

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# 1 Introduction

On request of the Dutch Ministry of Economic Affairs, Directorate Knowledge, Wageningen UR Food & Biobased Research (short: WUR FBR) has done an independent scan on opportunities for agro chain development in Cambodia, specifically for fruit, vegetables and spices.

The main project question is: Which opportunities in Cambodia exist concerning processing, and value chain optimisation, of fruits, vegetables and species and do barriers exist that interfere with these opportunities?

Special focus was on opportunities for Dutch parties. The work consisted of a literature scan, field trip and situation analysis and relates to Cambodia only. The public report is input for any government, company or NGO that is (intending) to contribute to the optimization of value chains, or to make use of processing opportunities, related to fruits, vegetables or spices produced in Cambodia.

This report describes the main findings of this work.

Based on a literature quick scan, Chapter 2 gives some background information on Cambodia and general issues with respect to the agro-food sector. Findings from the field trip are reported in chapter 3. In this field trip we consulted various stakeholders in the agro-food chain, including representatives from governments, farmers and innovative players in the agro-food chain.

The agenda for this visit was setup in close co-operation with Arie Veldhuizen (Dutch Agricultural Councillor for Vietnam and Thailand), Bernard Kelkes (Dutch Embassy for a.o. Cambodia, Thailand) and Marieke van Schie (SNV Cambodia). Based on the observations an analysis of highly necessary developments and practical obstacles and opportunities for such developments is presented; this is reported in chapter 4.

Key stakeholders that were consulted during the visit are listed in Appendix 1 of this report.

## 2 Background of Agricultural Sector in Cambodia

### 2.1 Introduction

This chapter intends to provide the reader with general figures related to the agricultural sector of Cambodia. It can be considered as required input for any government, company or NGO that is intending to make use of any of the opportunity described in chapter 3 and 4. Figures are based on a literature scan performed by Wageningen UR Food & Biobased Research.

Paragraph 2.2 describes general facts on Cambodia, her economic situation, the investment environment and the current trade. This paragraph is not directly related to the main project question, but does give important insights into the magnitude of Cambodia's private sector.

Economic growth (resulting in growing inland demand) and export-growth can boost the development of agro-food production and processing<sup>1</sup>. Therefore, paragraph 2.3 focusses on the agro-food production and trade in Cambodia. The current focus of the private sector can be concluded out of this paragraph.

Finally, paragraph 2.4 elucidates on the government policy and strategy to give insights in opportunities that might result out of government actions.

### 2.2 General facts, economic situation, investment environment and trade

To create a high-level understanding of Cambodia some general, non-processing and non-value chain related, general facts of Cambodia are shown<sup>2</sup>:

Capital City: Phnom Penh

- Area : 181,035 km<sup>2</sup>
- Population : Approximately 15 million, of which 2.2 million in Phnom Penh (2014 estimate)
- Key industries : tourism, textile & garment, natural gas, agriculture, construction, timber
- Currency : Riel (CR), US Dollar (US\$)
- Membership : UN, IMF, WTO, ASEAN

#### Gross Domestic Product

The Cambodian economy enjoys rapid growth with an average of 7.7% GDP growth per annum from 1994 to 2014<sup>3</sup>. This growth is expected to continue in the coming decade (Ministry of

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<sup>1</sup> *Otobe, N. (2016): Export-led development, employment and gender in the era of globalization, International Labour Office, Geneva, report, Employment Policy Department, Employment Working Paper No. 197.*

<sup>2</sup> *United Nations, World Bank.*

<sup>3</sup> *Worldbank, [www.worldbank.org/en/news/press-release/2015/04/13/cambodia-continues-to-enjoy-robust-growth-albeit-at-a-slightly-slower](http://www.worldbank.org/en/news/press-release/2015/04/13/cambodia-continues-to-enjoy-robust-growth-albeit-at-a-slightly-slower)*

Economy and Finance). The GDP is estimated at US\$17 billion, which is about US\$1,130 per capita (figures for 2014).

Cambodia has a trade deficit around 14% of the GDP; inflation is in the range between 3 and 5%<sup>4</sup>.

*Table 1. Decomposition of the GDP:*

Industrial sectors	26%
of which “Textile, Apparel & Footwear” contributed	10.5%
Construction	9%
Agriculture, Forestry and Fisheries	29%
of which gross value added through agricultural crops	17%
Fisheries	7%
Services	39%
Trade	9%
Hotels & Restaurants	5%
Real estate and business	6%

### **Investments and trade**

Annually about US\$ 3 to 5 billion is invested in Cambodian projects. Local investments amount to two third of total investment. Among foreign investors, Chinese investors are the largest ones. Together with other Asian investors (Vietnam, Malaysia, Korea, Singapore, Japan and Thailand) they account for almost 90% of total foreign investments. Other investing countries include UK, USA, Australia and France.

The majority of committed investments are in infrastructure (about 41% of the total investments over 2011-2015), industrials (35%), agriculture (14%) and tourism (10%).

Note: The data only reflects that of qualified investment projects according to the Law on Investment, thus, excludes investments that are not eligible for investment incentives such as Banking, Insurance, and Construction sectors.

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<sup>4</sup> ADB, <http://www.adb.org/countries/cambodia/economy>

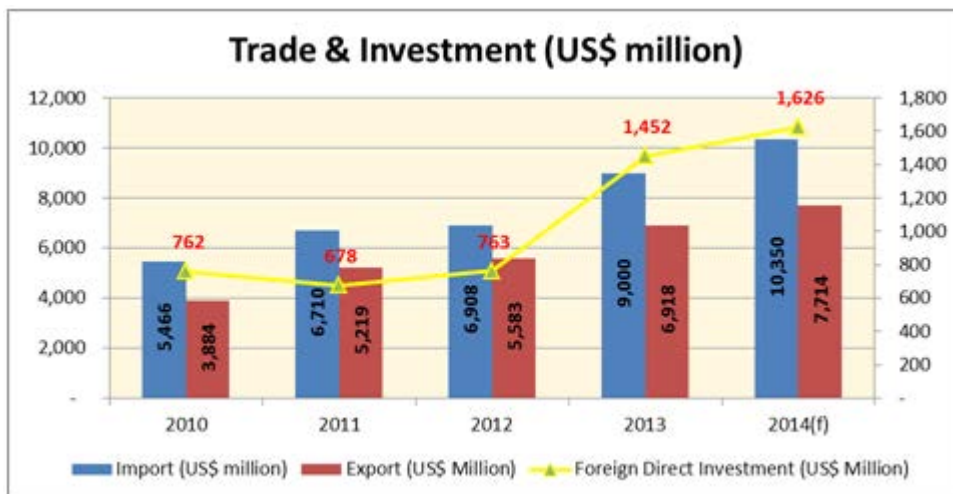


Figure 1. Cambodia import, export and foreign investments (source: Cambodia Post Bank<sup>5</sup>)

The country has been benefiting from preferential trade treatment of duty-free and quota-free access to both Europe and the United States, as one of the least developed countries (LDCs) in its economic development. The country also enjoys duty-free access within the Association of Southeast Asian Nations (ASEAN), and benefits from the free-trade agreements concluded with the ASEAN dialogue partners.

Interesting to notice it that many organizations recognise the high potential of the agricultural sector. Problems are identified and strategic visions are shared. Unfortunately, many practical approaches to tackle these problems or make use of existing opportunities are lacking. To illustrate this, an article of The Phnom Penh Post is highlighted below.

**Food and beverage industry vital to Cambodian tourism**

(Kun Makara, The Phnom Penh Post, 8 June 2012)

“Cambodian Ministry of Tourism and tourism experts agree that food and beverage tourism is one of four major services among total 11 services in the tourism industry that plays an important role in feeding Cambodia’s tourism sector. Minister of Tourism Thong Khon told the Post that for every country of the world, food was the primary recognition mechanism for national taste for visiting tourists. “Food and beverage service is one of four main important services that include lodging, transport, and entertainment, among eleven in the tourism industry,” he said. “We see that nowadays the industry needs to improve in quality and creating variety of foods to serve all nationalities of tourists.” “In other countries, we always test the quality of their foods first because we need to know their national test,” he added.

...

<sup>5</sup> Cambodiapostbank, <http://www.cambodiapostbank.com/view/view.aspx?pid=4&cid=28&lang=en>

Van Porleng, president of the Cambodia Restaurant Association (CRA) said that Cambodia offers many choices of food with low prices for customers to enjoy. However, she claimed that it needs to be much improved in quality. “It would be better to promote a better quality as well with fair and correct prices in order to make businesses sustainable,” she said. “I don’t know how some of the owners can survive with prices they are selling at. And therefore you can see many of them closing after even less than a year of existence.”

“The wrong image of the industry is that it is often seen as reserved for unqualified, low education level with no possible career evolution,” she said. “Not enough professional technical institutions are accredited with a food and beverage national curriculum,” she said, adding that so far, the CRA has about 100 outlets.

She said that that Ministry of Tourism was trying to raise standards to an ASEAN level, with green tourism, tourism security and a coastal promotional campaign, in concert with the Ministry of Health regarding hygiene for the industry.

“We are at the beginning of a long and positive transformation of the food industry and CRA is collaborating very well with the different ministries.”

Thong Khon said the Ministry of Tourism was currently working to enhance skills and hygiene of all the restaurants in order for them to comply with a national curriculum and ASEAN standards.

“If we use our curriculum which can respond to ASEAN, it not only improves local standards, but we can also mobilize our labour within ASEAN to participate in ASEAN,” he said.

“The ministry currently has a Prakas (edict) on strengthening their services and product quality because we offer a license to operate a business for one year, so they need to renew every year. If we find that they don’t comply with our requirements, we will not renew the license,” he said.

“But, now we don’t have 100 per cent implementation on strengthening our rule due to our lack of a technical school to offer. When we have more schooling, we will require that at least 15 per cent of staff in a restaurant must have gone through the school,” he added.

He said that currently the ministry had some support from France on opening a short training school to provide for those who had never gone through such schooling.

“We got support from France. Moreover, China and South Korea are also conducting their studies to help us.”

On average, tourists spend about \$100 on their hotels, food, entertainment and travel and other expenses per day.

Van Porleng said that the CRA would have a big event, an annual national restaurant competition from 10 to 12 October this year at Diamond Island in conjunction with the CamFood and CamHotel events.

The competitions will be to determine the best bartenders, baristas, bed makers, and



other activities.

“The purpose of these competitions are to raise the standards of the industry, promote fraternity within the sector, and make our country become one of the favorite destinations where people can enjoy our hospitality skills,” she said.

## 2.3 Agro-food production and trade

As indicated in Table 2 rice is the main crop in Cambodia. Cambodian rice is known for its quality internationally. Major part of the crops is processed (Table 3), and/or used for feed. No significant amounts of vegetables or fruits are processed.

Table 2. Top exported, domestically supplied and imported agro-food items (million ton/year; average 2010-2011; 0 stands for <0.01 million)<sup>6</sup>

<i>Item</i>	<i>Production</i>	<i>Import</i>	<i>Domestic supply</i>	<i>Export</i>
Rice (paddy + milled)	14.2	0.10	<b>14.0</b>	0.29
Cereals	<b>6.4</b>	0.13	6.2	<b>0.25</b>
Starchy roots	6.2	0	6.2	0.08
Cassava and products	6.1	0	6.1	0.08
Roots & tubers (dried)	1.9	0	1.8	0.02
Brans	0.66	0	0.66	0
Vegetables	<b>0.57</b>	0	0.58	0
Maize and products	0.74	0	<b>0.53</b>	0.13
Sugar cane	0.42	0.25	<b>0.42</b>	processed
Fruits	0.38	0.03	0.41	0
Spices	0.014	0	0.013	0

Table 3. Detailing of domestic supply<sup>7</sup>

<i>Item</i>	<i>Domestic supply</i>	<i>Food supply</i>	<i>Feed supply</i>	<i>Processing and other uses</i>	<i>Waste</i>
Rice (paddy + milled)	<b>14.0</b>	5.3	0.49	6.1	2.1
Cereals	6.2	<b>2.3</b>	<b>0.43</b>	<b>2.1</b>	<b>1.0</b>
Starchy roots	6.2	0.35	0	5.1	0.6
Cassava and products	6.1	0.28	0	5.1	0.6
Roots & tubers (dried)	1.8	0.10	0	1.5	0.2
Brans	0.66	0	0.59	0.06	0

<sup>6</sup> FAOSTAT

<sup>7</sup> FAOSTAT

Vegetables	0.58	0.45	0	0	0.06
Maize and products	0.53	0.14	0.24	0	0.11
Sugar cane	0.42	0.05	0	0.11	0
Fruits	0.41	0.35	0	0	0.03
Spices	0.013	0.013	0	0	0

Notwithstanding these officially recorded data by FAOSTAT, in practice significant amount of vegetables are imported<sup>8</sup>. Various sources (using local information sources) report around 40% imports of vegetables from neighbouring countries like Vietnam, Laos and Thailand.

## 2.4 Government policy and strategy

In the National Strategic Development Plan 2014-2018 it is concluded that “The enhancement of agricultural sector... is a key foundation for the growth of the economy and rural economy, equity, and food security. The four sides of this enhancement are:

- (i) Improving agricultural productivity and diversification;
- (ii) Land reform and de-mining;
- (iii) Fisheries reform; and
- (iv) Forestry reform.”

“Cambodian farmers also continue to be confronted with various constraints requiring solution. These include:

- lack of human resources, infrastructure, and budgets for research and development, and extension.
- inadequate policy support for scientific agricultural research.
- inadequate legal instruments.
- limited investments by the private sector on agriculture.
- climate change, causing natural disasters: drought, flood, pest outbreaks, others.
- limited farmers’ knowledge, making it difficult to introduce new technologies, and limited farmers’ capacities to partner with the private sector.”

Among the key priorities of the Cambodian government for 2014-2018 are:

- promoting and enhancing agricultural productivity and diversification;
- strengthening agricultural system and services (amongst which agro technological extension services, creating agricultural centres at community level, etc.);
- establishing and strengthening agricultural cooperative;
- promoting agricultural land use and management;
- promoting agricultural mechanization;
- providing market-orientation for agricultural products:

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<sup>8</sup> Phnompenhpost, <http://www.phnompenhpost.com/business/vegetable-farming-lacks-technique>

- developing national standards for agricultural products;
- strengthening laboratory services for quality and product safety;
- strengthening research and monitoring on produce quality through inspections;
- disseminating information on domestic, regional and global market requirements;
- strengthening institution, legislation and human resource development.

For agro-food chain development, the plans for Agro-Industry Sector are relevant:

“MAFF<sup>9</sup> will put following plans and prioritized actions for the agro-industry sector in the next 5 years:

- establish information systems on processing agricultural products.
- provide technical support to rural areas.
- enforce laws for economic land concession companies.
- strengthen development partnership.
- strengthen law and regulations.
- strengthen institutional and staff capacity.
- mitigate impacts of climate change through development of agro-industries.
- respond to gender-mainstreaming in agro-industry sector.
- pay special attention to strengthening the paddy processing industry.”

In addition, MOC<sup>10</sup> will support “Continue to grow and diversify in the processed food sector seeking new markets, moving to higher value products, and expanding domestic inputs.”

The Ministry of Commerce (in co-operation with other ministries and other governments) has been working for a number of years already on formulating a food safety law.

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<sup>9</sup> *Ministry of Agriculture, Forestry and Fisheries.*

<sup>10</sup> *Ministry of Commerce*

### **3 Experiences from field visit**

In the field trip we consulted various stakeholders from governments, entrepreneurs and knowledge organisations. Concerning value chain development and the professionalization of processing facilities, these organisations were asked to introduce their organisation, to list current challenges and to give a future perspective on existing opportunities including their needs towards other organizations like institutes, governments, investors, etc. To visualize the discussed opportunities, two sites visits were performed to both Eco Agri Center and the SOMA group

The following sub paragraphs summarize the outcomes of the interviews. The interviewed representatives of all organisations are listed in appendix 1.

#### **3.1 Ministry of Commerce - The Secretary of State**

The ministry recognizes that Cambodian farming as well as other parties in food chains lack technological state of the art (including high quality seeds, crop protection, storage facilities, processing technologies and transportation methods) economies of scale and practicable recognized certification schemes. Prices of electricity and fuel are high compared to Vietnam. Agro-food logistic operations in Cambodia are small-scale compared to Vietnam. Export is very limited, except for rice.

The Ministry of Commerce gladly supports agro-food chain initiatives addressing national as well as export markets. It recognizes that the issues mentioned above must be solved for that. Most compelling are lack of scale size and lack of investment capital (for farming and post-harvest chain).

#### **3.2 Ministry of Agriculture, General Directorate of Agriculture - The Deputy Director General,**

The ministry is facing strict rules for export to amongst others Europe. For instance export of herbs and spices to EU is halted because of SPS issues (related to insects control). These problems can only be overcome by technical investments at farm level or detection methods in packaging houses; however, capital for such developments is lacking.

The ASEAN members have agreed on GAP standards for vegetables and fruits. GAP includes 4 modules: quality, safety, labour consideration and environment consideration. The Ministry of Agriculture is supporting implementation of this standard in practice (amongst others through training of farmers who export).

The ministry stimulates the development of farmer cooperatives (groups of 5 to 15 farmers near a packaging house).

### **3.3 Royal University of Agriculture - President of Cambodia Association of Food Science & Technology**

Agriculture, fresh chains and processing are at initial stage of development. Traditionally fruits, vegetables and spices are produced for fresh market.

Establishing the Cambodia Association of Food Science & Technology is one of the first steps in recognizing that this type of activities can increase added value of Cambodian agro production.

### **3.4 Deutsche Gesellschaft für Zusammenarbeit(GIZ): Country Executive**

The Deutsche Gesellschaft für Zusammenarbeit (GIZ) assists the German Government in achieving its objectives in the field of international cooperation. In Cambodia, GIZ supports sustainable innovative enterprises like Eco Agri Center (next paragraph). Their main goal is to strive for increase of Cambodian share on wholesale markets. GIZ organizes trainings to a group ( $\pm 40$ ) of farmers in Takeo Province.

### **3.5 Eco Agri Center - CEO**

Eco Agri Center (EAC) is an innovative enterprise that promotes organic and chemicals-free agriculture. The company owns an organic farm in Koh Kong province, a coastal region, in which organic farming is applied based on principles learned in Japan. The farm is the biggest, if not the only, multicrop organic farm in Cambodia. It supplies to three, company owned, supermarkets in the capital Phnom Penh. The farm can be considered as pioneer farm in which new opportunities, like organic composting or the introduction of new organic varieties, can be tested. The company also supplies inputs for organic and chemicals-free agriculture to (smallholder) farmers.

Also, EAC supports development of chemical-free and organic production in Cambodia, through supplying fertilisers, seeds and irrigation systems and by training farmers (currently at their own organic farm. EAC has developed various pragmatic solutions for practical problems. E.g. EAC pays farmers in advance, solving an important credibility issue leading to new value chain based on trust.

Concerning practical farming, natural pressure from insects is reduced through insect-repellent vegetation. Also, transport from the farm to the city (220 km!) is organised through a van with air-conditioning. In addition, products are packaged in isolated boxes which are cooled with ice bottles. Another practical solution is an applied way to reduce food losses: the nearly-expired produce from the organic shops are used in EAC-owned restaurant.

EAC has a, 4 point, vision on development of agro-food production in Cambodia:

1. The consumer-driven market for organic product of Cambodia is growing rapidly. These first embedders of a new consumer mind-set will lead to more chemical-free demand. Focus should be on these first embedders.

2. Chemical-free and organic labels exist in Cambodia; however these are not yet internationally recognized. The Cambodian labels need to be adjusted or linked to international labels.
3. The government is progressing; however this is a slow process. Especially, the implementation of GAP standards in Cambodian legislation should be speeded up.
4. Farmers and consumers should be trained and the post-harvest chain should be modernized. Current quality perception by consumer (only looking at optical quality) encourages high dosages of chemicals. Therefore, modern technologies are needed in the value chain. Some options to realize this are to exploit quality indicators (including test kits for chemicals), packaging solutions, refrigerated storage and processing for surpluses.

### **3.6 SOMA Group - Business Development Manager**

The SOMA Group is an innovative farm and food processor that is intending to organise their own fresh trade and distribution organisation. Additionally it intends to buy produce from farmers in the region to facilitate in organizing the required (cold)logistics that individual smallholder farmers are not able to realize.

SOMA group produces various fruits, meats and ornamental products for Phnom Penh markets. SOMA is further expanding their activities, aiming to increase market share of Cambodian crops. Part of the materials is already bought from regional farmers.

SOMA and the involved farmers recognize that major steps are needed for upgrading local production.

Farmers, sellers of chemicals, vegetable traders and private sector work separately. Since very often the label on the chemicals is in Vietnamese, farmers rely on instructions given by the seller of chemicals. Vegetable traders can verify only optical quality of the produce. This situation stimulates excessive use of chemicals.

Also, Consumers still appreciate Cambodian fruits and vegetables, because they think these are safer than imported products. Consumers do not (yet) recognize unsafety of the products. Therefore, awareness among consumers needs to be created. In a transition to safer food production and further professionalization of the chain will require investments. This also covers possibly lower yield in start-up phase, higher risk of damage due to less chemicals. It is expected that farmers and other actors can make a change, but risks are considered huge obstacle. SOMA wants to contribute to these developments.

The tourist sector could also help speeding things up. Although the tourist sector is said to be interested in safer foods, they seem not yet interested in safer food supply channels than the common wholesale markets. Again, awareness creation can be triggering the optimization of the Cambodian food supply chains.

## 4 Opportunities for agro chain development and potential role by Dutch stakeholders

In this chapter we derive a vision on opportunities for agro-food chain development based on the literature/internet scan (chapter 2) and field trip (chapter 3).

To create an orderly factsheet, the SWOT model is applied to illustrate strengths, weaknesses, opportunities and threats for Cambodia and potential Dutch stakeholders.

<b>Strengths</b>	<b>Weaknesses</b>
<ul style="list-style-type: none"> <li>• inexpensive labour</li> <li>• willingness to innovate by individuals</li> </ul>	<ul style="list-style-type: none"> <li>• little trust in government</li> <li>• low education level farmers</li> <li>• low levels of organisation of agro-food chains</li> <li>• very short fresh chains; technological innovations have limited value in current system</li> <li>• current food system/fresh chains not ready for export market</li> <li>• missing infrastructure and technologies for food quality management and safety control</li> <li>• missing food processing industries</li> </ul>
<b>Opportunities</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>• growing awareness on food safety issues by consumers</li> <li>• tourists' food needs</li> <li>• export opportunities as a result of ASEAN development</li> <li>• interests by countries looking for sourcing opportunities (investing countries: Vietnam, Malaysia, Korea, Singapore, Japan, Thailand, UK, USA, Australia and France)</li> </ul>	<ul style="list-style-type: none"> <li>• weak competitive power of the informal chains compared to large-scale import chains</li> <li>• competition from import due to ASEAN development</li> </ul>

Co-development of all stages of the agro-food chains seems critical for improving the system. It is expected that co-creation and a value chain approach are necessary to create new farmer incentives leading to changes practices on, e.g. food safety. Organizing and realising the co-creation is considered as an opportunity for Public Private Partnerships (PPPs).

Also, export cannot be triggered without proper safety control as export required specific certification of produce. Dutch knowledge on food safety control is a valuable asset that can be used to implement a national control system.

Creation awareness on food safety and on nutritious value of product is another opportunity for Dutch stakeholders like knowledge institutes. Again, awareness will lead to new customer demand and will force the value chain to co-operate and change current production practices.



## 5 Discussion and conclusion

This project aims to answer the question: Which opportunities in Cambodia exist concerning processing, and value chain optimisation, of fruits, vegetables and species and do barriers exist that interfere with these opportunities? To answer this question a literature scan has been performed. Also a site visit to Cambodia has been executed in which various stakeholders like governments, entrepreneurs and knowledge organisations were consulted.

The agro and food sectors are in their initial stages of development. Agro logistics exist on primitive levels as barely no cold storage facilities and consolidation for food transport exists. A lot of fruits and vegetables are imported from neighbouring countries due to relatively lower costs. Therefore, next to a food loss reduction ambition, opportunities need to be found related to lower costs to become more competitive towards neighbouring countries.

Generally spoken, one can mention that postharvest chains are informal. The actors have limited or no control beyond their own working domain and technical infrastructure for safety control is missing. A value chain approach is lacking within most of the observed organisations.

The government recognizes that changes are necessary. The Ministry of Agriculture deploys support programs for farmers. However, these programs have limited success, possibly because of missing incentives in the market. The Ministry of Commerce adheres to a more modern market-driven development aiming for higher value markets (amongst others export market) defining new quality and safety standards. However, with missing quality and safety control facilities/infrastructure such developments have very limited success so far.

Food safety standards are not controlled. Implementing Good Agricultural Practices (GAP) is an ambition that has not been realized yet. To upgrade quality and safety standards, major development steps are needed:

- retail market/consumer level: (un)safety-awareness in the market should be increased, resulting in demand for safe added-value products;
- quality and safety control in the chain (including safety monitoring and control methods, refrigerated storage, shelf-life extending packaging, etc.);
- farm level: producing according to higher market standards (like chemicals-free for inland markets; GAP standard for ASEAN market). For this, training is needed, as well as intensification of relationship with traders/buyers;
- availability of capital (most critical at the level of farmer and regional collection centre).

In addition, outlets for products that do not fulfil fresh market requirements need to be setup up. One can think of effective food processing facilities, alternative outlet for fresh products or animal feed. These value chain professionalization methods will lead to a reduction on food

losses and cost reduction of the entire value chain. Once unmarketable products will be transferred into profitable products, also the fresh chain will benefit financially as total benefits of production will rise. This will lead to more competitiveness towards neighbouring countries.

Furthermore, consolidation of food will result in economies of scale in transport and trade. This will lead to value chain cost reduction. A government supported vision on agro logistics can help to concretise the ambitions and opportunities related to it.

This report refers to opportunities for Dutch industries. The most important recommendations are:

- Cambodia strongly needs:
  - food safety control facilities
  - food quality control centres (including refrigerated storage)
  - and other services that can arrange market-driven development of agro-food production

Dutch suppliers could supply hard- and software for such developments. However, capital is lacking in Cambodia and added-value creation for safe foods is far from obvious.

- Developing export chain for fruits, vegetables or spices to Europe would require an upgrade of agricultural production and logistic system to meet European safety standards. No (significant) fruits and vegetable processing industries exist in Cambodia.
- Connecting to tourism sector and upper class consumers in the metropolises seems most promising. However, this cannot be realised through supporting one category of actors in the agro-food system. Co-developing awareness in the market, logistic chain, facilities for quality management and control and agricultural practices will be essential.

In general, two main opportunities considering fruits, vegetables and spices can be distracted from the efforts performed during this study. Both face one main barrier that needs to be overcome. The first barrier relates to a lack of applied food safety methods. GAP certification or Eco certification will lead to new high value export markets. Moreover, Cambodian people will benefit as well as being the largest consumer itself.

The second barrier relates to a lack of professionalization of value chains that lead to high costs. Reduction of costs by professionalizing value chains will lead to competitiveness towards neighbouring countries giving a boost to the agricultural sector of Cambodia.

The ambition of the government of Cambodia to challenge these barriers can be considered high. Also, the ambition of the private sector and NGOs is profound. Therefore, related to stakeholder dedication, all signs are green. To effectively take hold of the opportunities one could advise the government of Cambodia to concretise the opportunities offered in this report and prioritise

them. The researchers involved in this project advise to setup a 5 year vision plan to effectively improve the value chains of fruits, vegetables and spices in Cambodia.

## Appendix 1. Key persons met during 1-4 March 2016 Cambodia visit

<i>Organisation</i>	<b>Name</b> <b>Position</b>
<i>Cambodia Ministry of Commerce</i>	Kem Sithan Secretary of State
<i>Cambodia Ministry of Agriculture, Forestry and Fisheries (MAFF)</i>	Hean Vanhan Ministry of Agriculture, General Directorate of Agriculture, Deputy Director General
<i>Royal University of Agriculture, faculty of agro-industry</i>	Thong Kong, Associate Professor President of Cambodia Association of Food Science & Technology
<i>Royal University of Agriculture</i>	Borarin Bunytong, PhD Post harvest technology specialist
<i>Eco Agri Center</i>	Ieng Sotheara Founder
<i>SOMA Group</i>	Lucinda Revell Director of Business Development Unit
<i>Bayon Heritage</i>	Chan Vannak Managing director (supplies chemicals and equipment for mushroom & asparagus production; sells end-products.
<i>GIZ: Deutsche Gesellschaft für Zusammenarbeit</i>	Claudius Bredhoeft Supplies training and technical support for developing agro-food enterprises in Cambodia
<i>SIZ</i>	Claudius Bredehoeft
<i>SNV</i>	Marieke van Schie Team leader CHAIN
<i>SNV</i>	Bernard Conilh De Beyssac Value chain expert, CHAIN program
<i>SNV</i>	Goele Drijkoningen Advisor Agriculture (Phnom Phenh & Takeo Provence)
<i>SNV</i>	Seng Thuy Senior Advisor (Phnom Phenh & Takeo Provence)
<i>NL Ministry of Economic Affairs</i>	Arie Veldhuizen, Agricultural Councillor for Vietnam and Thailand
<i>CBI</i>	Koos van Eyk