



IMPROVING TRADE COMPETITIVENESS IN CAMBODIA:

An Analysis Using a Trade and Transport Facilitation Assessment (TTFA)



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A TRADE DEVELOPMENT REPORT

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Acronyms and Abbreviations

AFD	Agence Française de Développement
AKR	Angkor Kasekam Roonrooueng
ASEAN	Association of South East Asian Nations
B2C	Business to Customer
CFR	Cost and Freight
CAMFFA	Cambodian Freight Forwarding Association
CAMTA	Cambodian Trucking Association
CASDEC	Cambodia Skills Development Center
C&F	Clearing and Forwarding
CGTC	Cambodia Garment Training Center
CMT	Cut, Make, Trim
CO	Certificate of Origin
DWT	Deadweight tons
EBA Initiative	Everything-But-Arms Initiative
EDI	Electronic Data Interchange
EU	European Union
FCA	Free Carrier
FDI	Foreign direct investment
FEU	Forty Foot Equivalent Unit
FIATA	Fédération Internationale des Associations de Transitaires et Assimilés, (International Federation of Freight Forwarders Associations)
FOB	Free on Board/Freight on Board
FOCC	Footwear Order Center Cambodia
GDP	Gross Domestic Product
GMAC	Garment Manufacturers Association in Cambodia
GMO test	Genetically Modified Organism test
HQ	Headquarters
ICD	Inland Container Depot
IT	Information technology
kg	kilogram
L/C	Letter of Credit

LCL	Less than Container Load
MOC	Ministry of Commerce
NBC	National Bank of Cambodia
NGO	Non-Governmental Organization
NVOCC	Non-vessel operating common carriers
ODM	Original Design Manufacturers
OEM	Original Equipment Manufacturers
PASS	Projet d'Appui au Secteur de la Soie
SEZ	Special Economic Zone
SMTQ	Standards, Metrology, Testing, and Quality
TEU	Twenty Foot Equivalent Unit
TT	Telegraphic transfer
TTFA	Trade and Transport Facilitation Assessment
US	United States
WTO	World Trade Organization

Executive Summary

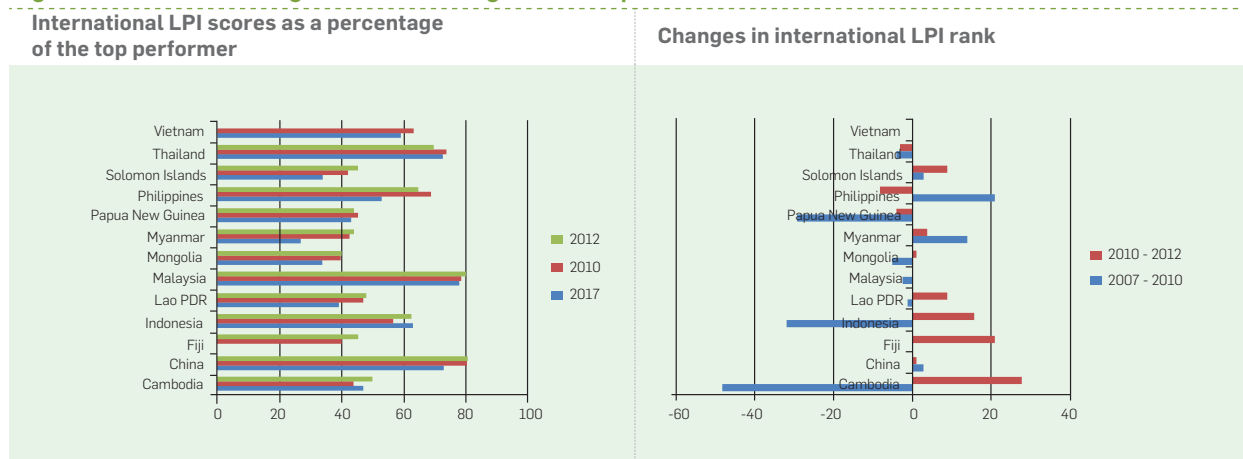
A Transport and Trade Facilitation Assessment (TTFA) is designed as a snapshot of a country's trading environment, viewed from the perspective of four key industries. In Cambodia's case, the industries selected were rice, garments, footwear and silk. This report dissects the inputs and outputs of each of these sectors by analyzing how the inputs to each industry arrive at the processing plant and are then exported. Each step of the value chain is examined for logistics issues and recommendations are made at the conclusion of each chapter. The analysis and recommendations are designed to provide an overview of logistics issues that affect the private sector in general in Cambodia.

This report is designed to be read as an adjunct to the Trade Corridor Performance Assessment that accompanies this report. The TTFA is not a tool by which to measure performance, but rather a tool to assist policymakers to understand the current trading environment. The TTFA includes recommendations based on the findings of each industry surveyed. These recommendations could become the basis of trade-related technical assistance projects to be carried out by the Royal Government of Cambodia (RGC), perhaps in conjunction with development partners. In Cambodia, the funding of such projects could include the major sources of funding to the Cambodian trade sector wide-approach (SWAp), namely the Trade Development Support Program and the Enhanced Integrated Framework CEDEP Program.

Cambodia's exports have grown strongly over the past ten years, in part boosted by its accession to the World Trade Organization (WTO) in 2004. Despite this strong performance, Cambodia's weak logistics performance, coupled with bottlenecks caused by gaps in infrastructure and services, together with limited storage facilities and inefficient border clearance procedures, continue to hamper exports. Trade facilitation and logistics are therefore key issues in realizing Cambodia's full export potential. The Government is fully aware of the importance of addressing the constraints. To this end, it has introduced significant reforms in Customs and is currently implementing a national single window as part of its Association of South East Asian Nations (ASEAN) commitments.

However, in addition to the broad improvements taking place, the main export sectors of Cambodia—in terms of actual performance and potential—have specific needs that need to be identified in turn. Garment exports are part of a supply chain that requires speed and reliability in delivery. Rice needs good internal freight connections from fields to border and adapted storage facilities. Cambodia's supply chain performance also faces the curse of size—not enough scale to justify large investments or improve efficiency—while its main competitors (Vietnam, China and Bangladesh) all enjoy the advantage of economies of scale. Cambodia's Logistics Performance Index (LPI) ranking improved significantly in 2012, jumping 29 places. Nonetheless, Cambodia's logistics performance is still well below major competitors such as Thailand and Vietnam. Several of the supply chains are also controlled by external buyers rather than local producers. Not only it is important to improve trade facilitation at a national level, it is also critical to address the specific requirements of its key export sectors.

Figure 1: Cambodia's logistics is showing recent improvement




Source: Logistics Performance Index, World Bank.
 Note: A positive change implies improvement

Sectoral findings

Rice has recently gained much attention, especially with the food security agenda gaining regional and global prominence. The TTFA report analyzes the rice sector from a domestic market perspective with a view to its potential as an export industry. The rice sector suffers from a lack of large milling facilities, a method to aggregate the supply of raw padi, and a dependence on road transport, with its higher attendant costs. Lack of access to domestic credit creates a market advantage for Thai and Vietnamese traders by allowing them to purchase a large amount of Cambodia's crop at harvest time. Millers are only beginning to offer drying and storage facilities, but in general the farmers and millers require fast cash payment to clear the harvest. Rice is bagged at the mills away from major trade corridors. It is transported to Phnom Penh by road and shipped through Sihanoukville or Ho Chi Minh City. The efficiency constraints of the current logistics methods are dealt with in detail in the rice chapter found below.

To improve the export performance of the rice sector from a logistics perspective, the government can encourage public private partnerships in establishing new facilities for storing and drying padi near the growing areas and operated by mills or third parties. The government also needs to upgrade trade corridors connecting rice growing areas to loading points for international shipments, which is likely to include development of the river transport corridor to Vietnam and simplified procedures at the border or provisions for movement of trucks across the border with Thailand.

The garments value chain is unique in the sense that this industry constitutes the bulk of Cambodia's export value. Cambodia's garment sector consists of two types of manufacturers: vendor factories and contract manufacturers. The size and type of each order is largely determined overseas by head office or by a foreign buyer, with very little design input from the local factory. The dependence of local factories on decisions made overseas extends into sourcing of inputs, shipping arrangements and even access to finance. Factories are provided the inputs, instructed about the shipping preference of the buyer and, in some cases,



provided credit from the buyer to meet the specification and delivery of the order. The logistics of the garment industry are complicated by the need to import inputs into the industry and to match these against exports. The manufacturers continue to report difficulties in processing duty-free inputs and report delays in exports related to licensing requirements and inspections.

To improve logistics specific to the garment sector, resolving inefficiencies in trade facilitation and border procedures are critical. This is because profit margins are low in the garment sector and any improvement in logistics that reduces costs and increases the reliability of delivery will lead to higher profits across the industry. The garment sector will benefit from consolidation of services amongst manufacturers, particularly contract factories, in order to derive faster turn-around of inputs into the manufacturing process. These could take the form of clusters. The skills of the workers need to be upgraded; to this end, the RGC may wish to consider linking with the industry advocacy group—the Garment Manufacturers Association of Cambodia (GMAC)—to create an institute that could address the needs of worker skill upgrading.

The footwear sector exhibits robust growth. In footwear, as in garments, the differentiation between vendor and contract factories is crucial in understanding the value-chain. The growth of the footwear industry demonstrates one important difference from rice and garments, however, in that the *value of each unit of output has been growing* at the same time that the volume of the exports have increased. This growth in unit value seems to imply that the footwear industry is climbing the value chain in sophistication and quality.

Improving the logistics supply chain in footwear requires concerted initiatives to upgrade worker skills and initiatives to further develop a cluster approach for supply industries that could support the footwear manufacturing process and reduce order cycles. These initiatives may be usefully housed within an enclave that fosters the development of footwear factories—an approach that is currently only somewhat possible within Special Economic Zones (SEZs). An enclave approach would allow the various factors of production to be integrated and closely sourced thus shortening the order cycle and production cycle. Financing is also a constraint to further strengthening of this value chain, which may be remedied by public-private approaches to fill the credit intermediation gap.

The silk sector in Cambodia is largely informal, small-scale and is difficult to define as a stand-alone industry in its current form. The sector is characterized by small-scale orders for tourist or domestic consumption. The orders tend to be of low volume, irregular supply and are dependent on low-quantity inputs from Vietnam and China. As such, the current structure of the industry does not lend itself to further consolidation or even to 'moving up' the value chain. The transport logistics are relatively simple—the low quantities sold are generally transported by air or sea to fulfill small order of less than 6kg in weight.

The fate of the silk sector depends on whether the Government wishes to promote this sector as a major export product or keep it as a cottage industry. For Cambodia to become a major exporter of silk, the industry would need to undergo significant consolidation and mechanization. For Cambodia to differentiate itself from major silk exporters such as Thailand or China, the quality and design and color of the silks produced in Cambodia would need to be more innovative than at present. Finally, industry standards would need to be agreed and enforced.

The findings from the survey were used to identify a number of improvements that could be introduced to heighten trade competitiveness in the key sectors mentioned above. These are summarized in Table 1. While there is a need to modify the supply chain management strategies in order to improve trade competitiveness, the most important involves restructuring the inbound supply chains to improve the reliability of supply of inputs. However, specific initiatives vary by trade. For rice and silk, the principal initiatives are to increase integration in the inbound supply chains and increase the contracting of supplies as a means to improve the reliability and quality of supply. In the case of garments and footwear, the principal initiatives focus on the development of clusters and complementary zones to increase the efficiency of production and attract additional investment. As for improvements in logistics services, the principal initiative would be to improve the performance along the trade corridor linking the production sites with the port terminals.

Table 1: Activities to support development of trade

Cambodia	Rice	Garments	Footwear	Silk
Supply chain strategies				
Change in business model	X	X		
Restructure inbound supply chains	X	X	X	X
Modify distribution channels	X	X		X
Logistics services strategies				
Increase scale of logistics services	X			
Supply chain initiatives				
Prepare sector vision		++		
Introduce backward integration	++	+		++
Introduce forward integration	++	+		
Modify contractual relationships	++			++
Redistribute processing	+			
Shorten cycles		++		
Establish zones, clusters		++	++	
Create trade finance instruments	+	++	++	
Logistics services initiatives				
Improve trade corridors	++	++	+	+
Develop collection/distribution hubs	++			
Modernize customs procedures	+	++		
Integrate and improve quality control				+
Modify trade and transit agreements		++	+	
Provide training and technical assistance		++	+	
++ first priority, + second priority				

1. METHODOLOGY & ORGANIZATION OF PHASE II TTFA

WEIGHT 9.2Ton

ទម្ងន់ ៩.២ តោន



MITSUI-PACECO
CONTAINER S.W.L. 35.6ton

កុងទ័រឺន័រ គម្រិតទម្ងន់សុវត្ថិភាព ៣៥.៦ តោន



MAERSK

MAEU
672187
2251



Safmarine

1. Methodology and Organization of Phase II TTFA

1.1 Methodology

The Transport and Trade Facilitation Assessment (TTFA) is a tool developed by the World Bank to evaluate the competitiveness of a country's trade and the quality of logistics services used for this trade. The tool has two components. The first focuses on public policy that affects trade and logistics. The second examines the performance of supply chains used by importers and exporters. Both components utilize background research and interviews to identify current constraints and opportunities related to improving competitiveness and quality of service. Phase I utilizes a series of interviews with key decision makers and associations involved in trade. Phase II, a survey of participants in supply chains for selected trades, includes logistics service providers. This report presents the results of the TTFA performed in 2011.

The primary objective of performing this assessment is to identify and prioritize initiatives to sustain the growth of the country's rapidly expanding trade and to increase the amount of value added provided within the country. In order to accomplish this, four trades were selected and the structure of their supply chains was determined. The activities in the product-specific supply chains were analyzed to determine their impact on the competitiveness of the traded goods. This analysis examined four key areas:

- *The performance of the supply chains as measured in terms of time, cost and reliability of end-to-end movements;*
- *The uncertainties associated with individual activities in the supply chain;*
- *The flexibility and transparency of these supply chains; and*
- *The transactions generated by these activities and the transfer of risk as a result of these transactions.*

Some of the opportunities for enhancing trade competitiveness were examined as part of the assessment, for example:

1. *Improvements in the organization and control of both inbound and outbound supply chains*
2. *Increased coordination among supply chain participants*
3. *Improvements in performance of logistics services*
4. *Introduction of value-addition logistics in the supply chains*
5. *Increased use of ITC to enhance supply chain performance*
6. *Improvement in the utilization and performance of trade corridors and production clusters*
7. *Increased scale of production and diversification of products*

The types of initiatives that support these opportunities include:

1. *Technical assistance*
2. *Standards and contractual relationships*
3. *Financial instruments tailored to specific requirements*
4. *Regulatory reform*
5. *IT platforms*
6. *Investments in infrastructure*

1.2 Organization of the survey

The Phase II TTFA was conducted in four steps over a six-month period. The first step was a review of the issues facing the logistics industry and identification of commodity-specific trades to be surveyed. Four trades were selected based on their size and contribution to the country's trade, both now and in the future. These were:

- *Rice –it is the largest agricultural export but remains a low value product*
- *Garments –it is the largest export and major source of employment but faces rising costs*
- *Footwear –it is a major export and source of employment but also faces rising costs*
- *Silk –it is a rural handicraft product with potential for development as a commercial export*

Subsequently, firms interviewed were selected based on size,¹ market, supply chain structure, track record and accessibility.² For each commodity, firms were selected to include different categories of products and different levels of integration of their supply chains.

The second step involved preparation of survey instruments, selection and mobilization of the survey team, pre-testing the instruments and arranging the field logistics. The instruments were prepared using the formats provided in the TTFA manual. These were substantially modified to reflect the situation in the country as well as the specific objectives. The largest adjustment was to give greater emphasis to interviews with the firms that organize the supply chains and less to the firms that provide the logistics services used in the supply chains.

The team was organized by Emerging Markets Consultants (EMC). Team members were selected according to their familiarity with the commodity-specific trades as well as with trade logistics. A separate team was selected to conduct expert interviews for trade finance, transport and freight forwarding/customs clearance. The teams participated in a three-day training course that covered the analysis of different aspects to trade logistics and the structure of the survey instruments. The instruments and interview techniques were pre-tested with a firm not included in the sample. Although the members of the team were fluent in English, the questionnaires were translated to ensure consistency in the interviews. Finally the survey team was organized into pairs with each assigned two trades.

The third step was the fieldwork, which was conducted in two stages. Two trades were surveyed in each phase. The interviewers were sent out in pairs in order to ensure a broad understanding of the firm's activities and to improve the interview dynamics. Four interviews were conducted with each firm responsible for organizing the supply chains. The first meeting was an introductory session with the general manager to introduce the study team, review the approach and discuss the firm's business model. The second meeting was with the company's logistics manager to discuss the organization of his supply chains. The third meeting was with the head of finance to learn about the cash flows and finance associated with the firm's trade activities. The final meeting was a recap with the general manager to discuss strategies for enhancing the efficiency of operations and improving trade competitiveness. Where required, additional interviews were held with the firm's principal suppliers and buyers. Between the two phases, meetings were held to discuss preliminary findings and the survey team finalized their field notes and prepared some preliminary essays to document their findings.

The expert interviews were conducted in parallel with firms providing clearing and forwarding services, transport companies and banks involved in trade finance. Most of the interviews were conducted in English or alternatively, in Khmer.

¹ Larger firms were chosen since smaller firms usually face additional hurdles because of their size rather than external factors

² The firms selected had to be willing to participate in multiple interviews

For the final step, the survey results were analyzed. This included preparing for each trade

- a consolidated form listing the responses of the firms,
- essays describing problems and possible initiatives for improving performance,
- flowcharts for the supply chains for some of the firms, and
- cash flows for some of the firms.

The survey findings were combined with earlier efforts to map out the characteristics of each trade, the different business models applied, the various configurations of inbound and outbound supply chain, the level of control over the operation of the supply chains exercised by individual firms, the cash-to-cash cycle and financing requirements for different business models, and the availability and performance characteristics of the logistics services used in these supply chains. Based on the results, policy recommendations were developed for both the private and public sector or joint initiatives proposed. Preliminary findings were presented at industry-workshops followed by a more detailed discussion with the associations representing each of the trades.

1.3 Key concepts

The analysis of the trades is organized around two key concepts. The trade itself is defined as an inbound supply chain linking production of raw materials with the processing of these materials and an outbound supply chain linking processing with the delivery of finished products to foreign markets. The activities in these chains were limited to those controlled by actors in the country. For this purpose, the entities involved in organizing the supply chains (the organizing principals) were identified. These enterprises connect the inbound supply chain delivering inputs and the outbound supply chain for international shipment of the finished products. In most cases these entities were involved in some form of transformation of the inputs. The activities of the organizing principal were categorized according to their business model and span of control over both inbound and outbound logistics.

The business model refers to both the transformation performed on the inputs and the characteristics of the outputs produced. The span of control refers to their involvement in the activities of the inbound and outbound supply chains. Separate business models were used for manufactured goods and agricultural products. For the manufactured goods, the standard delineation is based on value addition, as shown in Table 2. This includes not only value addition in physical terms but also in terms of design and marketing of the product. For agricultural products, a similar method is applied where value-added includes the extent of processing. Hence, it distinguishes between traders, suppliers, and distributors, as shown in Table 3.

* Parent company manages the sale of the goods.

¹ Also referred to as FOB1 when the contract manufacturer procures some of the inputs.

² Defined as a manufacturer of products or components that are purchased by another company and retailed under that purchasing company's brand name, also referred to as FOB2.

³ Also referred to as FOB3

Table 2: Business models for the manufacturing sector

	Title	Assemble	Produce Components	Procure Inputs	Design Outputs	Distribute Outputs	Branded Products	Buyer
VF	Vendor Factory	✓	✓					Parent Company*
CM ¹	Contact Manufacturer	✓	✓					Buying Agent, Manufacturer Wholesaler,
OEA	Original Equipment Assembler	✓					✓	Brand Manufacturer, Retailer, Distributor
OEM ²	Original Equipment Manufacturer	✓	✓	✓			✓	
ODM ³	Own Design Manufacturer	✓	✓	✓	✓		✓	Distributor, Brand Manufacturer
OBM	Brand Manufacturer	✓	✓	✓	✓	✓	✓	Distributor, Retailer

Table 3: Business models for the agricultural sector

Category	Trader	Supplier	Distributor
Input	Crops, minimal post harvest processing	Crops, some post harvest processing	Crops, some post harvest processing
Output	Agricultural commodities	Commodities and unbranded food products	Branded and unbranded food products
Processing	Sorting, basic processing, packing	Additional processing and quality control	Industrial processing and packaging
Contracts	Spot	Time, Standing orders	P.O.
Shipments	Single	Multiple	Continuous
Activity	Seasonal	At least half the year	Year round*
Inventory	Minimum storage for inputs	Storage of input for continuous processing	Storage of input for continuous processing and of output for uninterrupted supply
Backward Integration		Contracting of inputs. Collection facilities	Production of inputs
Forward Integration		Distribution and storage	Retail products and food services
Transport	Charter	Charter and scheduled	Scheduled
Shipping Terms	FOB	FOB/CFR	CFR

For each of the trades studied, there is a mix of business models being applied and, in most cases, a gradual evolution is occurring towards those providing more value-added. The analysis therefore examines the initiatives required to encourage this evolution. By focusing on the span of control, this study addresses the organization of both the inbound and outbound supply chains. Specifically it considers the extent of control of the organizing principal over the activities within the supply chains. This will usually increase as the business model evolves in order to:

- *ensure a more regular reliable flow of goods through the supply chain,*
- *improve the quality of the inputs, and*
- *provide distribution channels for specific markets.*

The span of control has two dimensions: (1) how far the involvement extends upstream in the activities of inbound supply chains and downstream in the activities of the outbound supply chains, and (2) the mechanism used to control these activities. Generally, there are a variety of mechanisms ranging from direct involvement through investment and operational control to restructuring the transactions with the providers of these activities. The latter includes among others:

- *simplifying the transactions,*
- *improving enforcement of contracts, and*
- *providing more flexible financial terms to ensure reasonable distribution of the benefits among the participants in the supply chains.*

2. RICE

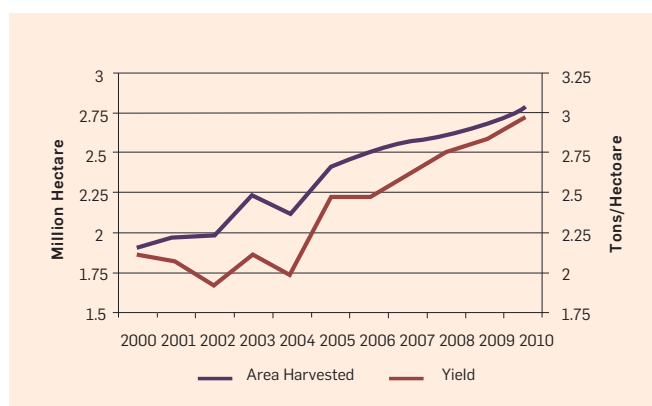


2. Rice

2.1 Trade and markets

The rice sector in Cambodia consists of about 2.9 million rice farms with an average area of less than 2 hectares and producing about 3.0-3.5 tons of padi per year.³ Total production of padi grew at about 8 percent per year from 2000 to 2010 due both to an increase in the average yield and harvested area (Figure 2). The increase in yield was achieved through various means including expansion of irrigation infrastructure; increased use of high yielding varieties; and an intensification of the crop cycle allowing double cropping. Although the average productivity is considerably below the global average, it is comparable with Thailand, the largest rice exporting country, which has an average yield of 2.88 tons/ha.⁴

Figure 2: Cambodia rice production, 2000-10



Source: Ministry of Agriculture, Forestry and Fisheries

The volume of rice that is formally exported has increased rapidly in the last few years from 10,000 tons in 2008 to 51,000 tons in 2010 and 175,000 tons in 2011. However, this represents only about 3 percent of total production.⁵

A large number of countries import Cambodian rice. However, in 2010, over 90 percent was shipped to the EU and Russia. The principal destination was France with a share of 55 percent, followed by Poland and Lithuania, which together received 15 percent. Asian imports amounted to less than 4 percent and North America less than 2 percent.

2.2 Industrial organization

The export of rice involves three participants with increasing levels of concentration. The rice is produced by about 2.9 million farmers most of whom have plots of less than 2 hectares. The larger farms (about 40 percent of all rice farms) produce a surplus that is sold directly or indirectly to commercial mills⁶ (as distinct from the custom mills).

The commercial mills are divided into two groups based on size as follows:

- *Small mills with a productive capacity of less than 10 tons of padi per day. These use older technology and have milling yields of less than 65 percent. They produce a high proportion of broken rice, up to 50 percent and more. The operating costs are relatively high, up to US\$50 per ton. The mills have limited storage, typically just enough for 3-4 months of production.*
- *Medium size mills with a capacity of 8 to 30 tons of padi per hour. These use newer technology with milling yields of up to 70 percent and a much lower ratio of broken rice, 10-20 percent.⁷ Their operating costs are also lower, close to US\$30 per ton.*

³ Based on ABIC survey data, average landing holding of farmer is 1.2 hectares (minimum landholding is less than 0.5 hectares and maximum landholding is 200 hectares). Ministry of Agriculture, Forestry and Fishery records that average paddy yield is 2.97 tons per hectares

⁴ DUSDA, FAO and Reuters

⁵ Assuming an average yield of 64 percent on the total padi production of 8.25 million tons.

⁶ These are distinct from the custom mills which serve the village requirements.

⁷ These yields are for good quality padi, lower outputs result with higher moisture content and immature rice

Cambodia has doubled its modern milling capacity in the past three years, primarily through the addition of medium-size mills. As of mid-2011, there were 14 of these, which process about one-third of the exported rice in the country, and several hundred small mills that process the remainder. There are on-going plans to build large mills to accommodate the expected growth in exports. Those will be in the 50-100 tons per hour range and involve substantial Foreign Direct Investment (FDI).⁸

The mills sell the rice either rice polishers, to exporters or export directly themselves. While there are a large number of exporters, the market is very concentrated. The five largest exporters account for about two-thirds of total exports and the next five about 14 percent. Of the five largest in 2011, only one had a mill and two have polishing factories.

2.3 Business models

Organizing principal

To date, rice exports are organized almost exclusively by local millers, polishers and traders who buy rice from the mills and sell to the international brokers and foreign importers. In the future, it is anticipated that the exporters will mill and/or polish a substantial portion of the rice they sell overseas.

Span of control

The span of control of the exporters extends back to the mills but primarily through spot market transactions. Most do not have control over the operations or output quality of the farms or even the mills. Similarly, their control over the outbound supply chain is limited.

They organize the domestic movement but the rice is primarily sold FOB and the buyer controls the international movement. There are some exceptions to this arrangement especially for higher value rice. In this case, the trader takes responsibility for the quality of the padi and it's processing as discussed in the box to the right.

Angkor Kasekam Roonrooueng (AKR) is a producer and exporter of aromatic rice. It has a 30-ton per hour mill and uses contractual arrangements with commune-level farm associations to produce a single variety. The farmers are provided with free seed and receive a premium price for their padi. Its involvement in the supply chain from farm to point of export is extensive and includes:

- **identifying areas suitable for growing fragrant paddy;**
- **establishing farmer associations based on existing commune structures and bringing these under its management;**
- **using these associations to recruit farmers;**
- **delivering improved seeds and technical advice to contract farmers;**
- **monitoring and solving production problems;**
- **collecting and purchasing rice output at AKR's gate;**
- **sorting milled and packaged paddy into different types; and**
- **exporting rice to international markets, including Europe, Australia and Hong Kong**

2.4 Supply chain structure

Inbound

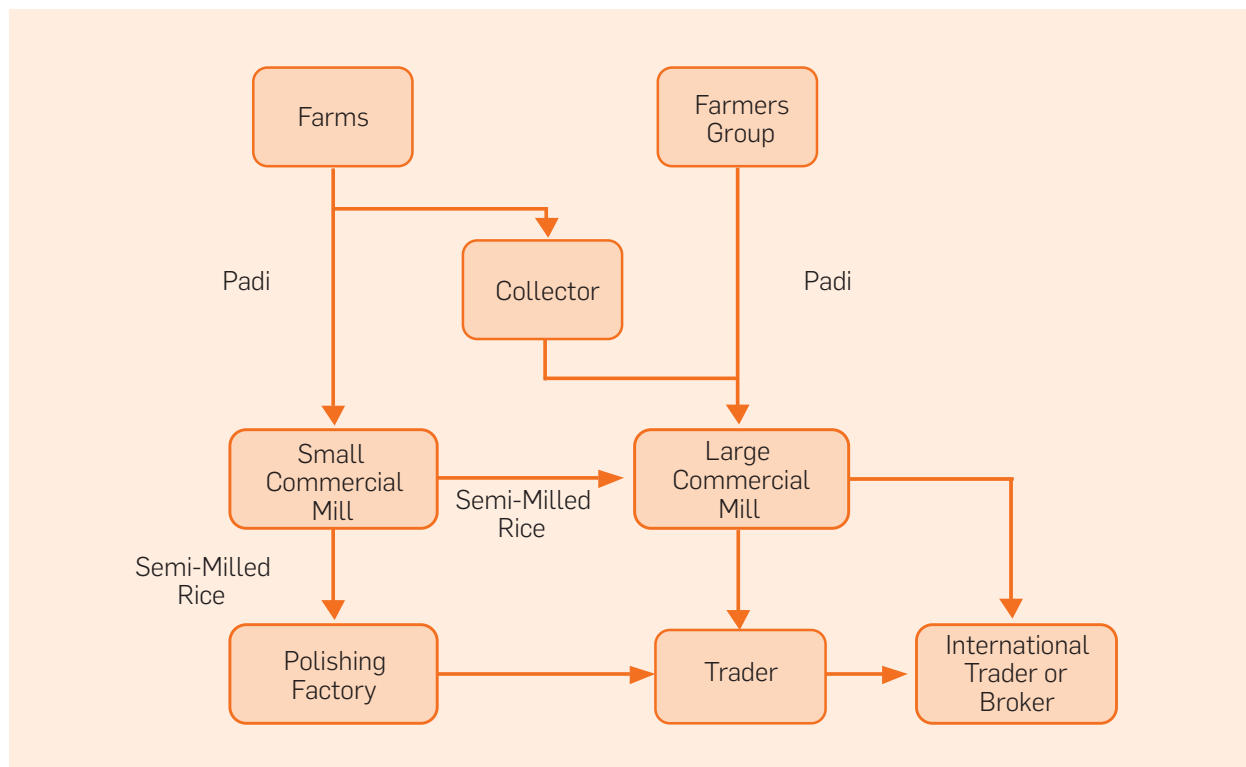
The flow of padi and milled rice from farm to export is shown in Figure 3. The inbound supply chain begins at the farm gate where padi is sold for cash to either collectors or directly to commercial mills. Most of the padi is purchased during the harvest season from December to May in the Southeast and July to November in the Northwest. The collectors consolidate the padi from several farms and either sell it to larger local traders or deliver it to the commercial mills. Sometimes they sell the rice to the highest bidder but often they act as agents for specific mills.⁹ They sell the padi to the mills on a

⁸ These include the proposed US\$100 million investment by Asia Golden Rice, Thailand's largest exporter

⁹ They also sell padi to traders from Vietnam and Thailand.

cash basis. The price is set at the spot market and the quality of the rice measured in terms of moisture content and immature rice. The size of their purchases is limited by the working capital and they normally purchase only a few hundred tons a year.

Figure 3: Rice flow



The current market structure provides few incentives for higher quality varieties of rice because the output of many smallholders is collated for sale. Since the transactions include padi collected from a number of farms that grow different varieties, for non-aromatic padi there is little differentiation in price based on variety. As a result there are few incentives for farmers to worry about varieties and moisture content. Similarly, the local market does not pay a premium for well-milled rice or rice with a limited number of brokens, so most millers do not attempt to optimize the quality of the milled rice. The tests for Genetically Modified Organism (GMO) are performed in laboratories in Vietnam or Thailand. Targeted initiatives to reward farmers and traders by differentiating between different qualities of rice may improve the value of the final sale.

The exporters who operate mills sometimes purchase semi-milled rice from smaller mills paying cash at the time of delivery and provide an advance to assist the small mills in purchasing padi. The semi-milled rice receives additional processing, including polishing and sorting, at the exporters' facilities. Transport for these larger shipments is organized using local transport companies.

Some of the larger mills sometimes purchase padi directly from growers' associations or through contract farming arrangements. In this situation, they are concerned with quality and will provide funding for inputs and advise farmers on seed selection. This is a relatively new initiative and provides a good model for the future direction of the industry.

The inbound supply chain is characterized by limited storage facilities. The mills store enough padi to fill orders for 3-4 months after the harvest season. Their storage facilities are also used to dry the padi prior to milling, though this drying is generally inexpert and therefore long-term storage is restricted. Some mills use silos for drying and a few have recently acquired mechanical dryers but the majority of mills store the padi in bags in warehouses, thereby limiting its shelf-life.

Outbound

Rice leaves Cambodia in relatively small consignments, with overseas shipments via containers generally departing through Sihanoukville or Phnom Penh, but beginning in 2011 uncontainerized rice was barged down the Mekong River to Ho Chi Minh City in Vietnam. Milled rice is exported in 50kg bags except for high-valued fragrant rice, which is sometimes shipped in 2kg bags or smaller packages. Due to the limited size of orders and draft limitations in Sihanoukville, most of the bagged rice is shipped in containers, including lower-value rice that would normally be shipped as general cargo. The exception is rice produced from padi that is transported from Cambodia to Vietnam, milled, mixed with Vietnamese rice, bagged and then loaded on general cargo vessels in the terminals in Ho Chi Minh City.¹⁰

Most of the mills are located away from the river at the intersection of a major trade corridor and the rural road network serving the growing area. The rice is bagged at the mill and transported by road to Phnom Penh where it is stuffed in containers for shipment by road to Sihanoukville or transported by barge to loading points near Saigon port. The domestic movement accounts for a relatively high proportion of the costs—trucking costs are reasonable by international standards but the expenses related to informal tolls on truck transport and freight forwarding are high. These were studied in greater detail in the World Bank's Transport Corridor Assessment.

The formal movement of rice is costly by international standards and is constrained by the limited supply of appropriate 20-foot food containers. As a result of the high freight forwarding costs discussed above, container transport is relatively expensive per ton kilometer and is constrained by limited availability of empty 20-foot containers suitable for transport of food. Most of the containers unloaded in Sihanoukville are 40-foot boxes carrying inputs for the garment industry or 20-foot boxes carrying equipment and other goods not compatible with food shipments. Therefore, it is necessary to reposition empty 20-foot boxes from Singapore to Phnom Penh or Sihanoukville for loading rice destined to Europe.

Financial

The availability of working capital also limits activity throughout the supply chain from the amount of padi a collector can buy to the order size that a trader or mill can accept. The lack of access to sufficient working capital has allowed Thai and Vietnamese traders to dominate the market for Cambodian rice. The farmers need cash quickly at the time of harvest, which local millers cannot provide due to poor access to credit, so buyers from across the border are able to purchase the majority of the harvest. Financial transactions on the inbound supply chain are mostly made in cash. The principal commercial problem is lack of working capital. The traders rely on their own cash flow and a line of credit from a commercial bank. The terms are about 9 percent fixed-interest for a one-year loan (foreign exchange).

Working capital remains a serious constraint on the outbound supply chain. An advance is frequently provided to the trader for purchase of the padi or semi-milled rice. However, nearly all of the shipments are FOB with payment made a fixed period after loading the cargo.

2.5 Supply chain performance

The firms interviewed were both rice exporters that purchased milled rice from local mills and miller-exporters who purchased padi from collectors. They export both white and fragrant rice, primarily to Europe. Two were large, handling 20,000-25,000 tons per year while two were niche players handling 3,000-6,000 tons per year.

¹⁰ Sihanoukville Port has a maximum draft of only 8 meters for general cargo vessels. Also it lacks continuous cargo handling operations and sufficient bonded storage for efficient transfer of bagged rice.

Segregating the types of non-aromatic padi allows traders to extract additional value from the crop. The average unit cost for semi-milled rice is US\$300-US\$500 per ton for white rice and US\$650-US\$750 for jasmine rice. The semi-milled rice and padi is delivered to their facility by the supplier usually within a day. The size of the orders varies with the smaller traders ordering less than 100 tons at a time. The milled and polished rice is sold primarily to foreign importers on FOB terms. Some of the fragrant rice is sold on CFR terms to foreign retailers and distributors.

The typical size of export shipments varies from 3 to 15 TEU. However, smaller traders will ship a single TEU, especially for fragrant rice. The minimum shipment size for larger traders is usually 5 TEU and they accept orders with multiple shipments. The time from confirmation of the order to loading on the ship is 5-14 days. The order cycle from order confirmation to delivery to the buyer's warehouse is 35-42 days for Europe but can be as little as 14 days for East Asia and less for Southeast Asia. The percentage of delayed shipments varies by trader but is generally 10 percent or less. Most delays are a result of problems in the outbound supply chain including

- *lack of reliability in terms of domestic transport,*
- *availability of 20' containers suitable for carrying food,*
- *inefficient handling at the loading port, and*
- *lack of availability of customs officials.*

There are no significant problems with documentation for the exports but the tests can be an impediment. The times for acquiring the necessary export documentation are:

- *Certificate of Origin about - 3 days,*
- *Phytosanitary certificate - 7 days*
- *Fumigation certificate – 1 day,*
- *Quantity certificate – 4 days, and*
- *Chemical tests - 7-12 days.*

2.6 Objectives and strategies

General objective and strategy

Since most of Cambodia's exportable surplus is informally shipped to Thailand and Vietnam as padi, the current objective of the government is to increase the formal exports of milled rice. The country generates sufficient surplus to reach the government's target of one million tons per year, but there are a number of logistics problems, only one of which is lack of modern milling capacity - especially that of sufficient size to accept larger orders. Meeting this target will significantly increase the value of the exports but equally significant gains can be achieved by increasing the quality of rice exports. Both efforts require a restructuring of the inbound supply chains which are currently based on small-scale operations. While the increase in exports of milled rice can be achieved through a short-term strategy, the improvement in quality of the rice requires a longer term strategy.

Given the current concentration in rice export trading business, the most expedient strategy for increasing the share of local padi production that is processed in and exported from Cambodia, would be to encourage larger traders to invest in modern rice-polishing factories and rice mills. This would take advantage of the existing collection system but expand it to include the purchase of padi that otherwise will be smuggled to neighboring countries. This requires private investment in facilities to improve the outbound supply chains and public initiatives to simplify trade regulations and encourage competition. Complementing this strategy, there should be a shift in the outbound supply chain from a system based on spot market sales to one based on supplying rice under an extended shipping period.

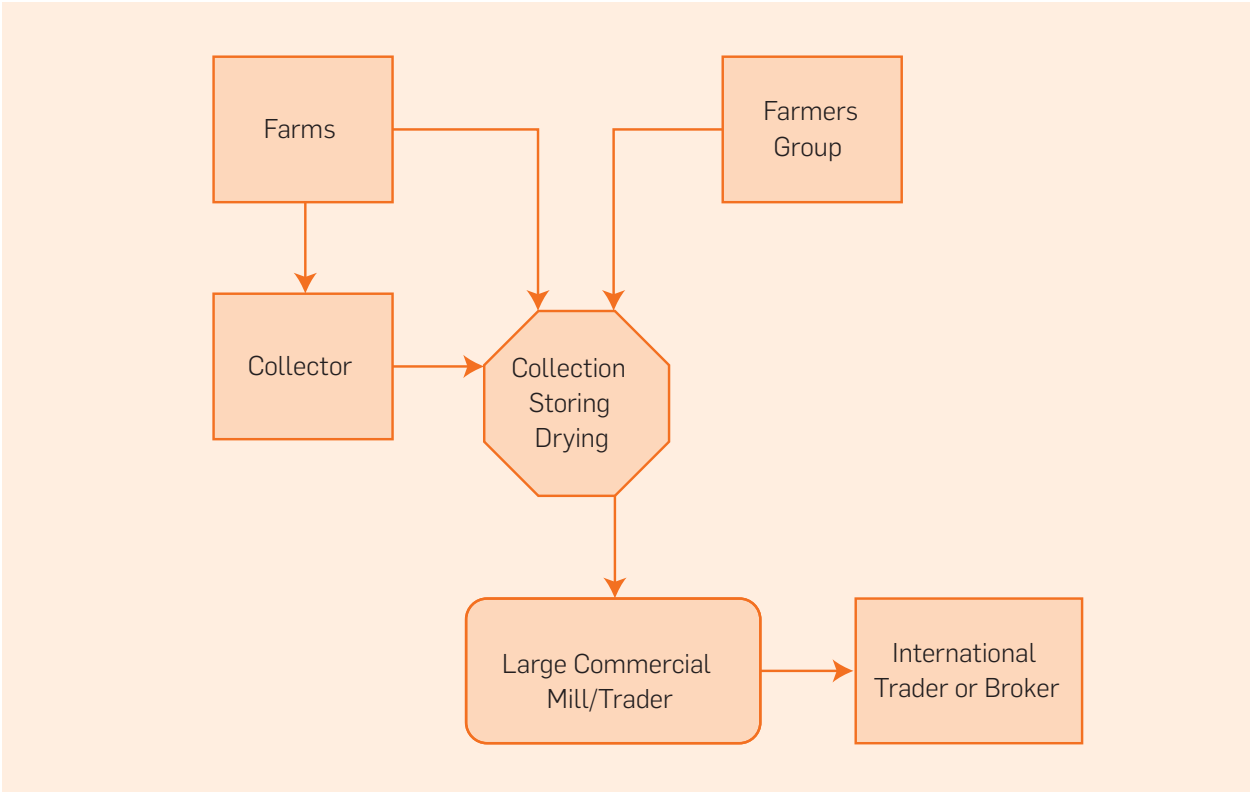
In the medium term, the strategy would shift to increasing the yield and improving the quality of both padi and processing. This requires a more integrated inbound supply chain that provides incentives to improve agricultural practices. It also requires a change in the organizing principal from exporters who do not own factories to miller-exporters and polisher-exporters that sell directly to international traders and distributors.

2.7 Implementation

Inbound supply chains will be strengthened by the current trend of increasing the size and efficiency of rice mills. The larger capacity of these mills implies a more efficient system for collecting padi to achieve economies of scale. This begins with a more efficient mechanism for aggregation of padi in order to reduce the cost of delivery to the larger mills. New facilities for storing and drying padi need to be established near the growing areas and operated by mills or third parties. The mills would purchase the padi either from the farm or from these facilities and would maintain their inventory at this facility removing it just before for milling. These facilities would allow greater flexibility in locating new mills, especially at locations that provide direct access to the inland waterways. Existing mills located close to the areas of production would use these facilities to supplement their own storage. The resulting restructuring of the inbound supply chain is shown in Figure 4.

A sustainable mechanism for improving the quality of export rice requires coordination between the public and private sectors. This could begin with encouraging traders to operate their own mills either through tax incentives or with certification/licensing requirements. The growth in volume of trade will increase the overall demand for working capital. The increase in the size of mills and export orders will increase the amount of working capital required by individual mills. The increase period of storage in order to reduce moisture content and extend the period of milling will lengthen the cash-to-cash cycles. As a result of these changes, the financial instruments used to provide working capital need to be modified to reduce the cost and collateral requirements while increasing the borrowing limit and tenor.

Figure 4: Restructure rice supply chain



Improvements in performance on the outbound supply chains require upgrading the trade corridors connecting the rice growing areas to the loading points for international shipments. These corridors include those used by:

- *Aromatic rice transport by road from the Northwest through Poipet to Laem Chabang for container shipments and through Khlong Toey for general cargo shipments;*
- *Aromatic, traditional and high yield varieties transported by barge to Ho Chi Minh Port port for loading general cargo ships;*
- *Aromatic, traditional and high yield varieties transported by truck to Sihanoukville for loading on general cargo vessels; and*
- *Aromatic, traditional and high-yield varieties transported by road to Phnom Penh for stuffing in containers and either loaded in Phnom Penh Port or trucked to Sihanoukville Port for loading on container vessels.*

The first two corridors require simplified procedures at the borders and the provision for movement of trucks across the border. The second requires simplified transit procedures based on the 2009 agreement between Vietnam and Cambodia on Waterway Transportation.¹¹ All four would provide economies of scale for the general cargo shipments and improve connectivity for container shipments. They would also provide shorter transit times, more competitive services and lower freight rates for both container and general cargo shipments.

Although there have been considerable improvement in documentation and transport services in recent years, further improvements will be required to support a significant increase in export volumes. The problems associated with obtaining a Certificate of Origin (CO) have been reduced and international certification and inspection firms now operate in Cambodia. However, the procedures for preparation and approval of trade documentation need to be simplified and clearance times for exports of large shipments of rice need to be shortened. Currently, the Government is working on a one-window strategy but there is also a need for:

- *Allowing non-governmental agencies such as Chamber of Commerce to CO prior to shipment,*
- *Licensing of private, certified testing facilities to perform phytosanitary, fumigation and GMO tests, and*
- *Automating the submission and processing of the additional documents introduced as part of bilateral trade agreements.*

Recommendations

- Facilitate greater investment in padi storage and drying facilities, perhaps by underwriting risk from commercial banks to encourage lending into the rice sector and reduce the cost of working capital sought by millers to buy rice at the end of each season.
- The RGC may wish to engage short-term agricultural experts to advise on the optimal location of these storing and drying facilities.
- Facilitate the creation of agricultural cooperatives in order to aggregate supply and tighten the supply chain in terms of quality and regularity of rice.
- Ensure that Cambodia and Vietnam jointly implement simplified transit agreements according to the Waterways Transportation Agreement of 2009.
- The preparation and issuance of Certificates of Origin will need to be expedited through more efficient procedures, perhaps by implementing an automated web-based approach, or allowing issuance of these certificates by industry groups such as the Chamber of Commerce of Cambodia.

¹¹ The purpose of the present Agreement is to establish a legal framework for the effective implementation of freedom of navigation in the Mekong river system, and to create favorable conditions for transit and cross-border



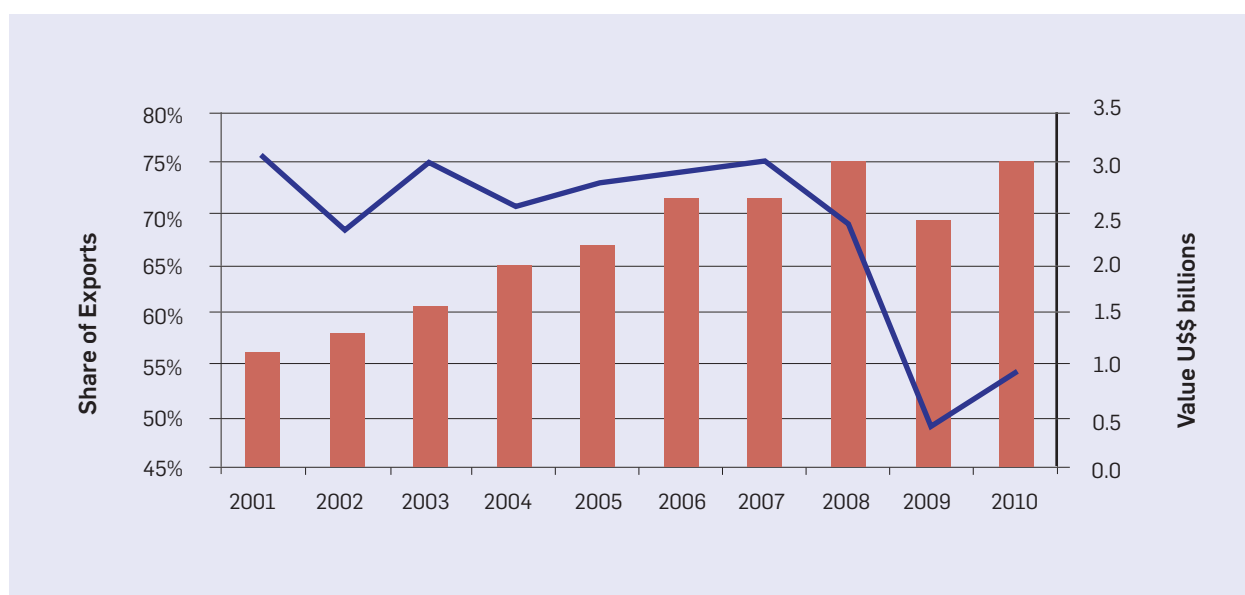
3. GARMENTS

3. Garments

3.1 Trade

Garments have provided the solid backbone to Cambodia's export-led growth story over the past decade. The industry has tripled its share in the global market place over that period, yet it still faces constraints in its ability to lead the growth of Cambodia's economy up the value chain or in leading towards greater and more sophisticated export product diversity. The benefits and limitations of the current industry structure shall be examined below.

Figure 5: Cambodian garment exports



Source: GMAC, 2011

The value of Cambodia's garment exports grew at a relatively uniform rate until the global financial crisis, which caused a temporary contraction (Figure 5). Similarly, the contribution of the apparel industry to GDP has risen from around 1 percent in the early 1990s to about 10 percent in 2009. Cambodia's contribution to global garment trade, however, remains small, growing to about 0.95 percent in 2011 from a very low base.

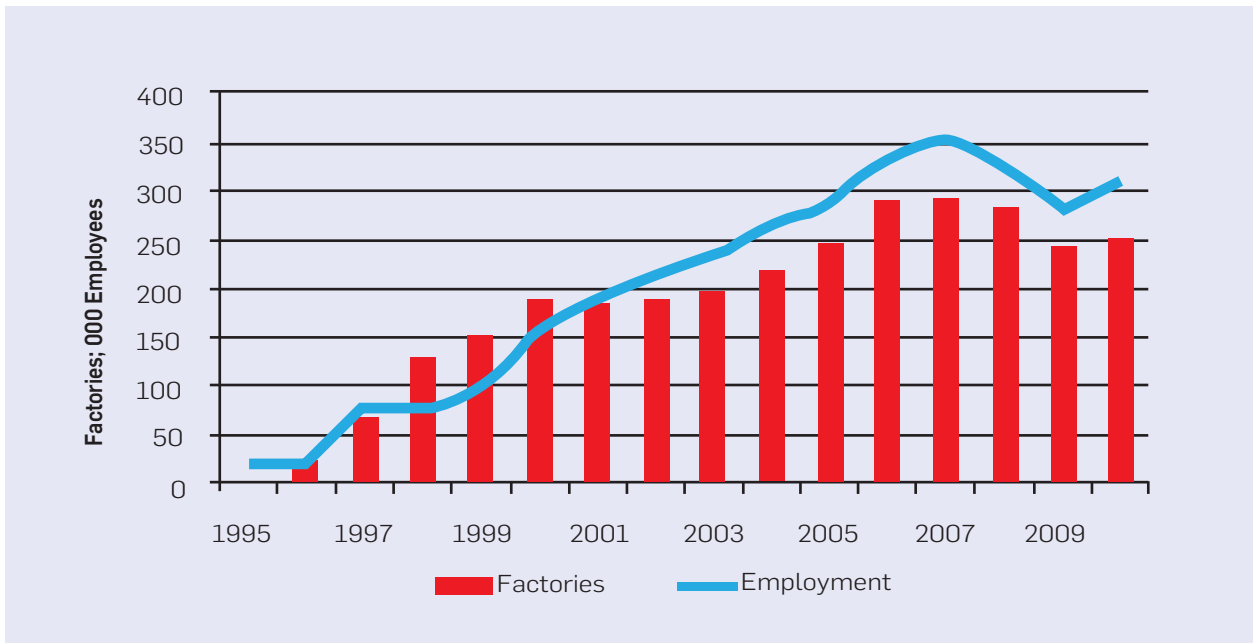
The growth in exports has been achieved through an increase in foreign investment, which led in turn to rapid growth in the number of factories and associated employment. The majority of garment factories in Cambodia are owned by investors from Taiwan, China, and, Hong Kong. Only about 6 percent are owned by local investors. The average level of employment per factory is about 1,100 employees. About one quarter of the firms employs less than 500 workers while the larger firms employ between 6,000 and 9,000. Locally-owned factories average less than 600 workers and Chinese firms about 650.¹² The balance of social welfare benefits accruing from the garment sector, the most direct of which is employment, thus rests in the hands of foreign investors.

If the benefits of foreign investment are clear, the potential instability of Cambodia's reliance on foreign investment in the garment industry was also illustrated in the financial crisis of 2008. The contraction in garment exports beginning in 2008 brought a halt to new investments and a number of factories closed

¹² Table 1.3, "Factory-Level Value Chain Analysis of Cambodia's Apparel Industry".

while others merged. The fast pace of recovery since 2010, however, has allowed exports to return to pre-crisis levels, though employment and the number of factories and the management structure have remained relatively unchanged (Figure 6). Recently, there has been renewed interest from foreign investors in relocating garment factories to Cambodia and a number of proposals for investment are awaiting government approval.

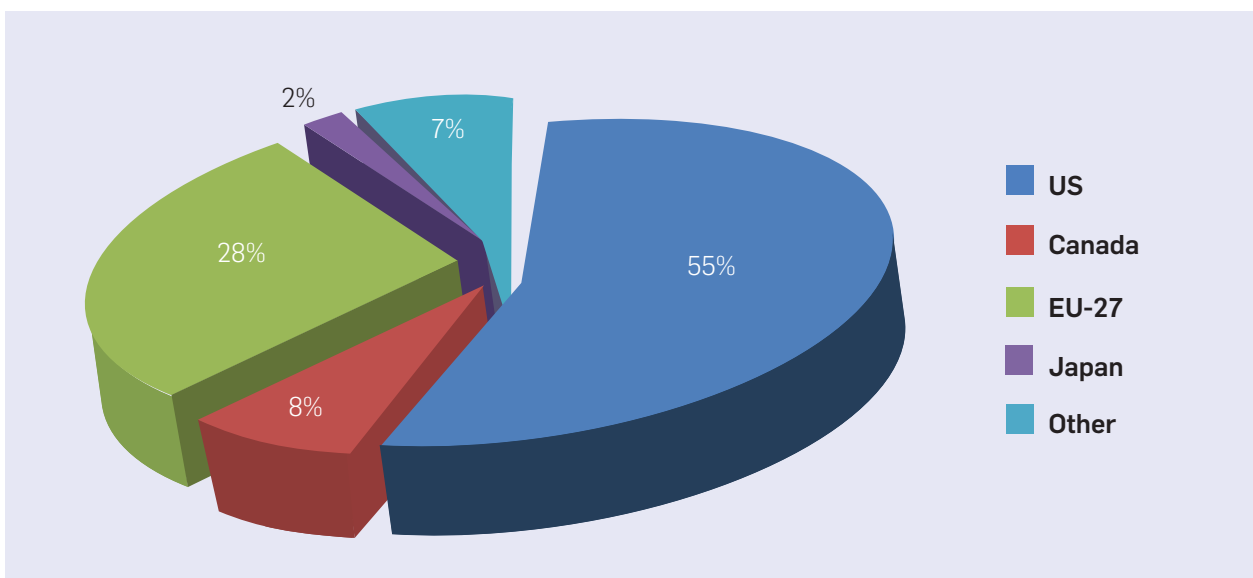
Figure 6: Number of Cambodian garment factories and direct employment



Source: International Labor Organization, GMAC, 2011

Cambodia serves a relatively small number of markets with a limited number of products. The principal export destination is North America followed by the EU, as shown in Figure 7. ASEAN accounts for less than 1 percent of garment exports, most of which is rag trade sent to Singapore, presumably for re-export. The concentration on markets in the US and EU has been encouraged by the various trade agreements that provide preferential access.

Figure 7: Cambodian garment export destinations, 2010



Source: GMAC, 2011

Exports are mostly large shipments of cotton products intended for the low and medium priced market segment in the US and, to a lesser extent in the EU. The majority of Cambodia's garment exports take place in four categories: sweaters/pullovers, men's and women's trousers, and t-shirts/singlets. These alone account for 60 percent of exports. Within these categories the type of products shipped from Cambodia includes knitted items such as t-shirts, sweaters, sweatshirts and polo shirts. Exports of woven garments include trousers, shirts, and jackets.

3.2 Business models

Cambodia's apparel industry applies a variety of business models. The majority of the factories (more than 80 percent) are either vendor factories or contract manufacturers. The type of factory ownership may have an impact on Cambodia's ability to move up the garment value chain, as the current structure limits the growth in knowledge spillovers from foreign experts into the broader economy. Most of the foreign-owned firms are vendor factories. Their parent companies operate as Original Equipment Manufacturers (OEM) sourcing the inputs used by their factories and, in some cases, as Original Design Manufacturers (ODM) providing the designs for the goods produced in their factories. Therefore, the factories located in Cambodia tend to be tightly controlled by offshore owners, with very little room for local initiative or entrepreneurship.

The parent company distributes orders among factories that it owns in several countries – including Cambodia – according to their available capacity, unit production costs, and required skill level. It then arranges delivery of the inputs to the factory according to the buyers' requests. If the parent company chooses the fabric or provides the design, then the vendor factory will provide pre-production samples for the buyer's approval. For the exports, the factory arranges the domestic movement but the parent company or buyer's nominated forwarder arranges the international movement. The factory has little ability to attract orders or identify markets into which it could expand.

Most of the contract manufacturers are foreign-owned but operate as independent enterprises providing CMT/Assembly services. Some take orders from buyers who provide the designs and specify the inputs; others operate as OEMs, assuming responsibility for sourcing inputs and preparing samples for approval by the buyer. A comparison of the supply chains of the vendor factories and contract manufacturers is presented in Figure 7, which also indicates who performs each activity (a dual-color box is used for those activities that have two possible participants). A few factories operate as ODMs. However, these are generally small operations. They produce mostly accessories with the designs prepared by Non-Governmental Organizations (NGOs) and other social enterprises, which contributes little to Cambodia's ability to move up the value chain.

Vendor factories have the advantage of scale through their relation with the parent company, which provides access to regional suppliers and global markets. Their parent relationship also provides access to low-cost capital borrowed internationally against the parent company's balance sheet. In contrast, contract manufacturers export to a limited number of markets and have difficulties in obtaining inputs of consistent quality at a competitive price. Furthermore, they lack access to low-cost finance, making it difficult to evolve from the CMT/assembly business model to an OEM. The smaller, locally owned factories produce only for the domestic market and sub-contract to larger producers.

The TTFA report is interested in knowing as much as possible about the upstream and downstream supply chain. To that end, the supplier and buyer relationships are important to this analysis of the garment sector. Each is examined in turn below. More information on these relationships and the facts and figures pertaining to the supplier and buyer relationship can also be found in the Annex.

Suppliers

All the fabrics, threads, accessories and trim used in production of apparel exports must be imported. Only packaging is produced locally. About 70 percent of the fabric is imported from China, Taiwan and Hong Kong and another 16 percent from Southeast Asia. The textiles are purchased from the original manufacturer or their overseas distributors. For the vendor factories, the parent companies have long- standing relations with these suppliers, a large proportion of which are located in the same country as the parent company.

The contract manufacturers that procure their own inputs do so in accordance with the buyer's specifications and, in many cases, receive a list of authorized suppliers from their buyers.

Buyers

The principal customers for Cambodia's apparel exports are brand marketers and retail chains. The largest customers, a selection of which includes famous brand names such as H&M, Levi Strauss, Nike, Adidas, C&A and Target, account for the majority of Cambodia's garment exports. GAP alone is estimated to account for 30 percent of total apparel exports. The vendor factories produce garments for larger buyers while most of the contract manufacturers to sell their garments to buying agents and smaller retailers.

Span of control

As indicated above, the managers of vendor factories in Cambodia have limited participation in their inbound and outbound supply chains. Aside from production, their only role is to manage the domestic movement, including clearance and transport. In contrast, the contract manufacturers participate in purchasing inputs that are imported on a CFR basis and selling their finished goods on an FOB basis.

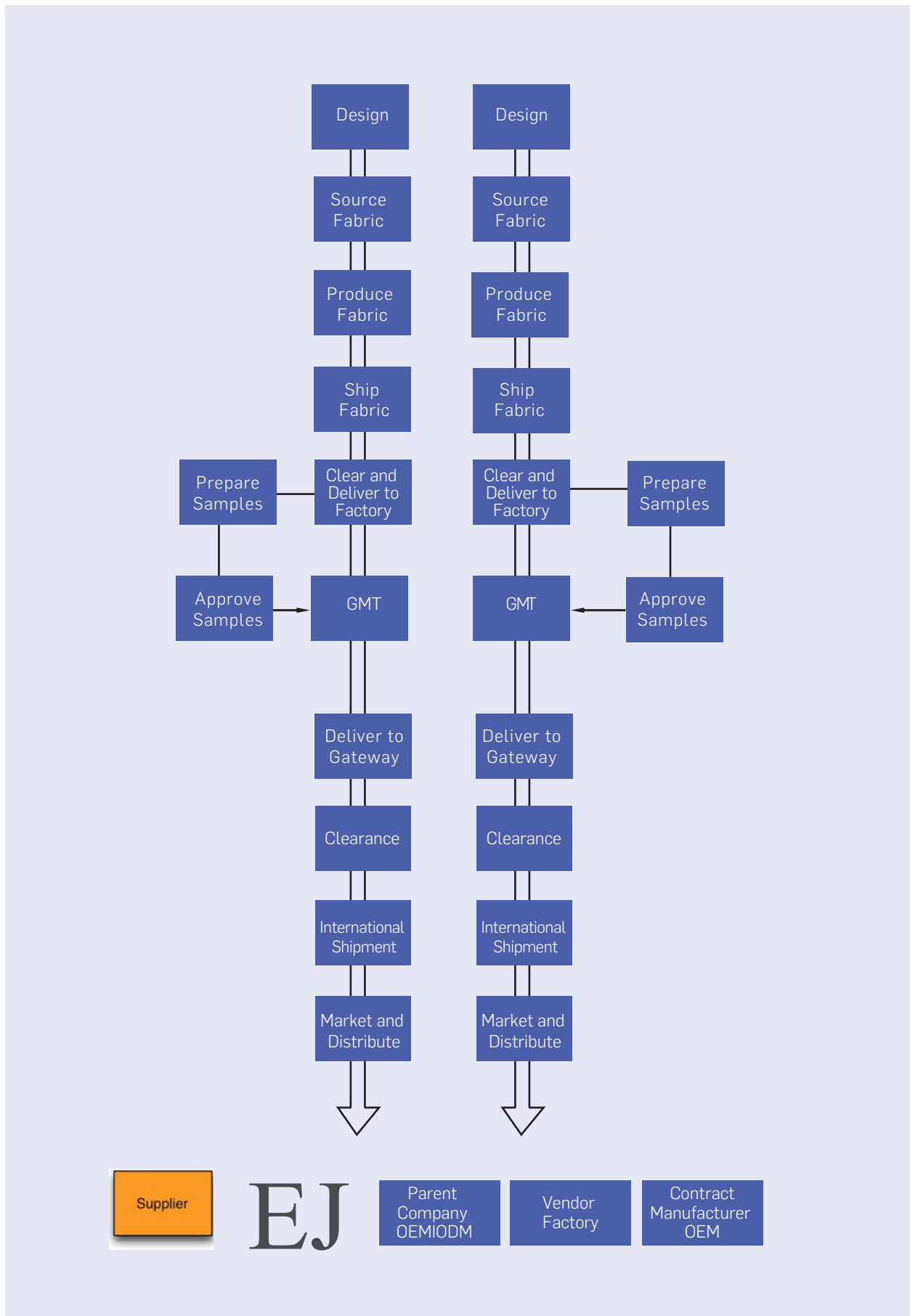
3.3 Supply chain performance

Despite continued growth, the apparel industry in Cambodia faces a number of challenges. The immediate concerns are the rising cost of production due to increasing wages and the high cost of energy. While the value of exports is expected to grow in the short term as more factories are established, this industry may become increasingly vulnerable unless changes in the structure and management of factories take place. At the present time, most factories have minimal investments in fixed assets and can easily relocate if operating costs are no longer competitive. The main challenge is to solidify the foreign investment in this sector, perhaps by fostering the span of control of local factories.

In the medium term, the industry needs to move away from basic apparel because of strong competition from larger exporters such Vietnam, Bangladesh, and China and India that can offer economies of scale. If it is to compete for the production of higher value goods, then the industry needs to become more efficient primarily by improving the performance of its inbound and outbound supply chains. Details of the structure and performance of the supply chain are contained in the following paragraphs. The information contained in this section is evaluated in following sections and informs the recommendations contained at the end of the chapter.

As stated earlier, the majority of garment factories produce against confirmed orders that are negotiated abroad by the parent company. The only inventory is imported inputs awaiting testing, and inputs that are being consolidated prior to the start of production. The volume of orders varies by season but peak demand is relatively small, about 20-30 percent above average, because most products have a relatively long shelf live. To accommodate these peaks, the factories extend their working hours, add production lines and/or subcontract part of the order.

Figure 8: Allocation of responsibility for supply chain activities



The order cycle from confirmation of order to delivery to the export gateway averages about 90 days. For smaller orders of simple products, the average is closer to 45 days while for larger orders that require special fabrics and/or various samples to be approved prior to production the average is closer to 120 days. The delivery time for imported fabrics is 3-8 weeks and the value of shipments is in the range of US\$50,000 to US\$75,000 per TEU. Factories receive consignments on a weekly basis with most shipments organized by the supplier on a CFR basis. Payments for the imports are made a specified time after receipt of goods, typically a week or two, using a telegraphic transfer (TT). For vendor factories, the parent company manages the finances and transactions. For local firms, the transactions often require a Letter of Credit (L/C) and are financed by discounting the buyer's L/C.

Finished garments are packed and labeled for delivery to retail outlets. The garments are then shipped in ocean containers to the retailer's distribution center. Ocean transport is arranged by the buyer's nominated forwarder. The containers are loaded at the factory for transport to Sihanoukville Port. The time for overseas shipment adds 15-35 days to the total order cycle depending on the distance to the overseas destination. Larger orders are sent in multiple consignments, usually on a weekly basis. Airfreight is used only for time-sensitive or delayed shipments, which account for 1 percent and 5 percent of the shipments, respectively.

The cost for moving the container from Sihanoukville port to the factory's warehouse is \$700-\$900 per Forty Foot Equivalent Unit (FEU), which includes the terminal handling charge. For transport from the factory to the port, the range is from US\$450-US\$1000. Most firms give 5-7 days advance notice when arranging truck transport to the port.

The garments produced have an average value of US\$3-US\$4 per unit. The higher cost items have more trim and embroidery. The value per FEU varies from US\$100,000 to over US\$200,000. The garments are shipped FOB or Free Carrier (FCA) with payment by TT, usually 7-30 days after loading on the vessel. International freight rates vary by destination but are currently about US\$800 per FEU for East Asia, US\$1,800 for North Europe and US\$3,600 for the US east coast.

The major challenge for the factories is to retain skilled labor and securing adequate energy supplies. Logistics is not considered a major problem; although the high cost for land transport and difficulties with submission of various shipping documents and with clearing the cargoes are among the concerns mentioned by factory managers.

Although Customs has improved its performance considerably, it is still seen as inefficient in processing imported inputs. Customs declarations can be submitted electronically for imports but hardcopies must be submitted together with supporting documents. A Report of Finding from the PSI is required for imports worth more than US\$4,000. Clearance is often delayed because customs officials are unavailable for processing. An import license may be required for specific commodities. The application for import permits should take only one day but, in practice, can require three to four days. Finally, the level of inspection remains high (Table 4).

Table 4: Customs inspection requirements for imports

a	The Customs Examination Team inspects the goods simultaneously with CamControl
b	Sealed containers are subject to PSI are not examined unless there is reason to suspect irregularities.
c	All other containers are subject to detailed inspection
d	80 percent of investment company goods are

Source: General Department of Customs and Excise, 2011

For exports, the major source of delay is associated with the issue of the certificate of origin (CO), which can only be issued after shipment and can require 5-10 days. This delays the transfer of documents to the buyer and payments to the exporter. The cost for reapplying for a CO is also high, about US\$280.

3.4 International competitiveness of Cambodia's garment industry

The contraction of the global trade in apparel during the financial crisis produced downward pressure on the prices paid to the manufacturers. The buyers not only reduced their orders but also placed greater emphasis on reducing order cycles and increasing flexibility in production and delivery. They also changed the terms of payment, thereby extending the manufacturers' cash-to-cash cycle. It is unclear to what extent the manufacturers will be able to reverse these developments even when the global economy recovers. The impact on Cambodia has been limited because it produces basic apparel, with little fashion content and a long shelf life. However, these developments create an obstacle for manufacturers to move into higher-value products.

The recent upward pressure on wages for Cambodian workers is creating a problem for Cambodia's garment manufacturers, who compete primarily on price.¹³ There is greater competition from China, which has reasserted itself in the low end of the market. Also, opportunities for reducing the order cycle are limited since about 70 percent of the order cycle is taken up by delivery of inputs and international shipping of exports (see details on supply chain competitiveness in the section above and in the conclusions and recommendations presented at the end of the chapter). Another difficulty facing the manufacturers is the trend among larger buyers to limit the number of suppliers and contract with OEMs that can manage the inbound supply chains. In terms of markets, there is an on-going redistribution of demand with much of the growth coming not from the EU and US but from the larger emerging economies.

The need for more working capital to accommodate these changes has not been a significant problem because most of the factories rely on their foreign owners to provide the funds. For Cambodian manufacturers to provide more value-addition, however, access to credit for garment factories that have been incorporated locally or that wish to evolve to become ODMs may need to be facilitated. For the same reason there is less concern about foreign exchange risk (in addition to the fact that there are few restrictions on foreign currency transactions in Cambodia), but the process of de-dollarization of Cambodia's economy may pose risks in the medium-to-long term.

3.5 General objective and strategies

The export of garments has grown steadily with the exception of the recent downturn due to the global financial crisis and it remains the principal export of Cambodia. However its share of total exports has declined as shown in Figure 4 and now amounts to about 55 percent. The objective for the industry is to sustain growth in the value of exports and thereby its contribution to economic growth.

The strategy for accomplishing this objective must have separate components for vendor factories and contract manufacturers. For vendor factories, logistics need to be improved to reduce time and cost for the inbound and outbound supply chains and to address shortages of labor and power. It is also important to facilitate approval for foreign investments that will produce higher value garments and open new markets while also providing access to credit for local manufacturers. For contract manufactures, the improvements in logistics should be complemented with improvements in the supply chains. There is also need for technical and financial support for the transition from CMT/Assembly operations to OEMs and compete effectively with vendor factories.

3.6 Implementation

While the private sector has been effective in organizing production of garments and expanding the volume of exports, there is a lack of strategic vision. Most of the management decisions are made outside of the country with the result that the industry lacks a consensus on the need for diversifying its products and markets,

¹³ Given the large portion of the non-farm, non-government labor that is employed in the sector, the difficulty in recruiting and retaining workers, and the growing assertiveness of labor unions, it is expected that this will continue.

increasing the quality of its products and/or adding value within Cambodia. First priority should be given to developing a vision on how to achieve the growth objectives mentioned above. This requires a coordinated effort involving the government and private sector. It also requires an assessment of the market opportunities

There are a variety of markets for higher value garments that Cambodia might consider, some of which are shown in Table 5. Each has slightly different requirement in terms of supply chain performance. While individual firms will continue to choose their markets, there is an advantage to selecting a target market for the garment industry, especially for the contract manufacturers. This would allow for a coordinated effort in developing the logistics and other capabilities that will provide a competitive advantage for that target market.

Table 5: Selected markets for higher value garments

Product	Market characteristics	Cycle time	Capabilities
Higher quality	Quality of inputs Skill intensive	Moderate	Procurement, Quality control throughout chain, Pool of skilled labor, Specialized logistics and equipment
Fashion basics	Short order cycle Short shelf life	Short	Quick setup, Quality control for inputs and outputs Flexible production, Tight logistics
Specialty garments	Small order Special fabric and trim complex inputs	Flexible	Procurement and supply chain management Flexible production Client management
Small brand manufacturers	Small order Flexible production runs	Short to Moderate	Procurement, Quality control for inputs and outputs

Most of the markets will require a reduction in the order cycle times. Current cycle times vary. The time for ordering fabric varies between 3 and 8 weeks depending on availability. The production runs are typically 4 weeks but depends on the size of the order. The time for delivery ranges from 2 to 5 weeks depending on the destination. The result is a total order cycle of 2 ½ to 4 months. A movement into high value products implies an increase in the order time for higher quality fabric. Any reduction in order sizes would have relatively little impact on production time because of the fixed time for setting up a new production line. The delivery time is determined by destination, which may change with the diversification into new markets.

Efforts to reduce the order cycle to 2 to 3 months would require a tightening of the inbound supply chain, primarily through improvements in the trade corridor linking Phnom Penh with the international container terminals near Ho Chi Minh. This would include both the road linkage via Bavet and container barge connection from Phnom Penh port. Current efforts to finalize the transit agreement with Vietnam and to introduce simplified procedures for the movement of goods in transit should ensure reliable connections to scheduled container shipping services.

This trade corridor provides a shorter transit time than the current route through Sihanoukville due to the combination of a larger number of scheduled services and more direct connections. Initially the savings will be relatively small because the new container terminals have yet to attract the anticipated traffic. The shipping lines have been cautious about expanding services following the global financial crisis. While these ports already offer better connectivity, it is anticipated that the time savings will increase over the next five years. For Asian trade the savings in the transit time to Asian sources of fabric and to customers in Japan, South Korea and Taiwan should be 1 to 2 weeks while for the European trade it would be 2 to 3 weeks.

Additional savings in transit time can be achieved through improvements in trade facilitation are needed to reduce the clearance ties for both the imported fabrics and the exported garments. These would build on the current Customs Reform and Modernization program but target the border crossing at Bavet and the Phnom

Penh port and focus on the other border agencies especially CamControl. In addition to developing a single window for processing documents, there needs to be greater use of risk management to reduce the amount of physical inspections, expedited testing procedures, less direct interaction between shippers and regulators and better control on hours of operations.

Another opportunity for reducing the order cycle is improving the management of the inbound supply chains. This applies primarily to contract manufacturers since the vendor factories already have tight control over their supply of inputs. A reduction in the time for procurement of textiles can be achieved through various initiatives which can provide savings of 1 to 2 weeks in delivery times for fabrics:

- *participation in the selection of fabrics,*
- *collective ordering in order to negotiate a higher priority in the production schedule,*
- *domestic facilities for dyeing and finishing fabric,¹⁴*
- *sourcing arrangements with smaller factories, and*
- *rapid delivery for the initial delivery*

There have been proposals for development of upstream production of fabrics, but this is not feasible in the short-to-medium term because these activities require greater skills and are more capital and energy intensive than garment manufacturing. Equally important, Cambodia does not produce the raw materials required unlike many of its competitors.

In order to create an environment that is attractive to foreign investors, Cambodia needs to develop garment clusters that can accommodate bonded factories, offer reliable utilities and logistics services, provide access to a large labor pool and attract supporting industries. An extensive network of special economic zones exists, but only three have had any success and these have a random collection of enterprises. Currently, most garment manufacturers prefer to operate outside of the zone near Phnom Penh or in Kandal Province because they have the same ability to import fabric under temporary admission and set up bonded storage but without restrictions on location or the activities they can pursue. To be successful, any new clusters should be designed jointly by the government and GMAC and offer the same advantage.

The relatively high borrowing costs in Cambodia do not affect vendor factories which have access to finance raised on international markets by their parent company. However, they prevent the transformation of local contract manufacturers from CMT/Assembly to OEMs and ODMs. These manufacturers rely on retained earnings for working capital and limit their investments in new equipment. However, if they are to improve their control over the supply chains and produce higher value goods with more costly inputs, then it is necessary to create financial instruments specifically for this sector.

Even with development of clusters and better access to capital, the contract manufacturers need to develop knowledge-based competencies in the areas of sourcing fabrics, supply chain management, lean retailing, managing financial risk and human resource development. It is difficult for individual firms to finance training in these areas but it would be possible with support from the government and the GMAC. The same applies to the training skilled operators where the risk for individual firms is that the trained operators will be poached by other companies. Currently, there are two major training institutes serving the apparel industry.¹⁵ However, the training activity needs to be expanded in both scope and scale, which will require support from the RGC.

¹⁴ Equipment for dyeing and finishing would enable firms to maintain stocks of the more commonly used grades of fabric in greige form. This would reduce lead times and increase flexibility but primarily benefit ODM manufacturers. OEM manufacturers would have to convince buyers that they could meet their specifications and create an additional round of sample approvals.

¹⁵ Cambodia Garment Training Center (CGTC) is funded by Agence Française de Développement (AFD) and run by GMAC and offers training in basic sewing skills; Cambodia Skills Development Center (CASDEC), which is largely financially self-sufficient; offers training in technical and industrial engineering, especially targeting middle management offering assistance for production management, including workflow, planning, controls, and supervision.

Recommendations

- RGC should encourage contract manufacturers in particular to engage in collective ordering of inputs in order to benefit from economies of scale and reduce costs;
- Garment manufacturers should be incentivized to move up the value chain from production of basic apparel which is increasingly crowded to producing niche higher-value items;
- Improve the performance of the trade corridors to ports in Vietnam. The Vietnamese ports (Ho Chi Minh, Cai Mep) have more frequent vessels calls with direct shipping which would significantly reduce sailing times and therefore order cycle times;
- The government and private sector should develop garment clusters in order to attract more FDI. The clusters should offer reliable utilities and logistics services and help also to provided access to a large pool of labor, credit and attract support services; and
- RGC should streamline and expedite the issuance of certificates of origin. Current practices take too much time while the cost for renewals is high.



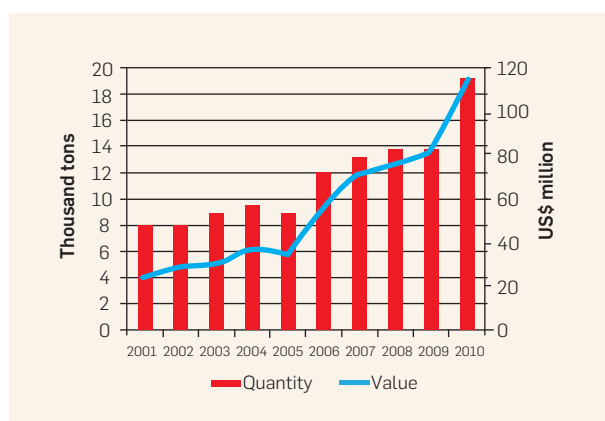
4. FOOTWEAR

4. Footwear

4.1 Trade

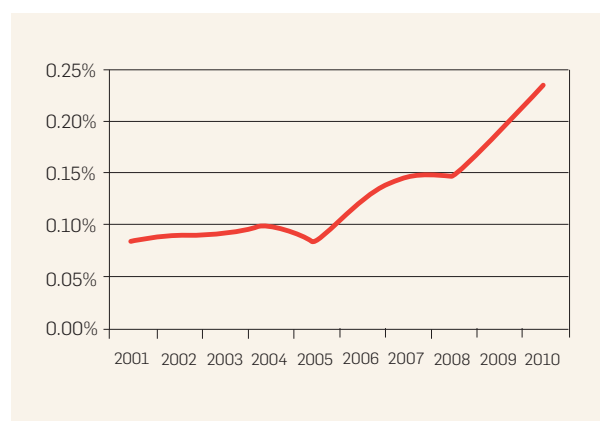
Over the past decade, global exports of footwear were increasing steadily until 2009, when there was a contraction due to the financial. Overall, the value doubled in the eight year period ending in 2010 and this trend is expected to continue. During the same period, the value of Cambodian footwear exports tripled (Figure 9). However, its share of global markets remains well below 1 percent (Figure 10). The increase in value was due to an increase in volume but more importantly to an increase in the unit value, which doubled during this period. While footwear remains the second largest exporter product, its value is only about 6 percent that of garment exports.

Figure 9: Cambodia's leather footwear exports



Source: UN-Comtrade, 2012.

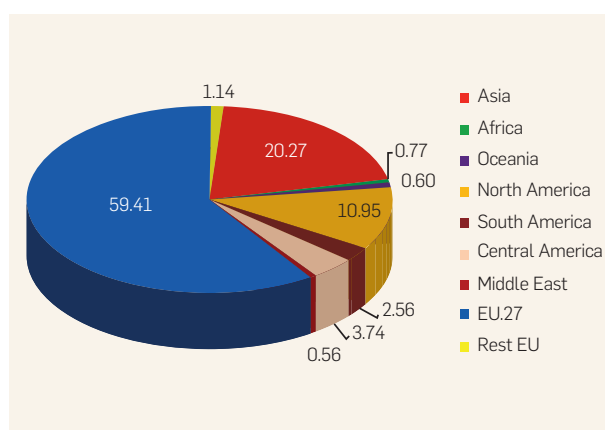
Figure 10: Share of leather footwear exports



Source: UN-Comtrade, 2012.

Almost 60 percent of the Cambodian footwear is sold to the EU, primarily to the United Kingdom and Germany. Other significant markets are Asia with around 20 percent, most of which is destined for Japan, and North America with around 10 percent, most of which goes to the United States (Figure 11).

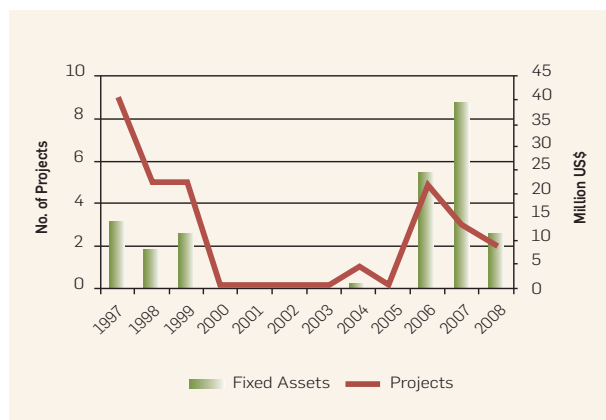
Figure 11: Cambodian footwear export destinations by % of value



Source: General Department of Customs and Excise, 2011.

Cambodia's capacity for footwear production has expanded significantly in the past four years with 20 new factories opening. This was after a period of five years of no investment (Figure 12). Some of the new factories are derivatives of earlier investments, but there are also new, large factories specializing in the production of shoes with textile uppers. The growth of the industry reflects a shift in production from neighboring countries to take advantage of low production costs and Cambodia's duty-free access to the EU under the Everything-But-Arms (EBA) initiative. All 37 factories producing footwear have some level of FDI.

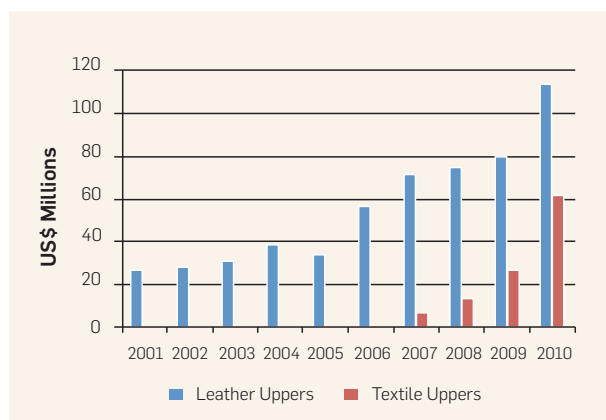
Figure 12: Footwear projects approved in Cambodia 1997-2008



Source: UNCOMTRADE

Although most of the footwear exports are shoes with leather uppers, the proportion of shoes with textile uppers has increased rapidly in recent years (Figure 13). The latter have an FOB value about 50 percent higher (Figure 14). While many factories produce whole shoes a significant portion import pre-made outer soles because the machines for the outer soles are relatively expensive. In contract manufacturing the production of uppers and inner soles are relatively labor intensive.

Figure 13: Footwear exports by type



Source: GMAC, 2011

4.2 Business models

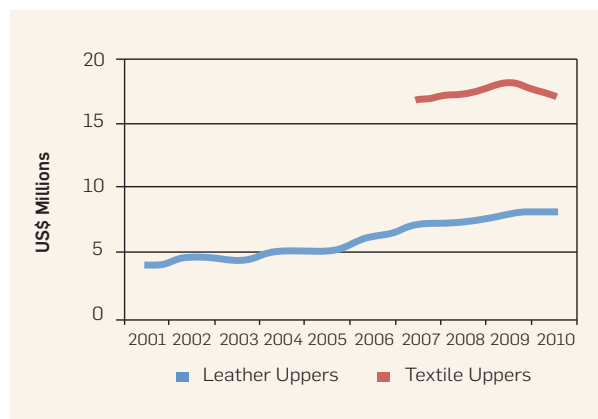
Organizing principal

The responsibility for managing the footwear supply chains rests with the shoe factories; however, their roles in structuring the inbound and outbound supply chains vary. The two prevailing business models are vendor factories and contract manufacturers. Vendor

factories are locally incorporated production units of foreign corporations. They are directly managed by their overseas headquarters, which allocate orders to factories according to capability, cost structure, and capacity.

The contract manufacturers have stand-alone factories that produce finished goods according to specifications provided by the buyers.

Figure 14: FOB value of footwear exports



Source: UNCOMTRADE; assumes 0.75 kg per pair

They compete for production contracts and procure most of the inputs. In addition to these factories, there are domestic firms that provide complementary services including dyeing, trimming and supplying locally produced packaging material.

Suppliers

Most of the leather and other raw materials used to produce footwear are sourced from within the region but very little is produced in Cambodia. For vendor factories, sourcing of inputs is arranged by the parent company, which takes advantage of its size to obtain favorable treatment. In most cases, the parent company has long-standing relationships with their suppliers and many are from the same country as the parent company, e.g. China, Thailand, Taiwan, and Vietnam. The parent company often purchases the inputs on FOB terms and arrange for their delivery to the factory.

The contract manufacturers are at a disadvantage in sourcing inputs because of their size. Their suppliers are usually smaller and the prices are higher. Most inputs are purchased CFR with the shipment arranged by the supplier.

Buyers and distributors

Vendor factories sell their products to brand manufacturers, wholesalers and retail chains. The contract manufacturers sell primarily to wholesalers and buying agents. The larger factories market their services directly, while smaller manufactures often rely on the Footwear Order Center Cambodia (FOCC)¹⁶ to identifying buyers and, in some cases, to manage product quality. Footwear exports are usually shipped on FOB/FCA terms with the factory responsible for delivering the goods to the loading port or the warehouse of the buyer's nominated forwarder.

Span of control

The vendor factory has minimal control over its inbound and outbound supply chains. The headquarters manages everything from sourcing of inputs and managing contacts with buyers to product design, marketing, and finance. The factory arranges the logistics for movement between the factory gate and the forwarder's warehouse or loading port. Interactions between factory and buyers are normally limited to an exchange of samples. As a result, the factory has limited opportunities to increase the value of its finished goods. It will be allocated the production of higher value goods once it has demonstrated its capability in terms of productivity and quality control.

Contract manufacturers have a greater control over their supply chains. They are involved in not only sourcing inputs but also developing basic designs, obtaining trade finance, and arranging the local logistics. However, the marketing and branding of the products is done by the buyers so the manufacturers have no direct interaction with the final market or consumers.

Concentration

About six of the shoe factories in Cambodia are large vendor factories that employ on average about 6,000 workers. They have a relatively high productivity, about 750 pairs per worker, due to investment in modern equipment and are estimated to account for about half of the total domestic production of 50 million pairs per year. The remaining factories are smaller, employing an average of 1,500 employees. These are estimated to produce between 2,000 and 3,000 pairs per day or about 500 pairs per employee per year.

4.3 Supply chain performance

All of the factories surveyed were vendor factories. Their supply chains are relatively simple. There are few intermediaries other than the foreign owners and forwarders nominated by the buyers, as shown in Figure 15. The leather and fabric used for production is imported primarily from China, Taiwan and South Korea. The factories purchase leather direct from tanneries though they frequently have problems with the quality. Fabric is ordered from suppliers nominated by the buyers. The suppliers usually arrange the shipments. These are on an FOB basis with weekly shipments in containers. The average time for delivery of the inputs is 30-45 days.

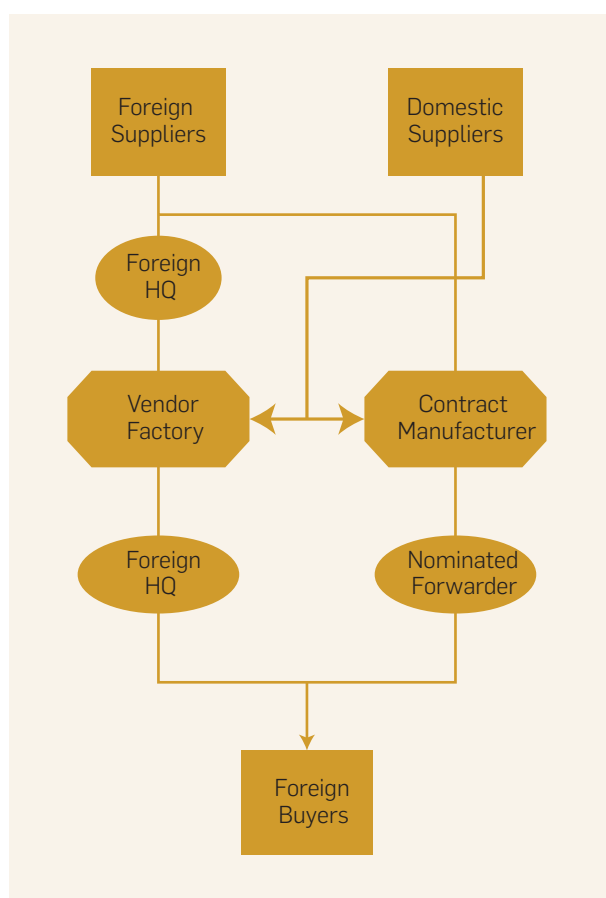
Payment is made at the time of delivery or 15-40 days thereafter. The cost of delivering the container from the port to the factory is US\$400-US\$700 for a 20-foot container and US\$600-\$1,000 for a 40-foot container. A similar cost is incurred for the movement of the footwear from the factory to the loading ports/airport.

Most inputs are imported duty-free with a value per container ranging from US\$15,000 to US\$55,000. The trade documents that present the greatest problem are import permits and technical certificates which normally require 3-5 days to obtain instead of one day.

The headquarters arranges the shipment of exports, which are shipped on a weekly basis. The principal destinations are Japan and the EU. Nearly all the exports are shipped by sea in containers that are loaded at the

¹⁶ FOCC was established to provide support to all international footwear buyers and factories in Cambodia. It promotes new orders from US, UK, EU and Japan.

Figure 15: Footwear supply chain



factory. The movements are arranged by forwarders or shipping lines. The smallest shipments are 1-2 TEU per week with 3,000-5,000 pairs per TEU. A typical shipment however is 3-15 TEU with a value between US\$110,000 and US\$550,000. Airfreight is used for less than 10 percent of the shipments.

The order cycle from when the initial order is confirmed to when the first shipment is loaded onto the vessel is 60-90 days for new orders, and 30 days for repeat orders. Another 12 to 20 days is required for the transport by sea to the importers warehouse. The principal document required for the exports is the certificate of origin, which requires 3-5 days to obtain and is usually issued post shipment.¹⁷ Payment is received within 7-30 days of shipment, either ex-factory or when loaded on the vessel. Financing for investment and working capital is the responsibility of the headquarters. The principal financial risks are

those associated with fluctuations in demand, prices and exchange rates.

The principal trade corridors used for exporting the footwear link the factories with the loading ports. The firms located in Manhattan SEZ near the Vietnamese border use Cai Mep while those located in or around Phnom Penh usually use Sihanoukville.

4.4 Opportunities and constraints

Growth of the Cambodian footwear sector has been dependent on foreign investments. Opportunities to increase the average value per pair are limited because larger vendor factories are managed overseas and contract manufacturers lack the scale to develop and promote their own designs. Cambodia's duty-free access to the EU has attracted foreign investors from South Korea, Vietnam and other countries that do not enjoy preferential treatment. However, this advantage is fading as Cambodia's competitors have joined the WTO (China in 2001 and Vietnam in 2007) and the EU has reduced its tariffs on footwear.

Cambodia, like its competitors, faces wage pressures as the footwear sector is having difficulties in recruiting skilled craftsmen and qualified supervisors.

4.5 Objectives and strategies

Footwear exports account for less than 2 percent of Gross Domestic Product (GDP) and this share has changed little over the past decade. Nevertheless, it generates significant employment and has the potential to grow rapidly in the future. The principal benefit to the economy from this expansion is the generation of employment for the urban population. At the same time, its growth will be challenged by rising wages and competition from its neighbors. In order to sustain its growth, it will have to increase both the average value and value addition of its footwear. This can be accomplished by improving the quality of production and the proportion of local inputs. Unlike garments, competition is less affected by order cycle. At the same time, there are greater opportunities for local design and procurement since there is less diversity in fashion and in materials.

¹⁷ There is a problem with correcting mistake on a CO Application when joint inspection takes place. Informal fees are exorbitant. In order to accept a correction, the CO can be applied post shipment.

Any strategy for achieving growth must differentiate between vendor factories and contract manufacturers since the activities of the former are controlled off shore whereas the latter is more responsive to local market conditions. With the current structure of the industry, overseas managers make the decisions regarding markets and product value for half of the exports. For the other half, decisions are made locally but the factories are smaller and have limited capacity to move up the value chain. The strategy for the vendor factories would focus on creating an attractive environment for FDI. In the short run, the challenge will be to improve productivity and quality of output of the factories so that their owners will allocate to them to produce higher value products. In the medium term, the challenge is to create an environment that will attract companies that produce higher value footwear. The strategy for the contract manufacturers would focus on incentives for increasing the span of control of contract manufacturers. This would include greater involvement in sourcing inputs and marketing their production capacity to buyers interested in small to medium orders of high value footwear.

4.6 Implementation

Specific activities to support this parallel strategy might include:

- *developing enclaves to encourage both foreign investment in factories and domestic production of inputs*
- *improving training for both management and semi-skilled labor and*
- *increasing the availability of finance to support the growth and evolution of the contract manufacturers*

The enclaves would be in the form of special purpose zones. One would be for of leather processing and include the necessary water treatment facilities and other environmental safeguards. This would be used to expand tannery capacity and develop leather dyeing and finishing activities in order to increase the supply and improve the quality of local leather. This would produce a significant increase in value addition since leather accounts for a significant part of the cost of footwear with leather uppers. Since there would continue to be significant competition from low-cost suppliers in China and Vietnam suppliers, this enclave would focus on the providing a reliable supply of higher value leather.

Another enclave would support a cluster for shoe factories, suppliers of inputs and providers of services. It would encourage local production of inputs including lasts, soles, lining, packaging, provide bonded storage for generic inputs and create opportunities for joint procurement of inputs and logistics services. The access to local inputs and services would be of immediate benefit to the contract manufacturers. Over time, it is expected that the vendor factories would also increase local procurement.

These enclaves would allow for a reduction in order cycles. At present, the typical order cycle up to the point of export is 1.5 - 3 months with imported inputs accounting for about half of this cycle. By introducing local production and bonded storage for generic inputs, the order cycle could be reduced by 2-4 weeks.

The challenge in developing both enclaves is to provide sufficient value for potential locators. In order to do this, there would have to be substantial private sector involvement in both the planning and management of these enclaves.

Activities related to training require collaboration between the industry and government to provide training in areas that individual companies lack the capacity or resources to provide. The selection of the curriculum would be done jointly; the private sector would take the lead in recruitment of instructors; and the government would provide support for the operation of a common training facility. The assignment of responsibility for specific areas would be assigned based on interest, for example:

- *a private sector effort to provide management training in lean manufacturing and quality control,*
- *a public sector effort to train managers in the evolving physical, social and environment standards*

of importing countries, and

- *a public-private effort to teach new workers the skills of shoe making.*

The target audience for the training would be the contract manufacturers since the vendor factories already have their own training programs. However, if the training is successful it is expected that the vendor factories would also make use of it in training their employees.

Improvements in trade finance are required so that the contract manufacturers can expand their activity and extend the involvement in the inbound supply chain to include procurement of inputs and participation in the design process. These changes require an increase the working capital requirements and extend the cash-to-cash cycle. The goal is to provide financing on terms comparable to that available to competing firms, in this case the vendor factories. This would require a joint effort by government and the commercial banks to reduce the risk premiums associated with lending to this sector. The expected increase in cash-to-cash cycle would still be within tenor currently on offer.

In addition to these activities, the development of an efficient corridor connecting to the new container terminals downriver from Ho Chi Minh Port would reduce the order cycle and lower freight rates for both imported inputs and exported products.

Recommendations

- The foot wear sector in Cambodia has great potential for growth but RGC should encourage the increased use of locally sourced inputs as well as greater value addition in Cambodia;
- Government and the private sector should cooperate to develop footwear industry clusters to increase volume, have access to a larger pool of labor and obtain the benefits from economies of scale from co-location;
- Develop the trade and transport corridor to Cai Mep in Vietnam, which has higher frequency of vessel calls to key source markets for inputs and markets for exports.
- Increase the availability of finance for contract manufacturers in particular, so they can increase quality and capacity.

The background of the slide features three vertical strips of silk fabric. From left to right, the colors are a warm orange, a vibrant red, and a deep navy blue. Each strip has a horizontal band of a different color, with fine stitching visible at the intersections. A solid cyan horizontal bar is positioned across the middle of the image, containing the text.

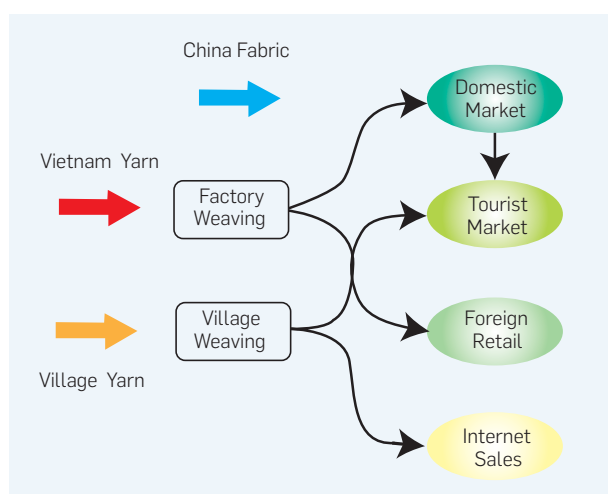
5. SILK TRADE

5. Silk Trade

5.1 Trade and production

Cambodia is located between the largest exporter of silk yarn, China, and one of the largest exporters of traditional silk, Thailand. Its role in the global silk trade is therefore overshadowed by the larger suppliers in the region. The Khmer silk sector generates significant employment for households in rural areas, however.

Figure 16: Material flow for silk trade



At present there are about 20,000 weavers in Cambodia, where the industry is structured around village-level production using handlooms.

This silk industry has not developed a uniform supply structure due to its diffuse, cottage-industry level of development. The variety of product flows is shown in Figure 16. Yarn is obtained from Vietnam for production of silk fabric for export and domestic market. Silk fabric is imported from China for domestic consumption. Domestically produced yarn is used for production of fabrics for export but accounts for only about 2 percent of total yarn consumed.

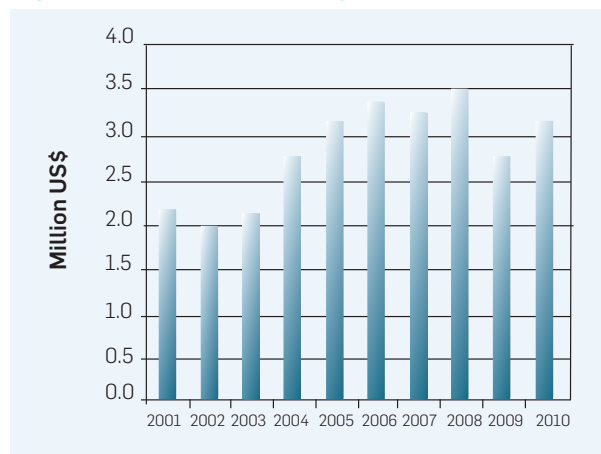
The reliance on imported yarn is due to two factors. First, the returns to farmers are too low to encourage large-scale production of cocoons because the land for growing the mulberry bush can also be used for other crops that produce higher yields per hectare. As a result, the farmers treat this as a marginal enterprise even though it could provide non-seasonal work. Second, Vietnam and China can produce yarn at a lower cost.

Silk yarn from Vietnam is usually purchased through informal channels because of the relatively small volumes, the proximity of suppliers and its low cost. The yarn is variable in quality and consistency, affecting both its appearance and its ability to absorb dyes. Because of this difficulty, formal imports of yarn through China are being considered by some of the larger manufacturers.

Only a small portion of the domestic production of silk products goods is exported. Gross revenues are estimated to be around US\$3.5 million based on the data from Cambodia's trading partners, as shown in Figure 17.¹⁸ This amount is less than the cost of the yarn imported from Vietnam or silk fabric imported from China, which shows that most silk is absorbed in the domestic market or sold in low volumes to tourists.

The informality of the current arrangements for importing yarn can lead to difficulties in obtaining a certificate of origin from the Ministry of Commerce (MOC). This is not a major impediment at present since these certificates are only required for shipments to the EU or the US over €6,000.

Figure 17: Cambodia silk exports



Source: UNCOMTRADE mirror data

¹⁸ Accurate information is not available on these flows because much of the yarn is smuggled in from Vietnam, exports of silk fabric and garments move through a variety of outlets including local retail and small shipments, and the production of silk fabric for domestic consumption is not reported.

However, it could become a problem if there were growth in sales to foreign retailers. Formality of production will, therefore, be necessary if silk is to be sold to foreign retailers in significant quantities.

5.2 Potential growth in production

The outlook for growth in production differs for the production of yarn and finished goods. In the last few years, there has been a marginal increase in the number of breeders. The competition from other crops that produce higher yields however, and the time and effort required to manage the larvae are expected to discourage significant increases over the current level of production. More importantly, the farmers cannot compete in terms of cost with the Chinese producers of cocoons from bivoltine silkworms.¹⁹ The only area where the farmers are competitive is the production of cocoons from polyvoltine hybrids of the traditional Golden silk (*Bombyx mori*). This must be done locally primarily at the village level production since the yarn must be hand-reeled.

There is more potential for growth in the production of silk fabrics using imported yarn since weaving does not compete directly with other agricultural activities and yields higher returns than the production of cocoons. Domestic demand for fabric is expected to increase as the population increases and disposable incomes rise.²⁰ Assuming a continued preference for locally woven fabric, domestic producers will be able to compete with Chinese manufacturers even without access to large-scale silk production using power looms such as exists in Chinese factories. Cambodia will also be able to compete in the export market since Cambodia's silk exports are marketed as handicrafts and thus require the use of handlooms.

The growth in exports depends on the ability to identify new markets and improve both the quality and availability of finished products. Currently, the larger silk producers are constrained by demand while the smaller ones are constrained in terms of cost and availability of high quality yarn. Until these constraints are overcome, the sector will fail to attract the attention of business and commercial banks. The decentralized nature and size of the industry also represents a constraint on higher investment.

5.3 Supply chains

The silk supply chain includes a number of productive activities such as sericulture, processing, external sourcing and marketing (Table 6). The first three are conducted at the village level either by individuals or cooperatives. These are concentrated in the northwest of Cambodia, where local yarn is woven and incorporated in the final product. In the southeast, imported yarn predominates the weaving process.

Table 6: Activities in the silk industry

Activity	Tasks	Actor
Sericulture	Mulberry cultivation, raising silkworms, cocoon production	Farmer/breeder
Processing yarn	Sorting, cooking, reeling, skeins/warping	Artisan
Processing (wet)	De-gumming, bleaching, dyeing, Warping	Artisan
External Sourcing	Import raw silk*	Importer
Fabric Production	Weaving	Artisan
Finished Goods	Cut, make, trim (CMT)	Semi-skilled labor
Marketing	Designs	Designer
	Markets	Entrepreneur

* Raw silk refers to untwisted and un-degummed silk thread that has been reeled to produce a continuous silk filament of great length

¹⁹ The rising labor costs in China and Vietnam are raising the price of imported yarn and fabric but both countries benefit from economies of scale in reeling, which is the major labor cost in production of yarn from poly-voltine cocoons.

²⁰ By one estimate, 70 percent of fabric is used domestically for satisfying local demand, while the other 30 percent of fabric is used to meet demand by tourists (Silk fabric being a typical khmer souvenir that tourists like to buy) and by cambodian expatriate.

The principal participants in the silk supply chain are importers and suppliers of silk yarn, weavers, intermediaries (both pre- and post-weaving), organizations that coordinate the production, firms that produce finished goods, local retailers and local buyers for export markets.

The production of finished goods, other than simple products, is done at factories located around Phnom Penh. The factories are owned by exporters, who also take responsibility for design and marketing. The challenge for these manufacturers is to produce designs that highlight the uniqueness of the Golden Khmer silk yarn while at the same time offering styles that appeal to foreign buyers. Marketing is also challenging because Cambodia produces insufficient volume to be of interest to large foreign retailers and distributor, nor does it have brand or market recognition to compete as a boutique product internationally. The cost of supplying individual retail outlets and the lack of large distributors for silk products poses an additional challenge.

The process for importing yarn to Cambodian wholesalers is as follows: a collector based in Vietnam aggregates the yarn. A trader receives an order from a Cambodian wholesaler, purchases the yarn and ships it informally across the border to the wholesaler in Cambodia who stores the yarn and sells it to the weaving factory. The Cambodian domestic market is dominated by four wholesalers located in Phnom Penh.

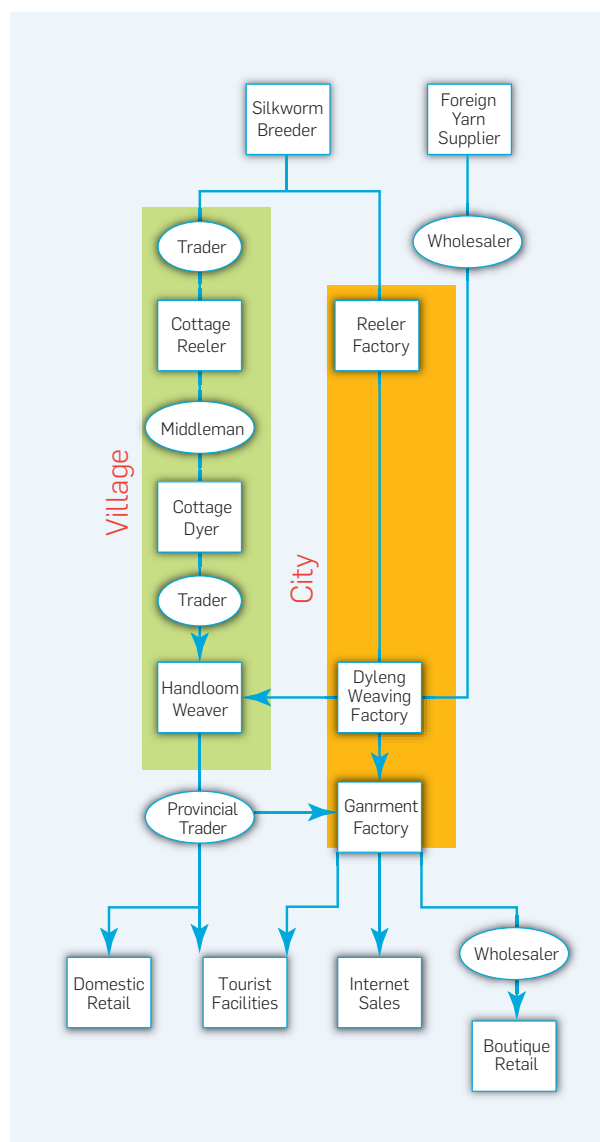
Once in Cambodia, the weaving of the yarn creates added value to the final product. Weaving operations vary in size. Individual households sell their output through the traditional village marketing system.

The supply chain is highly fragmented with different participants performing individual activities, as shown in Figure 18. The exchange of intermediate goods between the participants is managed by traders or middlemen. In many villages, cooperatives or NGOs have integrated these activities and eliminated intermediaries. However, a provincial trader is often involved in distribution of finished goods to domestic retail outlets.

Small weaving enterprises sell their output through the commercial village marketing system to medium-sized factories in the urban marketing system. They purchase raw silk from suppliers on credit and often resell the woven fabric to wholesalers/traders on a cash basis.

There are also larger reeling and weaving factories located in urban areas that use modern equipment. They subcontract farmers groups and provide inputs to farmers on credit, including imported species silkworm eggs and materials necessary for their care. The farmers are then required to sell their cocoons back to the company as raw material. There are a few of these located around Phnom Penh.

Figure 18: Silk supply chain



Efforts by the government to promote the silk industry have focused on local production but leaves the marketing aspects to agents. In contrast, the larger private companies integrate production and marketing.

The finished products that are exported include plain silk fabric, scarves, handbags and cushions. The most common destinations are the US, EU (mainly France, Italy, Germany, and Switzerland), Singapore, and Australia. Distribution channels include local retail, internet sales and exports to individual retailers. The domestic retail is a mix of higher value goods sold through hotels and local boutiques and lower value goods produced for the domestic market but purchased by tourists. Internet sales are business-2-consumer (B2C) with products sent directly to the consumer.

The various markets for Cambodian silk products are summarized in Table 7.

Table 7: Markets for finished products

Market	Type of yarn
Local Khmer	Almost 100 percent made from imported yarn, the cost of the yellow yarn is higher for a less usable quality (in the eyes of weavers)
“Low-end” tourist (incl. expats) “High-end” tourist (incl. expats)	Mostly imported silk from Thailand and Vietnam and some mixed with synthetic yarn – Golden Khmer silk yarn is too expensive for this market. A limited number of Golden Khmer silk yarn products available, the rest made from imported white silk yarn (in a few hotel shops as well as some high street shops)
Sophisticated export	A limited number of Golden Khmer silk yarn products

Source: Cambodian Sericulture Stock Taking Report

5.4 Business models

The business models used in Cambodia can be differentiated by their sourcing of silk yarn and by the extent of integration of their supply chains. The first model is the village weaver that produces fabric exclusively from local yarn. The second is the handicraft manufacturer that produces finished products using fabric produced in the village from a mix of local and imported yarn. The third model is the commercial manufacturer that produces finished products from fabric produced by weaving factories that use imported yarn but may also incorporate yarn from village manufacturers.

Organizing principal

The manufacturers of the finished products organize the outbound supply chains. For products made from local yarn, cooperatives or NGOs purchase yarn from local weavers, produce small volumes of handicrafts and sell these direct to retailers and final customers for sale. In the traditional arrangement, traders would have performed this function but they are not able to provide the scale or management skills (quality control and designs) required to produce goods for export. For products made from imported yarn, the firms manage the manufacturing and sale of garments, accessories or household furnishings.

Span of control

The span of control of the organizing principal varies. Village level organizations are more likely to involve themselves in controlling the quality and quantity of inputs provided by the breeders, reelers, and dyers. The larger commercial manufacturers buy their imported inputs through local wholesalers and their domestic inputs through local traders. The organizing principal has more control over the outbound supply chain since most of the sales are made directly to local retailers or to foreign customer via direct distribution channels such as the Internet.

5.5 Supply chain performance

The producers surveyed produce silk garments from a combination of local or imported yarn and dyes. The finished goods are sold through local outlets and also shipped directly to Europe, North America and East Asia.

Imported yarn costs about US\$50 per kilogram. It is purchased from local wholesalers who deliver the yarn within a few days and are paid in cash. Locally produced yarn is purchased directly from the producers. The delivery time, which includes dyeing the yarn, is up to 15 days. Payment is on a cash basis paid at time of delivery.

For exports, the firms use a mix of sea and air shipments, the duration of transit and associated costs vary according to the method of delivery. Some firms ship by sea as Less than Container Load (LCL) cargo and by airfreight (60-70 percent by ocean, 30-40 percent by air). Others rely on courier services (e.g. DHL, UPS, TNT). The order cycle from confirmation of order to delivery to the destination port/airport is as little as 1-2 weeks for air shipments and as much as 3 months for shipments by sea. Typical shipments are relatively small with about 100-700 pieces with an average value of the US\$2,000-US\$10,000, but orders can be as small as US\$400 and as large as US\$30,000.

Payments for exported silk products vary according to the sales channel. Exports are sold on an FOB basis to wholesalers and retailers but on a CFR basis through Internet sales. For FOB shipments, a 30-50 percent advance is paid at the time of order confirmation and the rest is paid at the time of shipment or one week thereafter. For CFR shipments, payment is made at the time the order is confirmed or when the goods are shipped. As a result the cash-to-cash cycle is only about 2 weeks. The producers rely on their own funds for working capital.

5.6 Objectives and strategies

The government's main objective for the silk sector may be to increase employment for the rural poor and older family members. The silk industry represents a very small share of the country's economic activity and trade, and currently lacks the inputs, scale and organization to be a major contributor to the domestic economy or Cambodia's export mix. However, as a small-scale, village-based activity, it provides a significant level of rural employment especially for women or the infirm. An appropriate strategy for increasing the volume of production at the village level may therefore be welfare-enhancing for local communities.

The RGC's policy options for expanding this industry may be most easily targeted at introducing modern management of productive technology, perhaps through the introduction of cooperatives in each province that can form a management structure and provide a framework through which to target reforms in the industry. The production of silk products for export continues to be a handicraft industry based on village-level craftsmen, which hampers the aggregation of the sector into more efficient economies of scale. While production can expand or contract to meet demand, it is not possible to introduce modern management or production technology within the limits of the current industry structure. Handlooms allow the industry to fill small orders with short delivery schedules but the outdated equipment makes it difficult to control costs and quality. If the industry is to grow but continue to generate rural employment, then a new mechanism must be developed for organizing this activity.

Cambodia faces significant competition from China for manufactured silk products and from Thailand in traditional hand-woven products. This competition extends to Cambodia's domestic market. Since Cambodia lacks the scale to compete, it must currently focus on niche markets. The current mix of final products—primarily scarves, simple accessories and home furnishings—offer little in the way of style. Instead, they are marketed based on the quality of the fabric and the cachet of being produced in Cambodia using traditional means. The high-end products use "Golden Khmer silk yarn" but the supply relies on small weaving operations creating problems with the reliability and consistency of the yarn.

A diversified set of distribution channels is used including local sales to tourists, internet sales and supply contracts with boutique outlets. Any further diversification would require a significant increase in scale. In order to grow the Cambodian silk industry in the long run, it will necessary to develop new products supported by new distribution channels. These need to be high-value products since Cambodia cannot compete on cost or scale. One possibility is to refocus on the production of fabric and expand village level production and emphasize color and quality through the formation of cooperatives and solid training for local people toward quality and efficiency.

5.7 Implementation

Efforts to expand production and develop new distribution channels will require cooperation between the public and private sector. In order to make the transition from manufacturing handicrafts to supplying fashion accessories, it will be necessary to increase scale of production. This can be achieved through consolidation of production based on cooperatives, mergers, or marketing arrangements. Because of the significant level of involvement of NGOs in exporting silk products, this effort would require collaboration from government and the private sector.

The consolidation of production would be complemented by adjustments to the inbound and outbound supply chains. By increasing the size of orders for yarn, dyes and other inputs, the industry can develop a direct relationship with suppliers and customize their orders. By consolidating the distribution of their products, they can accept larger orders and reduce distribution costs. Individual producers can develop joint marketing effort with individual brands treated as separate product lines. There are also opportunities for reducing costs within the supply chain especially through tighter integration of the inbound supply chains and consolidation of shipments on the outbound supply chains.

The main focus should be on increasing the value of the fabric itself, however. Since silk fabric is a standard product, this requires differentiation in the quality of weaving, dyeing and product design. One option is to open a second line of business that focuses on producing higher quality fabric. This would be sold to high-end producers of fashion accessories and household furni-shings. This would take advantage of the flexibility of the village based system but introduce improved quality control. It would transfer responsibility for design and marketing to those more familiar with the market (but not preclude manufacture of finished products or the development of in-house designs). An example of this strategy is presented in the box below.

A useful example of this was the pioneering efforts of the Jim Thompson Thai silk company which was formed shortly after World War II to revive the Thai silk industry. It expanded its business by building a relationship with the cottage industry in the village of Ban Krua and encouraged them to use better looms and dyes. Because of its texture, the silk was more suited to home furnishings and Thompson emphasized the bright colors and integrating the fabric into contemporary design. He provided access to overseas markets through contacts with high-end retailers in the US and through retail outlets in Bangkok. Over the decades the company has evolved its product line from fabrics to garments and accessories and home furnishings and now collaborates with international designers in furniture design.

The company currently operates factories where weaving, printing, design and tailoring are performed. It promotes sericulture by raising and selling bivoltine silkworms in the factory and working continues to work with village breeders under a subcontracting system.

The government can develop a more efficient connection between Vietnamese suppliers of yarn and domestic buyers by simplifying border-crossing procedures. This would encourage the buyers to formalize their imports and, in the process, cut out various intermediaries. The weaving factories could import yarn directly from producers and establish a relationship to ensure consistency and quality of the yarn.

The government can work with the private sector to encourage a joint purchasing effort. It can support marketing of the industry to complement private sector efforts to market their product lines. Finally it can coordinate with the private sector to develop and enforce standards for a Cambodian Silk Quality Assurance Label and to provide training to factories on Standards, Metrology, Testing, and Quality (SMTQ).

Recommendations

- RGC can implement policies to encourage the formation of coope-ratives in order to increase the scale of production and rationalize the supply of yarn
- Encourage the production of higher quality fabric through cooperatives or marketing associations (still using the village-based approach emulating the Jim Thompson model.)
- Use the cooperative structure tomake formal business relationships with Vietnamese suppliers in order to establish a regular supply chain and bargain for better input prices.
- RGC can initiate a joint purchasing effort on behalf of the cooperatives or marketing associations
- RGC can work with appropriate agencies (such as the Institute of Standards Cambodia) to develop and enforce relevant standards to promote exports.

6. LOGISTICS



6. Logistics

6.1 Trade finance

The majority of demand for trade finance is to provide working capital to increase the size orders that exporters can accept. This is especially important for exports of agriculture products such as rice, rubber, cassava, maize, and cashew nuts. Trade finance has been less important for imports of inputs to the production of exported products. Instead the focus has been on orders for petroleum products, construction materials, car, agricultural equipment, pharmaceutical products, and fast moving consumption goods.

The annual value of the various forms of trade finance is estimated to be in excess of US\$100 million, which is a relatively small percentage of the banks' total portfolio. Import financing is primarily in the form of L/C with more than US\$200 million issued per year.

Available instruments

The major banks vary in the trade finance products they offer. Some focus on L/C but others provide a broader range of services including guarantees (advance, payment, retention, shipping) and documentary collections. Most banks offer discounting and pre-shipment financing for exports. Domestic L/C are for exports that require domestic inputs are available, but there is little demand to date. A few banks offer trust receipts for import transactions.

L/C for imports are issued in amounts up to several million US dollars for periods of 1-3 months although longer periods can be arranged. The fee charged for L/C varies from 0.10-0.15 percent per month plus an issuing fee. The collateral required may be as much as 100 percent of face value. The terms of the L/C do not require that the bill of lading be issued in the name of the issuing bank but this is preferred.

The most common method of payment for both imports and exports is TT followed by a sight draft. Time drafts are less common.

Loans

Commercial banks offer loans for working capital in the form of overdrafts with a defined credit line. The maximum tenor is 180 days to one year. The loans are backed by collateral and the balance sheet. Where there is a clean financial statement and other indicators of financial soundness, loans may be issued without collateral. Banks prefer lending to exporters for specific contracts rather than for general working capital.

For exports arranged through L/C, banks will discount the face value of the L/C up to 70-80 percent. However, 50-60 percent is more common. The annual interest rate is about 12 percent and processing fees are relatively small although in some cases additional collateral is required. Some banks only provide post-shipment discounting.

The interest rate in Cambodia is high compared with the interest rates in Hong Kong or Singapore. Therefore Cambodian traders often use offshore finance arranged through their foreign buyers/traders. Foreign owned firms arrange offshore finance through their parent companies. This is particularly common in the garment industry. Other sources of trade finance, e.g. credit from foreign suppliers and buyers, or supply chain intermediaries, are not significant.

It is unclear to what extent high interest rates and collateral requirements depress demand for trade finance, but the expectation is that the volume of trade finance will grow and a broader range of services will be offered in the future. Possible changes in trade finance as a result of new regulations might include international rules on the issue of L/C and the establishment of a credit bureau for sharing credit information.

Foreign exchange

The exchange rate regime in Cambodia includes official and parallel exchange rates. The official rate is determined by the National Bank of Cambodia (NBC) for transactions between the NBC, government and the public sector. The parallel rate is a freely floating rate used for all the private sector transactions.

All exporters and importers of goods and services need to make payments for their commercial transactions through banks permanently established (domiciled) in the Kingdom of Cambodia. For exports, the proceeds need to be credited to the exporters account with the domiciled bank.

The only restrictions on foreign exchange operations such as purchases and sales on foreign exchange markets, all types of international settlements, and capital flows in foreign or domestic currency is that these operations be undertaken through domiciled banks. As a result, banks are able to offer foreign exchange transactions including spot, swap, forwards and options, however, so far demand has been limited.

Clearing and forwarding services

The logistics industry in Cambodia is relatively large given the size of the country. The Cambodian Freight Forwarding Association, CAMFFA, has more than 200 members and is a well-organized union. The industry is composed of many small firms, fewer medium sized firms and some large, international players. Most of the medium-sized companies are part of international forwarding companies or networks.

For clearing and forwarding (C&F) agents, imports make up the largest share of their business, reflecting the trade imbalance of the country. Nevertheless, C&F companies also handle exports, mainly rice and garments, as well as some admissions.

The C&F firms provide both domestic and international forwarding and may act as NVOCCs (non-vessel operating common carriers). Almost all offer transport, consolidation, storage, packaging and labeling. The larger firms provide inventory management and bonded storage. The more sophisticated companies, mainly large international operators, perform assembly and customization, manage cold chains and provide testing and quality controls.

The large, international forwarders compete primarily on quality of service. They operate in a different market segment from the smaller service providers, which offer basic services and compete on price. The foreign forwarders serve predominantly foreign suppliers, wholesalers/distributors and retailers. They serve a range of clients including small and large volume shippers.

The foreign buyers have the dominant role in structuring export supply chains for FOB shipments. The international forwarders often have service contracts with their larger clients giving them authority to manage all logistics. Among the interviewed firms, all freight forwarders provide door-to-door service. The dominant destinations are North America and Europe, followed by East Asia.

Major clients are producers of consumer goods (~60 percent) as well as firms from the construction sector (~15 percent). Construction material is in most cases project cargo. Most of the contracts are for specific time-periods with a fixed unit price for shipping.

For outbound shipments, the forwarders issue bills of lading, combined bills of lading and multimodal transport document. Some of the documents conform to the standard International Federation of Freight Forwarders Associations (FIATA) format. The C&F firms use computer systems for all kinds of business operations, including coordination of transport services, processing cargo/shipping information, coordination with the consignees and communicating with banks.

All interviewed firms mentioned licenses and regulations as key impediments to expanding their services. There were also problems with the reliability of trucking services as well as restrictions on what services they are allowed to provide.

Clearing

The larger firms are more involved in clearing manufactured goods while the smaller firms cleared mostly agricultural products. Large firms clear between 200-300 shipments per months while smaller firms clear as little as one shipment a week.

The information for clearing cargo is entered into the system at the customs office by the customs officer or the broker. Delays in the clearing process are caused primarily by missing supporting documents or errors in evaluation.

Imports are cleared either at the point of entry, an Inland Container Depot (ICD) or an inland customs facility. The fees charged for clearing cargo vary with some brokers charging by declaration and others by the quantity of goods cleared. There are significant differences in the fees charged. Large international firms have significantly higher fees than their competitors. However, the absolute amount of informal fees seems to be the same for all firms.

The time to obtain an import license or a certificate of origin varies depending on the issuing agency, the firm and the commodity (manufactured or agricultural products). For example, a large international forwarder is able to obtain these documents within one day for manufactured products, but it can take up to 10 days for smaller firms. For agricultural exports it takes 3.5 days.

The time to clear exports depends on the gateway. The fastest clearance time is 2-6 hours at the airports. At the land borders, cargo is cleared in 2-12 hours. At seaports the time is ½ - 2 days while at ICDs it is ½ - 1day. According to the firms interviewed, it is often not clear what the exact document requirements are or what the rates for duties and taxes will be. Further, there is a problem with discretionary behavior of officials, informal payments and irregular enforcement of laws.

While computer systems are widely used in the industry, Electronic Data Interchange (EDI) is rarely used for communication with clients or service provider.

International freight rates

The freight rates on the international routes fluctuate with global demand. They dropped dramatically in 2009 as a result of the global financial crisis. They have since recovered but are still below the 2008 rates. Examples of current rates for typical shipments from Cambodia to typical destinations are shown in Table 8. These incorporate the basic discounts but not the deeper discounts available to large foreign importers. The rates are also for basic level of service. These will increase for shipping lines offering faster or more reliable services and decrease for those offering slower, less reliable services.

Table 8: Typical sea and air freight rates from Cambodia

Mode	Direction	Gateway	Unit	Currency	Current Range	12 months ago
Ocean	To	Rotterdam/Antwerp	FEU	US\$	1,800.00	2,500.00
	from		FEU	US\$	900.00	
	To	US east coast	TEU	US\$	3,800.00	3,600.00
	To	Yokohama	FEU	US\$	1,000.00	1,000.00
	From	Shanghai	FEU	US\$	1,000.00	1,000.00
Air	To	New York	Kg	US\$	4.00	4.60
	To	Frankfurt	Kg	US\$	3.00	3.00
	From	Taipei	Kg	US\$	1.50	1.50
	To	Singapore	Kg	US\$	0.85	0.85
	From	Singapore	Kg	US\$	1.20	1.00

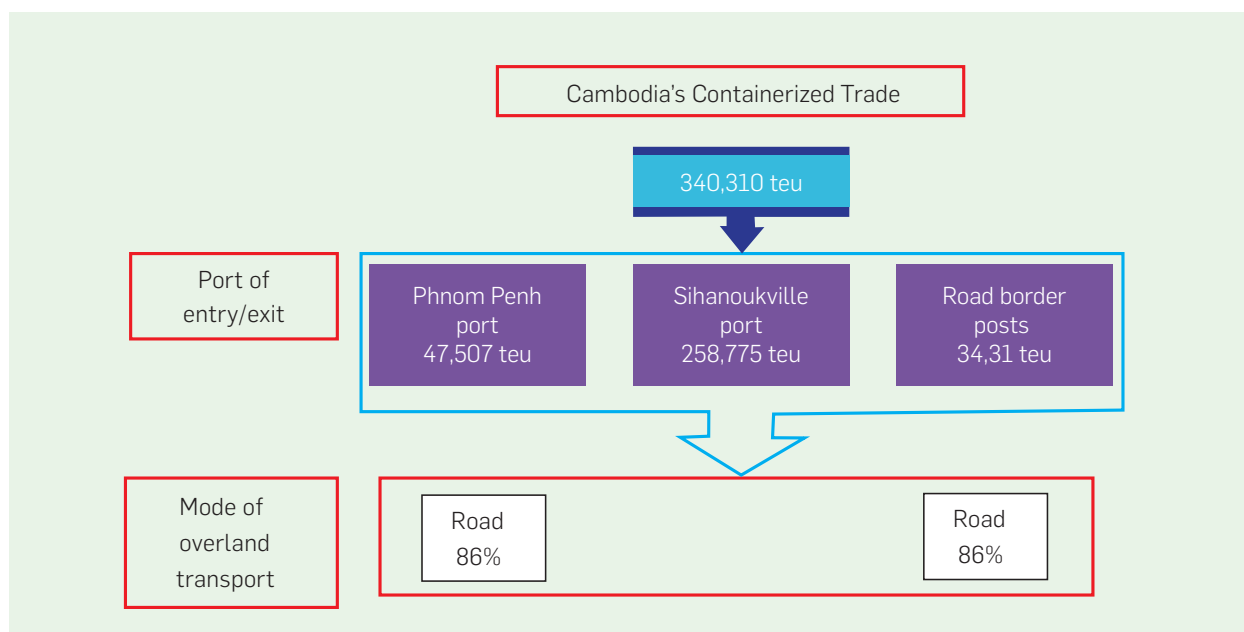
Source: Trade and Transport Facilitation Assessment Survey

6.2 Road transport

While Cambodia has an extensive inland water network and a backbone rail line, road transport is the dominant mode of freight transport. The railway consists of 640 km of single track meter gauge lines linking Phnom Penh to Sihanoukville and to a terminus about 50 km from Poipet. The railway is used to transport to the port but otherwise has a small share in the freight market. A concession to develop the rail system was signed with Toll Railways in 2009 and should eventually generate a significant increase of rail freight despite the short travel distances. River transport is growing in importance with containers and bulk cargoes moving by barge from the area around Phnom Penh down the Mekong to Cai Mep and the terminals near Ho Chi Minh Port. These include schedule feeder services provided by some of the largest international container shipping lines. The development of new terminals to serve both routes is indicative of the growing interest in this mode. The trucking sector has been growing with the increasing trade in recent years and is expected to continue its growth path.

It is estimated that about 340,000 TEUs entered Cambodia in 2010 of which about 86 percent was transported on trucks (around 290,000 TEU) and the remainder on inland waterways (Figure 19). The large imbalance with imports outweighing exports results in a large percentage of empty containers moving outbound, which increases the cost of transporting the loaded containers.²¹

Figure 19: Cambodia's containerized trade



Source: World Bank, Cambodia Corridor Assessment Study, 2011

Cambodia's trucking fleet is estimated to include 1,500 heavy trucks. There are five large trucking companies with more than 100 trucks and a few more in the range of 60-100 vehicles. The majority of firms, however, are small operators with 5-40 trucks. The Cambodian Trucking Association (CAMTA), has 15 members with a total of 800 large trucks, the majority of which are semi-trailers. The trucking companies do not hire independent operators to meet peak demands but instead rely on informal networks with other trucking companies providing additional capacity. During the dry season, demand for transport increases between 30-50 percent.

Almost all trucks in Cambodia are second-hand imports from South Korea, Japan, Taiwan and the US. The average age at time of imports is between 5-7 years. The present average age is about 15 years. Most companies

²¹ This problem is exacerbated by the problem of matching demands for 20- and 40-foot containers, for containers controlled by different lines and the limited time shipping lines allow for boxes to be returned to the port.

rely on their own funds to purchase trucks. Because of the age of the trucks most of the operating costs are for labor, fuel consumption and maintenance accounting together for around 80 percent of all operating costs. While this allows the local trucks to compete effectively for short haul movements within Cambodia, it places them at a competitive disadvantage for transport goods to the ports in Vietnam and Thailand.

The principal cargos carried by the larger trucking companies are construction material, other project cargo, imports/exports especially for the garment and footwear industry, and bagged rice in containers. Trucks typically make only 5-6 long distance trips per month, giving an annual mileage of less than 40,000km. They have a low load factor due to of the lack of return loads. Some firms have their trucks wait at the destination to try and obtain a return load. The return cargo is usually located through agents employed by the company in e.g. Sihanoukville.

It is estimated that between 5-15 percent of trucks are overloaded with some trucks extending the chassis in order to carry more. The use of strengthened twenty-foot containers which can carry over 20 tons of imports are contributing to this problem. The average percentage of damaged or lost goods is around 3 percent. Most of this occurs because of accidents or during cargo handling.

Competition from foreign truck operators is limited. Thai trucks can cross the border but are restricted to operating within 30 km of the border. The number of Vietnamese trucks crossing the border carrying freight to/from the Vietnamese ports is increasing but they often must return empty since they cannot carry local cargo.

The trucking market is divided in two segments. The first provide basic movements on a shipment-by- shipment basis with competition based on price. This market is dominated by local companies. The second offers a more complete service including consolidation warehousing, and clearance with the emphasis on quality of service. Recently some large foreign operators, mainly from Japan, have entered this market offering their services primarily to foreign companies.

The larger companies engage in contract haulage with time-based contracts. They use IT systems to manage their fleet and are increasing their use of GPS systems. The smaller family-run companies provide haulage on a shipment-to-shipment basis with few long-term contracts. They operate on a limited number of routes such as Phnom Penh-Sihanoukville. The use of computer systems is very low and the company's management capacity depends solely on the ability of the owner.

The terms of payment for trucking services varies from payment at the time service is provided to payment from 10 days to a maximum of 3 months after the service is provided. Normally, it takes 5 to 30 days to collect payments.

6.3 Clusters and corridors

Corridors

The trade corridors serving Cambodia have had a significant impact on trade. They have improved access to the port at Sihanoukville but also provided access to the more efficient ports in Vietnam thereby reducing the time and cost for international shipment. They have fostered regional trade by expediting both formal and informal trade with Vietnam and Thailand. The four major trade corridors are:

1. Western Cambodia-Poipet-Bangkok
2. Central/Eastern Cambodia-Bavet-Ho Chi Minh Port
3. Phnom Penh-Sihanoukville
4. Central Cambodia- Mekong-Ho Chi Minh Port to Cai Mep

The first two are land routes. The last two are multimodal and include water routes that use barges carrying both containers and general cargo. The first three are shown in Figure 19 and the fourth in Figure

20. The physical characteristics of these routes are described in Table 9. For the water routes, the transit time is 2 to 3 days for Sihanoukville including the time for loading and unloading and 4 to 5 days for Cai Mep. A typical container barge is shown in Figure 20. It has a capacity of 144 TEU, length of 78 meters and draft of 4.8 meters.

The most important corridors are those providing connections to the Vietnam deepwater facilities (No's 2 and 4). For agricultural goods these provide access to larger general cargo vessels. For containers they provide access to direct calls by vessels operating on the global corridor to the US and to Europe. Both offer savings in freight rates because of the larger traffic volumes at the Vietnamese ports. The only constraint is the procedures for border crossing and movement of goods in transit. Efforts to facilitate trade on these routes are being pursued at both the regional and bilateral level but more needs to be done to insure uninterrupted movement. The performance of these corridors is improving as the shipping lines become involved in providing feeder services to the ports. Additional improvements in performance should be prioritized based on the impact on the cost and time for movement over the entire length of the corridor.

Figure 20: Corridors for Poipet and Bavet



Table 9: Routes to the South China Sea

Sections	River	Km	Deadweight tons (DWT)	
			Low Water	High Water
Phnom Penh - Vam Nao Pass	Mekong	154	3,000-4,000	5,000
Vam Nao Pass - South China Sea	Mekong	194	3,000-4,000	3,000-4,000
	Bassac	198	5,000	5,000

Figure 21: Delta route to Ho Chi Minh

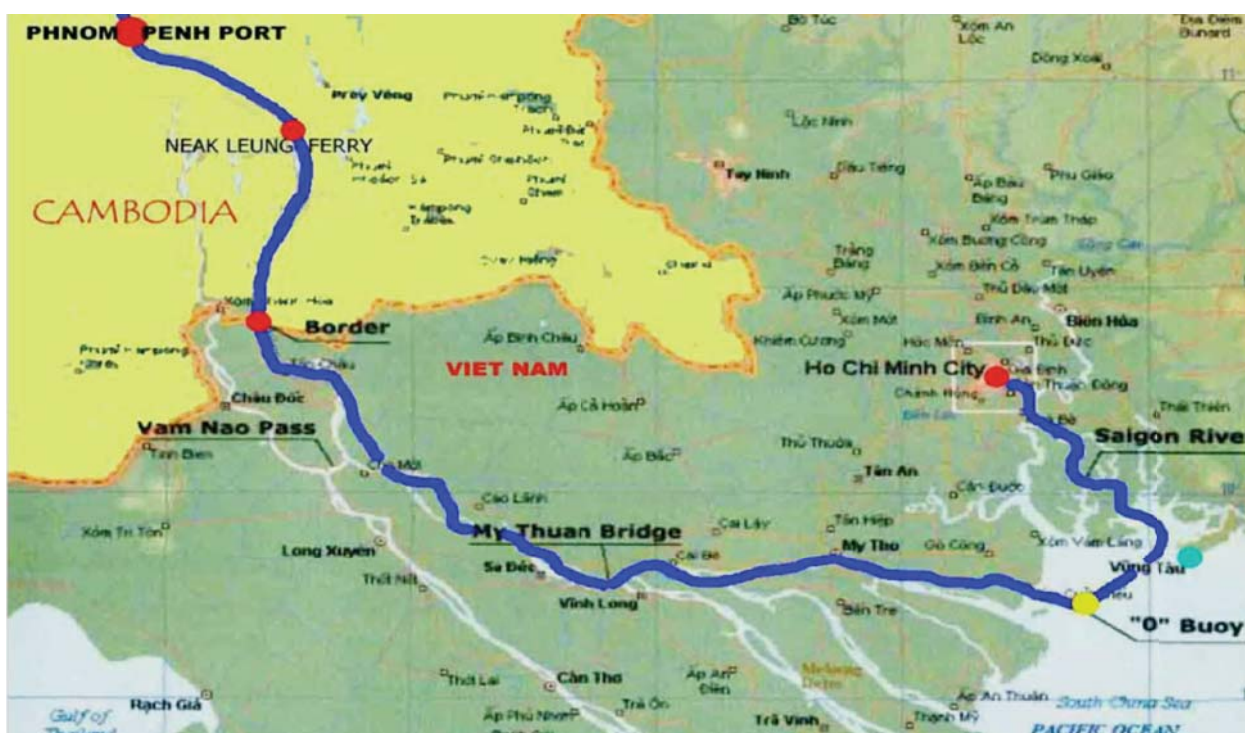


Figure 22: Delta container barge



Clusters

Most of Cambodia's manufacturing is clustered around Phnom Penh while its agricultural production is clustered near the borders with Vietnam and Thailand. Although Cambodia has an extensive collection of SEZs (Figure 21), there are few industrial clusters that provide economies of scale or support a network of suppliers. Only four of the zones have significant levels of activity and even these have occupancies of 20 percent or less. Also there is little specialization. Two of the zones, Manhattanville Svay Reing and Tia Seng Bavet, have a large number of garment factories and one, Sihanoukville, has a significant number of factories producing leather goods (Table 10). However, all have a random collection of enterprises.

Manhattanville and Tia Seng are located on the Vietnam border and serve as transfer points for goods moving through the port facilities near Ho Chi Minh. However, they do not provide significant logistics services. The only logistics hub is along the Mekong near Phnom Penh but it is more a collection of cargo-handling facilities than a hub offering broad storage, transport and trade facilitation services.

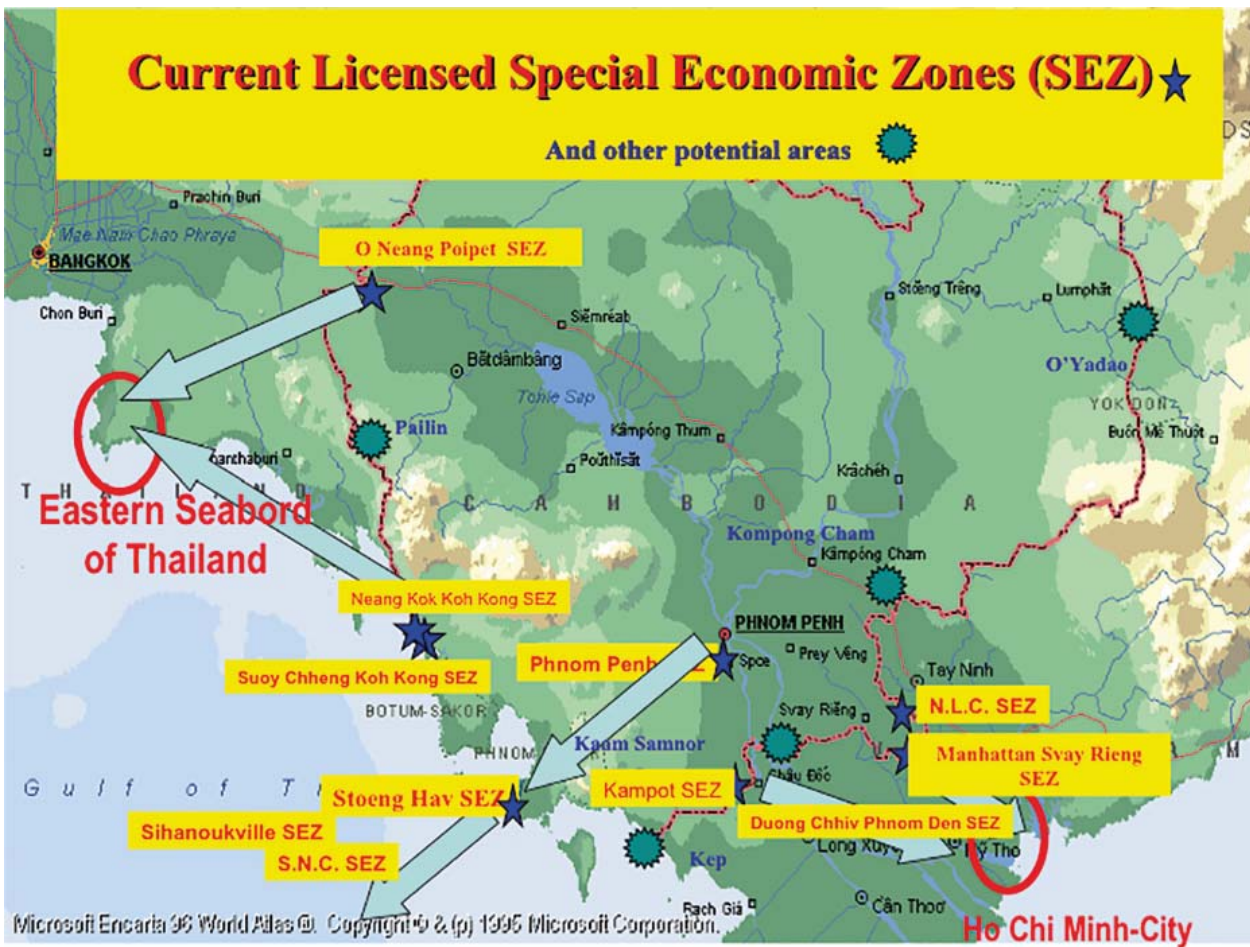
It is likely that there will be some agglomeration of garment and footwear industries as the larger zones increase in size. It is also expected that the Phnom Penh logistics hub will grow in terms of capacity and variety of services. Efforts to improve the existing clusters develop additional clusters should focus on increasing competitiveness by providing efficient connections to the trade routes and encouraging development of domestic suppliers to serve the factories located with these clusters. This requires better coordination between government and the private sector in planning the development of the clusters. The development of new zones should be based on a value proposition that emphasizes efficient logistics rather than taxes and other financial incentives.

Table 10: Enterprises in three successful SEZs

Sihanoukville SEZ 2	Phnom Penh SEZ
No. of Investors – 18	No. of Investors - 37
4 Shoes, bags, leather products	4 Plastic
3 Garments	3 Food Processing
Vehicle assembling Bicycles assembling House	3 Wiring Harness
ware products Household appliances Plastics	3 Footwear and leather products
Floor and plywood	2 Carton box and paper processing
Others	2 Japanese traditional clothes
Manhattan Svay Reing SEZ	Garment
No. of Investors - 18	Shoulder Pads
5 Garment and textile	Baby goods and toy
3 Packaging products	Labels
2 Footwear Neoprene wet suits Packaging bag	Packaging materials Electrical equipment Small-size
Plastic	motor
Bicycle	Motorcycle assembly, accessories and spare parts
Bolt-Nut	Steel processing for construction
Hi-tech equipment recycling	Others
Hospital	Tai Seng Bavet SEZ
Mattress products	No. of Investors – 11
Others	4 Garment
	3 Bicycle
	3 Footwear, Gloves
	Shoulder Pads
	Others

Source: Trade and Transport Facilitation Assessment Survey

Figure 23: Developed SEZs in Cambodia





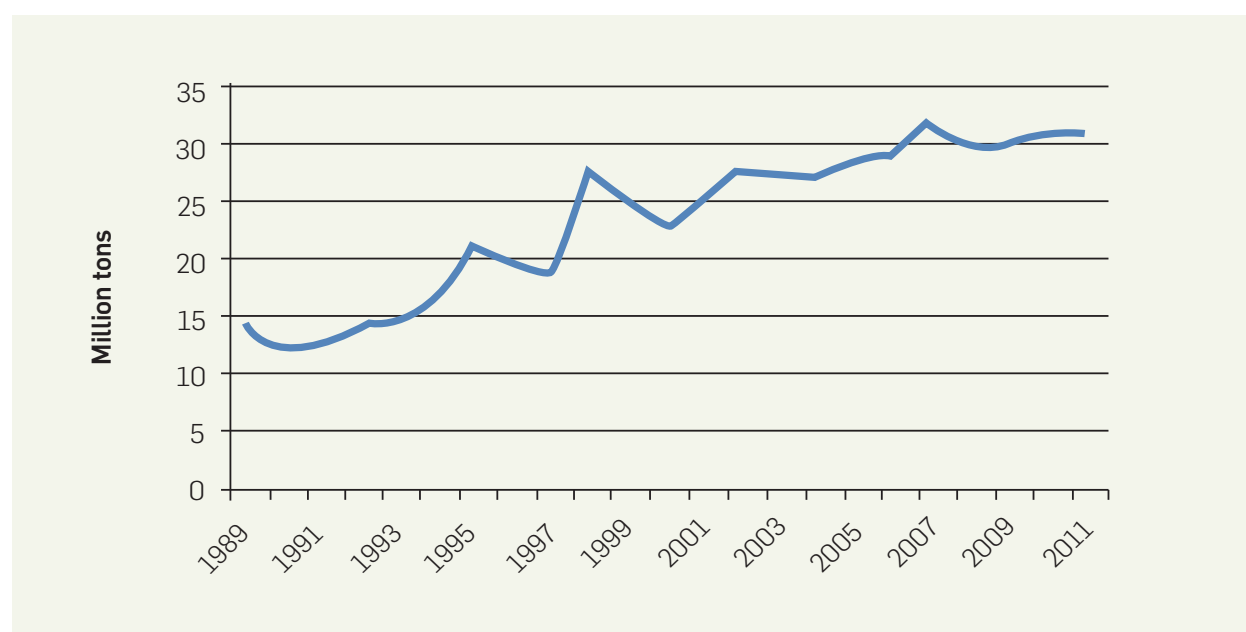
ANNEX I: RICE

Annex I: Rice

Global trade

The global trade has grown steadily over the last two decades as shown in Figure 1. Of global production, trade accounts for only about 7.2 percent. India and China produce about half of total output, but generate only about 11 percent of total exports. In contrast Vietnam and Thailand account for half of total exports but only 16 percent of global production. Five countries account for over 4/5 of total exports as shown in Table 1. Of these, India's value per kg is highest since most of its exports are Basmati rice. Thailand has the second highest value per kilogram because of its various branded products, including fragrant rice, and the quality of the milling. Vietnam has the lowest value since most of its export is generic, white rice.

Figure 1: Global rice trade 1989-2011 (million tons)



Source: USDA Economics, Statistics and Market Information System.

Annex Table 1: Leading rice exporters (by volume, value and market share)

Million tons	Volume (million tons)			Value per ton (US\$)			Market Share (%)		
	2008	2009	2010	2008	2009	2010	2008	2009	2010
Thailand	10.01	8.57	9.05	610	589	590	33.7	29.4	29.0
Vietnam	4.65	5.95	6.73	623	448	444	15.7	20.4	21.6
India	3.54	2.15	2.51	804	1,115	916	11.9	7.4	8.0
Pakistan	3.05	3.19	4.00	800	557	569	10.3	10.9	12.8
United State	3.22	2.99	4.50	688	731	523	10.8	10.3	14.5
Uruguay	0.74	0.93	0.80	598	498	491	2.5	3.2	2.6
China	0.97	0.78	0.62	497	668	672	3.3	2.7	2.0
World Total	29.69	29.15	31.15	713	638	615			

Source: "Vietnam's Rice Balance: Recent Trends, Future Projections, and Implications for Policy" Vietnam Food Security and Value Chain, Policy Note #1, May 2011.

Most of the traded rice is milled and packaged in bags for shipping. As rice is a highly segmented crop, each market has different prices and consumer preferences. Prices are determined by type, quality (moisture content, grain length, percentage broken, translucency, etc), consistency of variety and impurities (disease and foreign matter)²². The basic distinction is between glutinous, aromatic, Japonica, and Indica. The trade in glutinous rice (sticky rice) is extremely small, about 300,000 tons per year. Indica is the most prevalent with roughly 23.5 million tons traded annually. The remaining two, aromatic and Japonica, average 5.7 and 1.5 million tons per year, respectively.

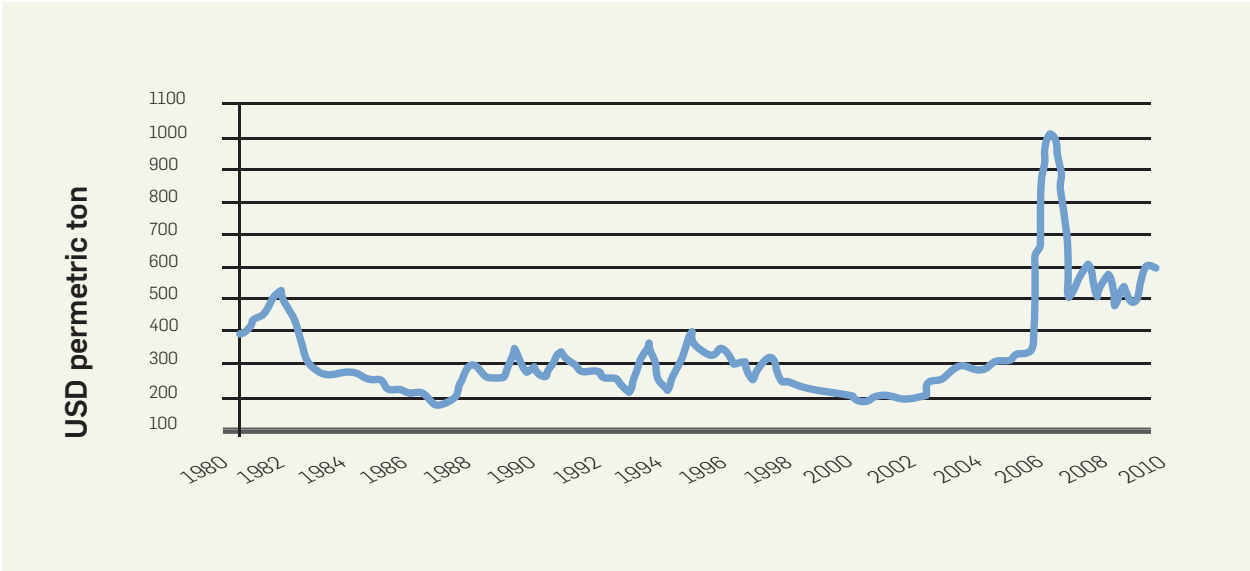
The majority of the rice trade is conducted between developing countries. There are two primary channels for this trade. The first is government to government which generally involves large quantities of low value rice shipped in multiple shipments over a period of time. Although the government negotiates the contract, it is often left to the private sector or individual state-owned enterprises to procure and mill the rice for export at an agreed date. The other channel involves contracts between private parties. These are usually arranged by brokers, international grain traders, or buying associations. International traders take long and short positions in the commodity market, but also take ownership of the grain and may use back-to-back sales-purchase agreements to connect the exporter and the importer.

In contrast the brokers act as middleman in the negotiation between the exporter and importer. They assume no commercial risk and collect only a commission. The associations purchase grain for their members. The largest is Associated Marketing Service in Europe, which represents Ahold, Dansk, ICA, Migros, and WM Morrison Supermarkets among others.

Prices

The price of traded rice is determined by availability of supply and demand. Demand increases with population but varies with the increase in disposable income. On the other hand, a variety of factors affect supply and because rice is a thinly traded commodity and there is limited substitution between varieties, price volatility can be quite high (Figure 2). In 2008, the international price peaked due to various factors that led major exporters to restrict shipments to maintain domestic stockpiles with a reciprocal panic buying by importers.

Annex Figure 2: Price of Thai white rice 5 percent broken (US\$ per metric ton)



Source: Vietnam Food Security and Value Chain, Policy Note #2, May 2011.

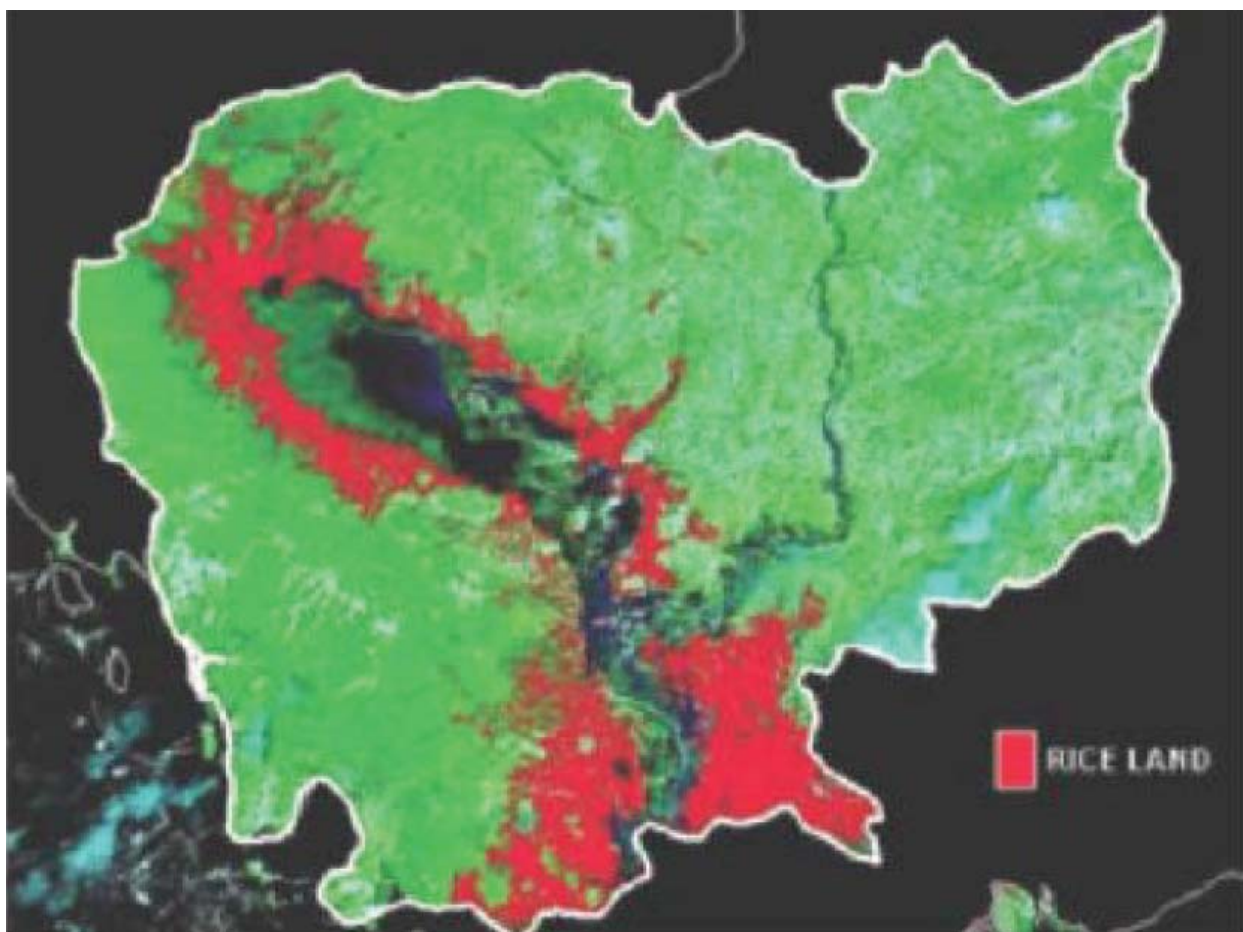
²² Value Chain Study by GDS June 2003, page 24.

Cambodia production and trade

Cambodia's rice production consists of mainly three types: (1) fragrant rice grown in the northwest during the rainy season; (2) traditional, non-aromatic rice grown during the rainy season in the southeast and (3) IRRI high yielding varieties grown during the dry season in the southeast along the Vietnam border. A recent report by the World Bank estimates that half of the total harvest is made up from the traditional non-aromatic varieties, which include Phkar Khney, Neang Minh, and Neang Khon. About one third to one fourth of the total production consists of the IRRI rice. Fragrant rice has significantly expanded in recent years, and is about 20 percent of the total production.

The rice growing areas run diagonal from the Northwest to the Southeast of the country along the Tonlé Sap and the Mekong River (Figure 3). The fragrant rice is grown in the northwest along the border with Thailand, while the IRRI rice is grown in the southeast close to the Vietnam border. Due to the relatively high cost for transport, the proximity of modern mills and large-scale trading operations just across the border, a significant portion of Cambodian padi is transported to Thailand and Vietnam for processing.²³

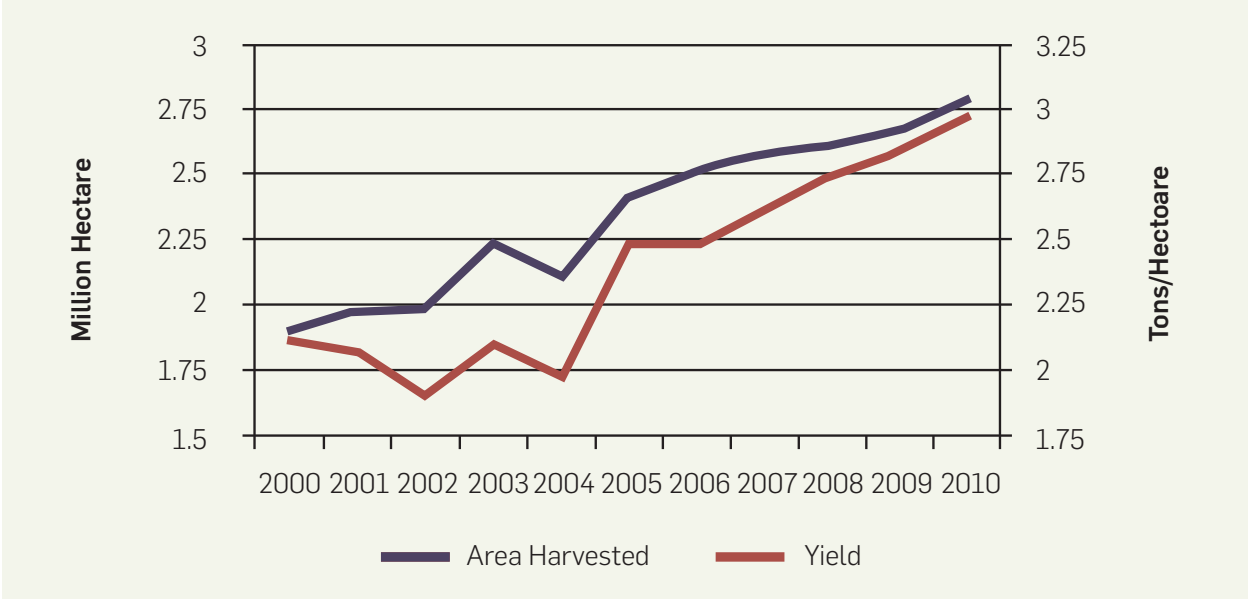
Annex Figure 3: Rice growing areas in Cambodia (red)



Source: USDA.

²³ Other factors contributing to this movement are the lack of domestic milling capacity and shortage of working capital to purchase padi.

Annex Figure 4: Cambodia rice production, 2000-10 (million hectare and tons/hectare)



Source: Ministry of Agriculture, Forestry and Fisheries.

The rice sector in Cambodia consists of about 2.9 million rice farms with an average area of less than 2 hectare and producing approximately 3.0-3.5 tons of padi per year.²⁴ Total production of padi grew at about 8 percent per year from 2000 to 2010 due both to an increase in the average yield and harvested area. The increase in yield was achieved through various means including expansion of irrigation infrastructure; increased use of high yielding varieties; and an intensification of the crop cycle allowing double cropping during the main wet season. Although the average productivity is considerably below the global average, it is comparable with Thailand, the largest rice exporting country, which has an average yield of 2.88 tons/ha.²⁵

Rice is harvested throughout the year, but about 60 percent of production is harvested during the wet season (November to January). The majority of wet season rice is planted in traditional varieties. Farmers usually choose these because they are easier to grow, require fewer imported inputs and meet local tastes. The dry and early wet season rice is planted using improved varieties because of their higher yields and shorter growing periods.

Rice for export is collected from June to December (early and medium rice, Table 2). Late rice, floating rice and upland rice, all of which are traditional varieties, are consumed domestically.²⁶ Rice is collected from Eastern Cambodia between December and May and from the Northwest between July and November

The amount of rice exports has increased rapidly in the last few years from 10,000 tons in 2008 to 51,000 tons in 2010 and 175,000 tons in 2011. In 2010, over 90 percent rice exported shipped to the E.U. and Russia both of which provide duty-free access. This was due in part to the granting duty free access for Cambodian rice to the EU in 2009 under the EBA initiative. The principal destination is France with a 55 percent share of Cambodian rice exports, followed by Poland and Lithuania with another 15 percent. Asia imports less than 4 percent and North America less than 2 percent.

²⁴ Based on ABIC survey data, average landing holding of farmer is 1.2 hectares (minimum landholding is less than 0.5 hectares and maximum landholding is 200 hectares). Ministry of Agriculture, Forestry and Fishery records that average paddy yield is 2.97 tons per hectare.
²⁵ USDA, FAO and Reuters.
²⁶ Suvannaphum, Mr. Anurut.

Annex Table 2: Type of padi rice production

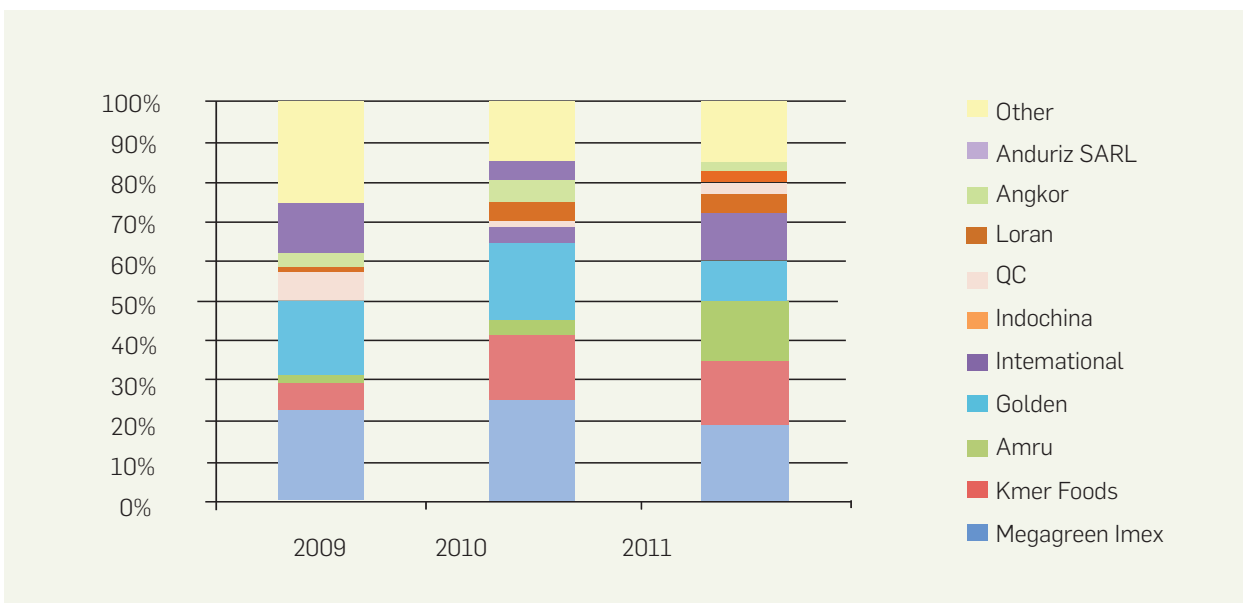
Rice system	Cultivated area (%)	Variety	Crop calendar
Upland Rice	2.3	Traditional	Jun to Nov
Early Rice	24.8	IR and Fragrance	Jun to Sep
Medium Rice	46.3	Traditional and fragrant	Jun to mid Nov and Dec
Late Rice	22.6	Traditional	Jun to Jan
Floating Rice	4.1	Traditional	May to Jan

Source: Sovanphum Investment

Rice exports to Russia are primarily non-fragrant rice, about one-quarter of sales to the EU last year was fragrant rice. The principal competitor for fragrant rice is Thailand, but Vietnam also provides competition. The principal competitor for non-aromatic rice is Vietnam. Demand for non-aromatic rice comes from large consumers such as the Philippines, Indonesia and Africa.

Rice is exported by private traders. Despite a large number of traders, the market is dominated by five as shown in Figure 5.

Annex Figure 5: Market share of major rice traders in Cambodia, 2009-11



Rice processing

The farmers solar dry the padi and sell their surplus at the farm gate to collectors or directly to mills. In that way they avoid the cost of transport. Also this is a cash transaction. Post harvest losses are on the order of 15-20 percent depending on whether the padi was machine threshed or hand threshed.

The only check on quality of the padi is performed at the larger mills during the sale transaction when measurements are taken for moisture content, percentage broken and purity.²⁷ However, during peak buying times, quality control is often done manually by random checking.

After the millers acquire padi, they pre-clean it to remove sand, straw and other large foreign matter and then dry it using a mechanical dryer. The husk is then removed using a rice huller and a separator to collect the brown rice. A de-stoning machine removes any remaining stone or metal. The rice may then be polished at the

²⁷ The smaller mills will check for moisture.

mill if it has a polished or at a separate polishing factory. Otherwise it is sold unpolished. Additional processing includes the use of a length grader to measure the length and thickness of the rice and a color sorter to filter the rice into different grades.

Cambodia's modern rice milling capacity has doubled since 2009, but there are still only 14 medium-size rice mills located in the rice producing regions (Table 3). The average capacity of these modern mills is about 15 tons per hour but a few of the newer mills (built after 2009) have a capacity between 20 and 30 tons of padi per hour. These have yields in the range of 65-72 percent. The smaller mills that process padi and supply rice to the larger mills or polishing factories have a capacity of less than 10 tons of padi per day. The yields for the smaller mills are lower due to their age, about 62 percent -64 percent.

There are four rice-polishing facilities, two each located in Battambang and Phnom Penh. Their combined capacity is about 250,000 tons per year.

Annex Table 3: Large rice mills in Cambodia (tons padi/hr)

Mill	Capacity	Location	Comment
Existing 2009			
Angkor Rice (AKK)	10	Near PP	Built 2011
Golden Rice	20	Near PP	Operational 2009, JV Reunion
Green Trade	10	Various, 4 of 6 in PP	Partner Cavifood with plans of 24 ton mill to begin construction in June
Lor Ngor Peng	8	K-Cham	
Loran Import-Export	12.5	Battambang	Built 1994 & expanded; Plans to add 30 ton/hr by mid 2012
Men Sarun	24	PP	Built 2003, also polishes rice from its other mill; also has 39 others mill elsewhere
Phou Poy Rice mills	9	Battambang	At two mills
New Mills			
Baitang	20	Battambang	Built 2009, operational 2010
BVB	30	K-Thom	Operational June 2011
Chhun Thom	10	Prey Veng	Operational 2011
QQ Rice	12	Porsat	Malaysian JV
Sour Keng QC Rice	12	K-Cham	Built 2010
Yum Leoung	10	Battambang	Mill Expansion operational June 2011
Vinh Cheang	12	K-Cham	Under construction
Rice Polishing			
Baitang	30	Battambang	Built 2009, operational 2010
International Rice Trdg	10	PP	Built 2010
Khmer Food	10	PP	Built 2009
Loran Import-Export	30	Battambang	Operation June 2011; this's addition to 5 ton/hr existing capacity
Rice Upgrading			
Ying & Yang Rice	10	Sih'vill port	Built 2009, foreign company

Source: Slayton & Moniroth, 2011, page 14

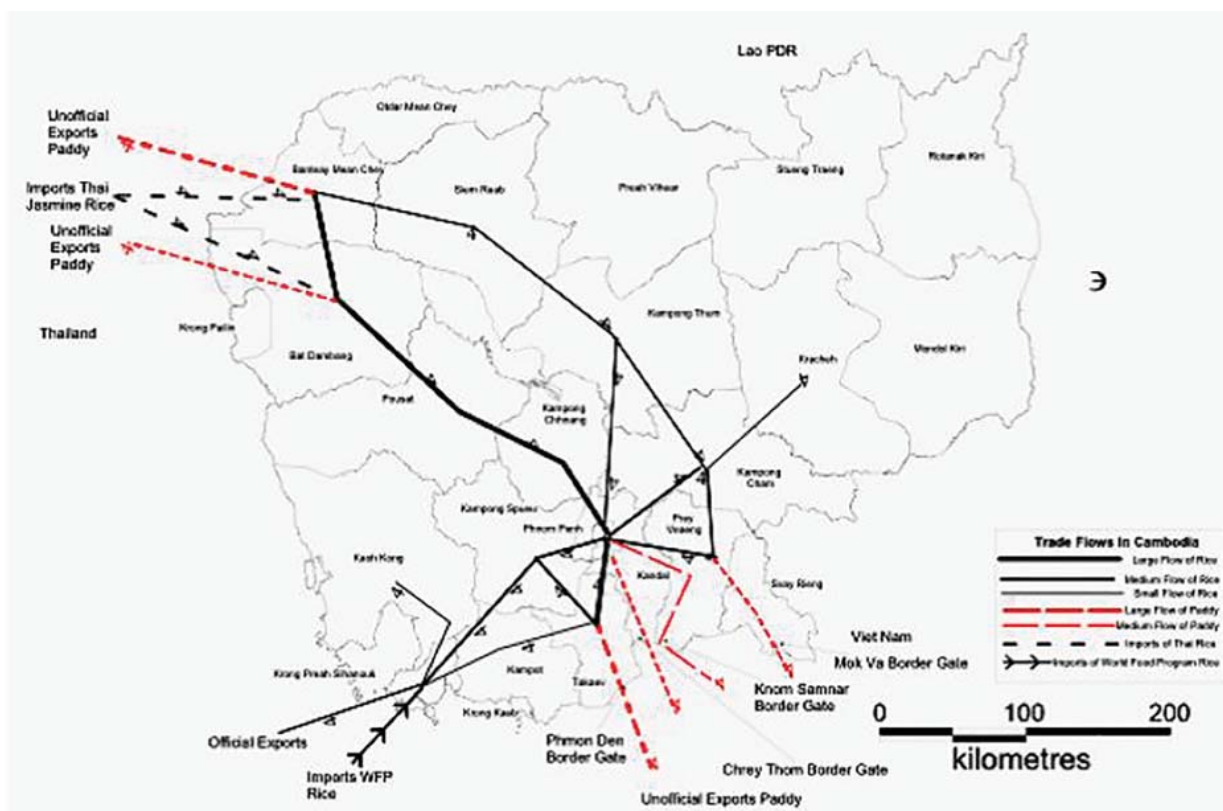
It is estimated that over 3,000 varieties of rice are cultivated in Cambodia.²⁸ As a result, various types of padi are often mixed during the farming and collecting stage. Because of the low quality of the post-harvest processing, lack of segregation of varieties during transport to the mill and limited quality control during milling, most of the rice produced is of low quality with a high proportion of broken and immature rice.

The domestic pricing of rice for export varies by variety and percentage broken with the typical categories Somaly, Phkaa Khnhei and mixed white with 5 percent, 15 percent, 25 percent and 35 percent broken. The price range is +25 percent of the median value.

Rice transport

The transport of rice from the farm to the mill is done using small vehicles up to 10 ton trucks. The latter are used for deliveries from growers associations to the larger commercial mills. Trucks capable of carrying up to 40 tons are used for the movement of rice from the mills to Phnom Penh or other loading points. They are also used for the transport of padi to mills in Vietnam and Thailand. From Phnom Penh the rice is loaded in containers and moved by road to Sihanoukville where it is loaded onto container feeder vessels and then transhipped at Singapore or Hong Kong for movement to the final destination. Rice destined for regional markets is moved directly from Sihanoukville to the destination on regional carriers. Beginning in September 2011, limited quantities of uncontainerized rice have been barged down the Mekong River directly to general cargo vessels for loading in HCMC. The principal corridors over which the export rice moves out of the country are shown in the following Figure 6.

Annex Figure 6: Trade flows of padi in Cambodia



Source: ACI, 2006

²⁸ USDA, 2010

Characteristics of firms surveyed

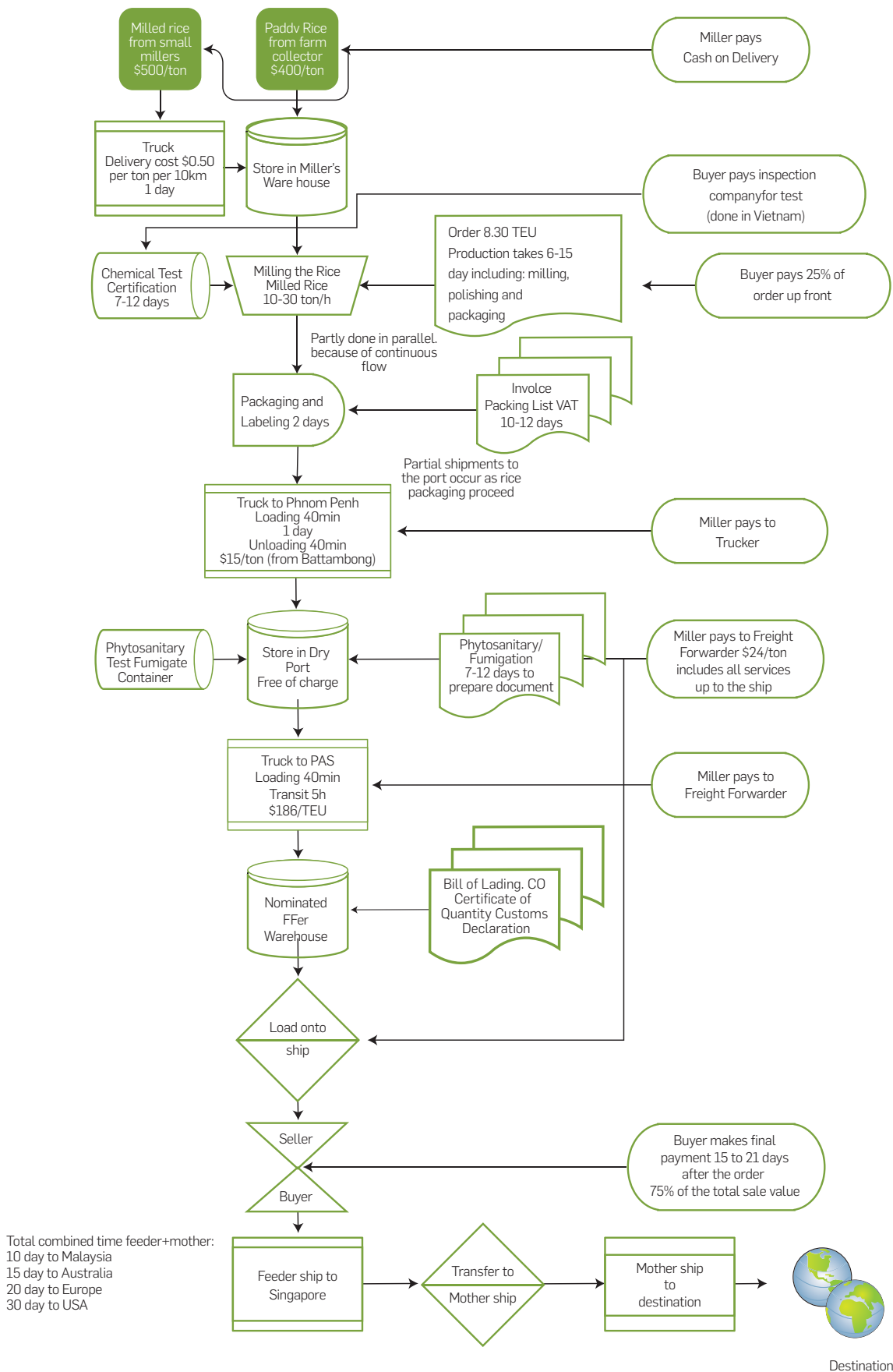
1. The 4 traders interviewed are locally owned rice trading companies that purchase milled rice from local mills
2. Their principal products are white and jasmine rice. They buy both padi and milled rice from farmers groups and local rice millers, respectively.
3. This is delivered to their facility by the supplier
4. The supplier is paid cash on delivery
5. The only problem with suppliers was inconsistent quality rice reported by one of the traders
6. The only difficulty in obtaining adequate supply is that of working capital
7. These traders export from 60-100 percent of the amount that process
8. They sell the output primarily to Europe
9. The product is shipped on FOB terms and sold to foreign distributors (international traders). However some of the Jasmine rice was sold to foreign retailers and distributors and shipped CFR
10. After export the rice receives additional processing in the form of packaging for retail purposes
11. These traders provide rice against fixed orders put in one case maintain a stock of Padi for milling
12. The products are exported through Phnom Penh or Sihanoukville ports
13. The time from confirmation of the order to loading on the ship is 5-14 days
14. Payment is received the time of transfer to the buyers representative
15. There are no significant problems with documentation by the exports
16. The principal commercial problem is lack of working capital
17. The principal source of competitive advantage is the quality of the product and speed of delivery followed by cost
18. In order to grow the business, two traders need to increase available supplies while one sees a need to improve the quality of the export. For the former is necessary to expand warehouse capacity
19. The principal factors limiting the growth are working capital and ability to invest additional capacity
20. For exports there are problems with the availability of transport
21. Two of the traders are large-scale handling 20,000-25,000 tons per year while two are smaller niche players handling 3,000-6,000 tons per year
22. The small traders handle orders with individual shipments whereas the large traders will also handle orders with multiple shipments
23. The availability of milled rice/padi varies by season but is generally delivered the same day as ordered or one day later
24. The size of the orders for input varies with the larger traders ordering in the thousands of tons of smaller ones less than 100 tons
25. The larger traders receive daily deliveries
26. They export both white and jasmine rice
27. The typical sizes of export shipment varies from 3 to 15 TEU
28. The larger traders try to limit their minimum shipment to 5 TEU whereas the smaller traders will take orders of one TEU, especially for Jasmine

29. Shipments are made on a weekly basis although for the smaller shipments on a monthly basis
30. The average value of shipments for white rice is about US\$12,000-US\$14,000 per container while for Jasmine it is about US\$21,000
31. One of the traders arranges their own shipments but the others use forwarders
32. Most of the rice is shipped in containers although one of the traders also ships as loose cargo
33. The rice is transported by truck from the factory either in container or in full truckload
34. The domestic movement is arranged by the traders and generally requires a one-week advance notice
35. The total order cycle from order confirmation to delivery to the buyers warehouse depends on the location of the order, for Europe this is 48-60 days but for East Asia it can be as little as 14 days
36. There are problems in the outbound logistics in obtaining containers and arranging for transport, both of which need to be addressed
37. The percentage of delayed shipments varies by trader with the largest reporting 50 percent delays but the other 3 reporting 10 percent or less
38. Most of the delays result from problems with production and difficulties in coordinating transportation, however the largest has problems with obtaining suitable quality rice at a reasonable price
39. The typical penalty for late deliveries is only 0.1 percent of the invoice value
40. In event of the delay they notify the buyer
41. The time for acquiring the necessary documentation for exports is 3 days for the letter of origin, 7 days for the Phytosanitary certificate, one day for the fumigation certificate, four days for the quantity certificate and 7-12 days for the chemical tests
42. There are no significant problems with staying up-to-date on regulations and procedures
43. The principal problems in the outbound supply chains are lack of reliability in terms of domestic transport, inefficient handling at the loading port and lack of availability of customs officials
44. The average unit cost for semi-milled rice is US\$300-US\$500 per ton for white rice and US\$650-US\$750 for Jasmine rice
45. The inputs are priced based on the spot price and are paid for in cash at time of delivery although a partial payment is often made at time of order
46. The traders are reliant for financing on their own cash flow and a line of credit from a commercial bank
47. The terms for the lines of credit are about 9 percent interest for a one-year loan with a fixed interest rate (foreign exchange)
48. Communications between the traders and the buyers is by telephone, fax and e-mail
49. The trader is paid for the exports by TT when the goods are shipped
50. One of the traders uses letters of credit
51. The traders use various banks to finance their trade

Supply chains and cash flow

Two models were examined. Both are rice trading and milling operation. The first involves smaller volumes transported from Phnom Penh dry port to Sihanoukville via road. The second involves large shipments moving by barge from Phnom Penh to Sihanoukville.

Annex Figure 7: Rice model A



Annex Figure 8: Cash flow

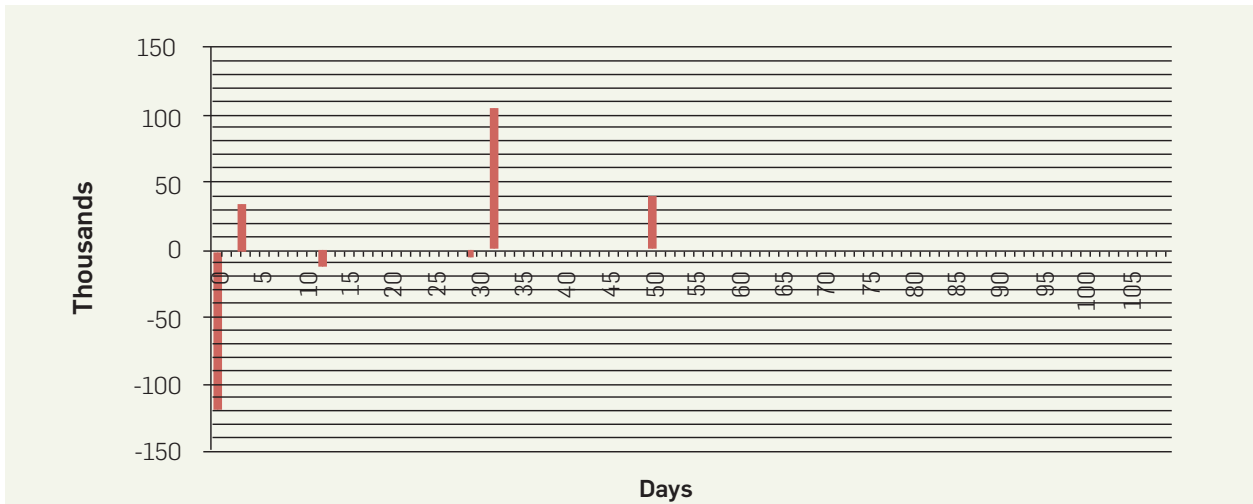
Title	Rice Export
Trade	Export
Country	Cambodia
Description	White Rice Export

Events	Day
Receive sale order	0
Buying paddy	1
Confirm order	8
Receive packaging list	10
Milling, packaging and labeling	26
Transport to dry port	30
Custom Clearance	31
Transfer to vessel	32
Get the final payment	50

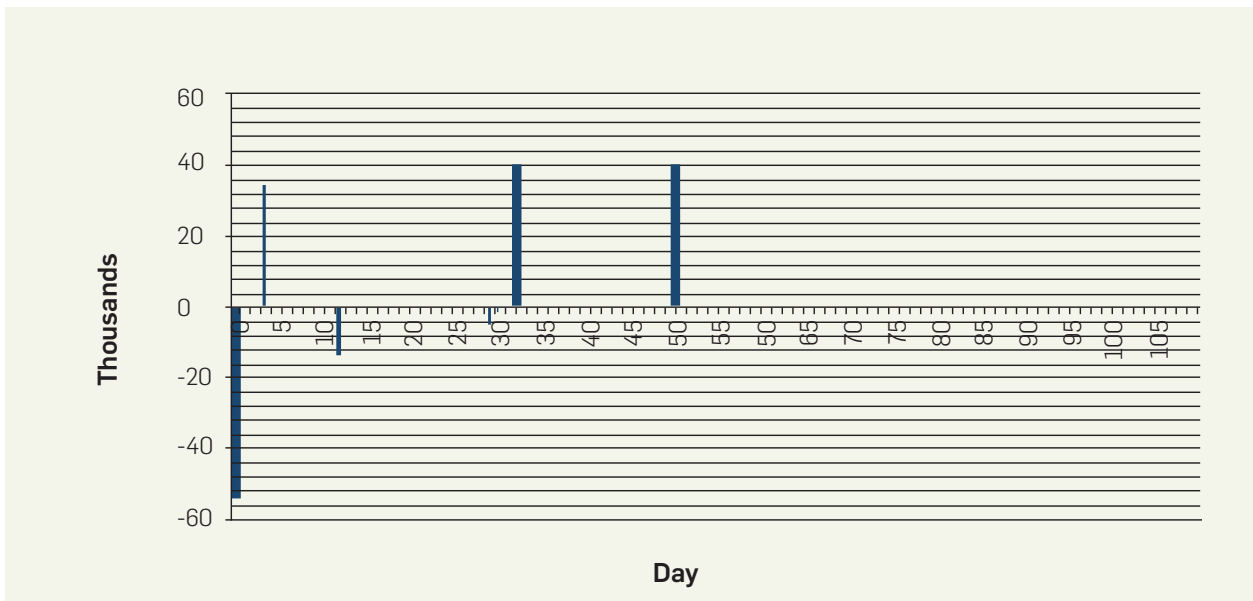
Transactions	Amount	Event	Offset
Buying paddy	119,040	2	-1
Receive packing list	35,000	4	-7
Milling, packaging and labeling	13,860	5	-14
Transport to dry port	5,000	6	-1
Custom Clearance	2,100	7	-1
Receive initial payment	105,000	9	-18
Receive final payment	40,000	9	0

Financial Instruments	Start		End		Fee	Interest	Collateral
	Amount	Event	Event	Offset			
Loan for working capital	65,000	2	9	-1	-18	15.0%	

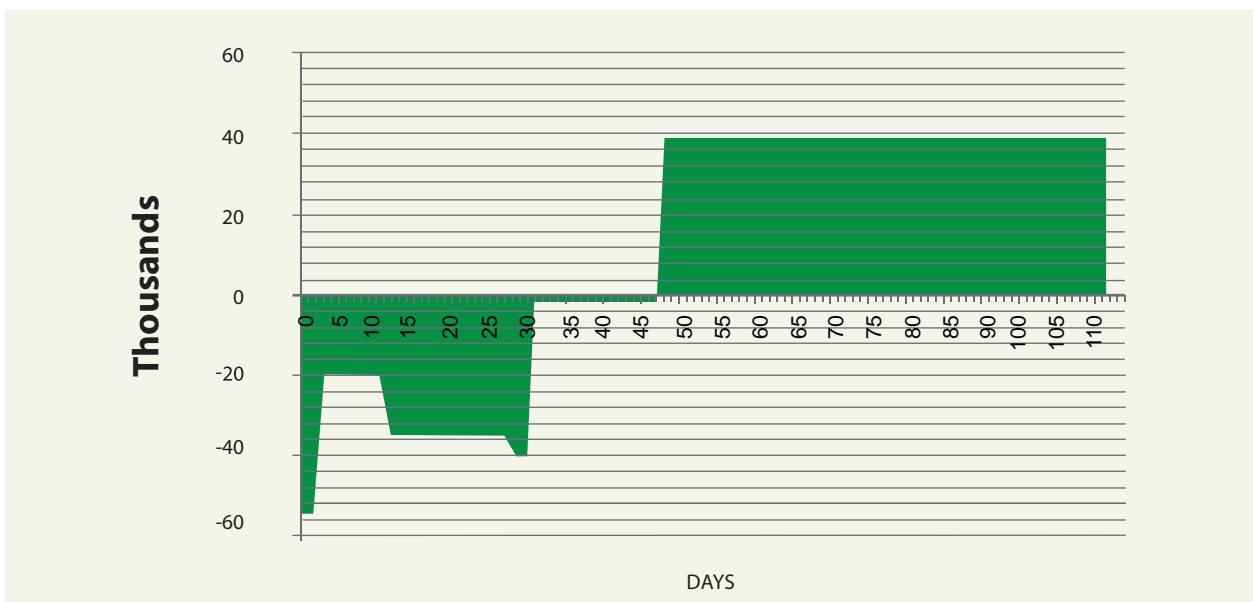
Cash Flow



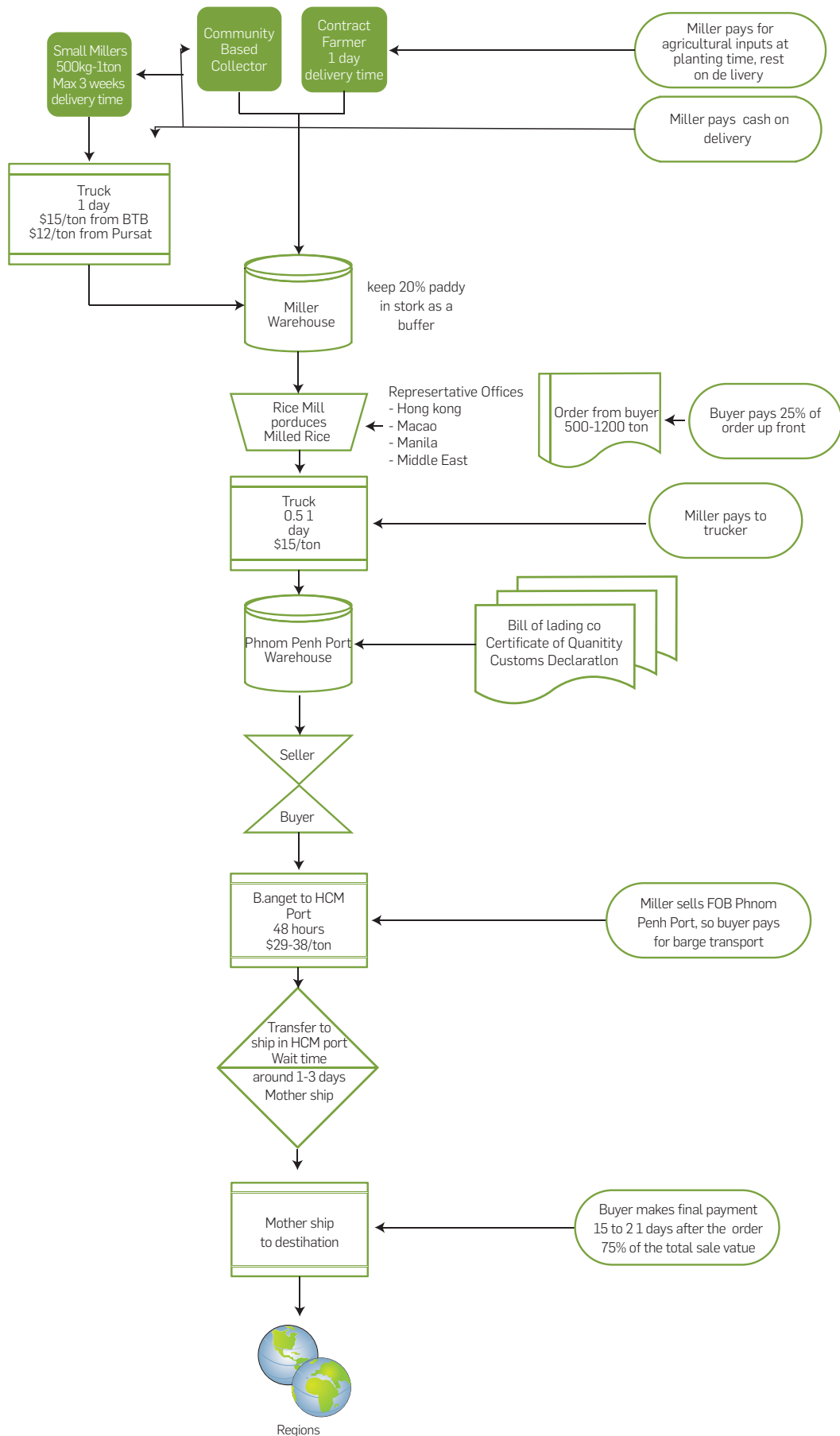
Cash Flow with Financing



Cash Exposure



Annex Figure 9: Rice model B



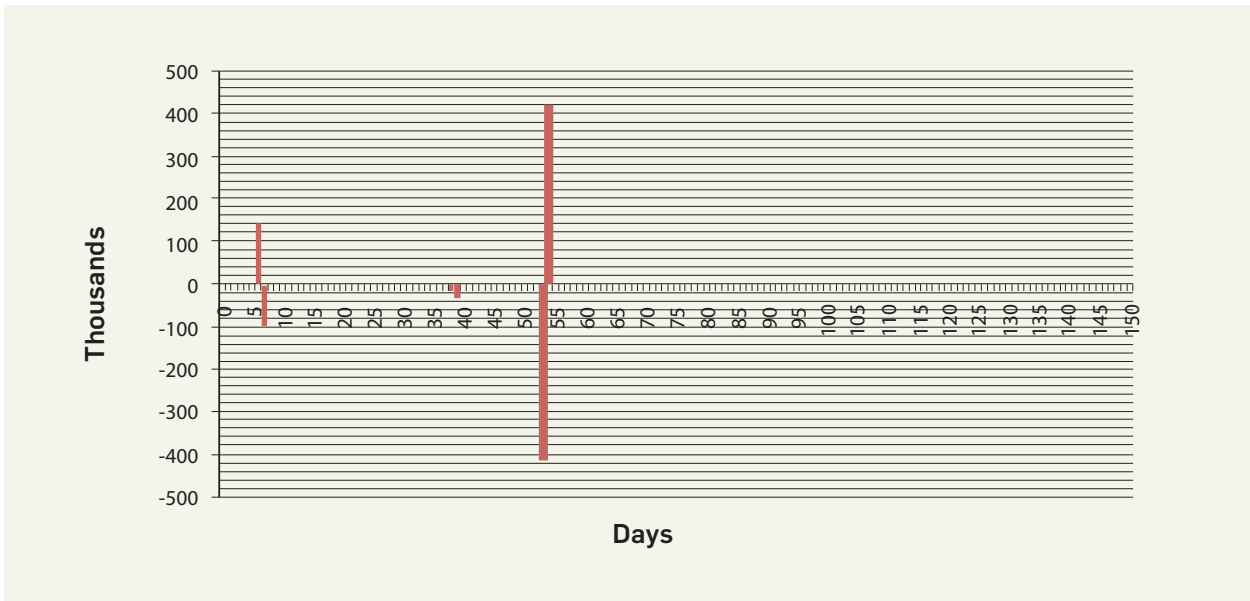
Annex Figure 10: Cash flow

Title	Rice Export
Trade	Export by barge through Phnom Penh Port
Country	Cambodia
Description	White Rice Export

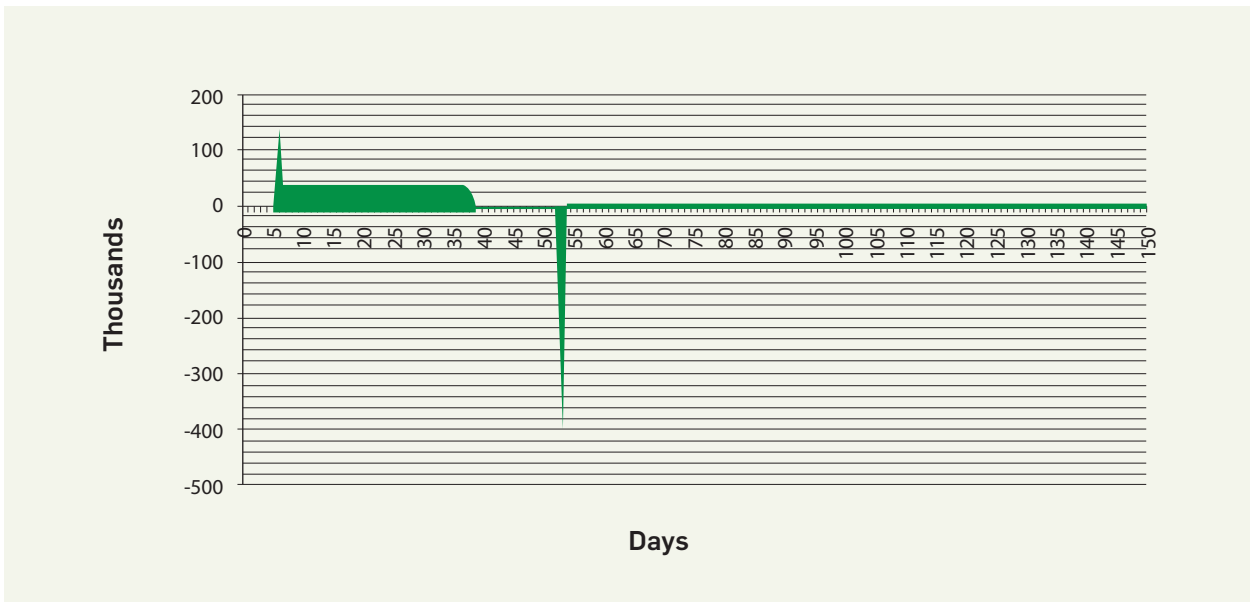
No.	Events	Day
1	Receive sale order	0
2	Confirm order	7
3	Order milled rice	8
4	Pay 20 percent to millers	8
5	Millers mill rice	38
6	Transport to Phnom Penh	39
7	Store and load to barge in Phnom Penh Port	44
8	Pay to rice miller another 80 percent	54
9	Get the final payment	58

Direction	Transactions	Amount	Event	Offset
2	Confirm order	140,000	2	-1
1	Pay 20 percent to millers	100,958	4	-1
1	Transport to Phnom Penh	15,000	6	-1
1	Store and load to barge in Phnom Penh Port	32,000	7	-5
1	Pay to rice miller another 80 percent	403,834	8	-1
2	Get the final payment	420,000	9	-4

Cash Flow



Cash Flow Exposure





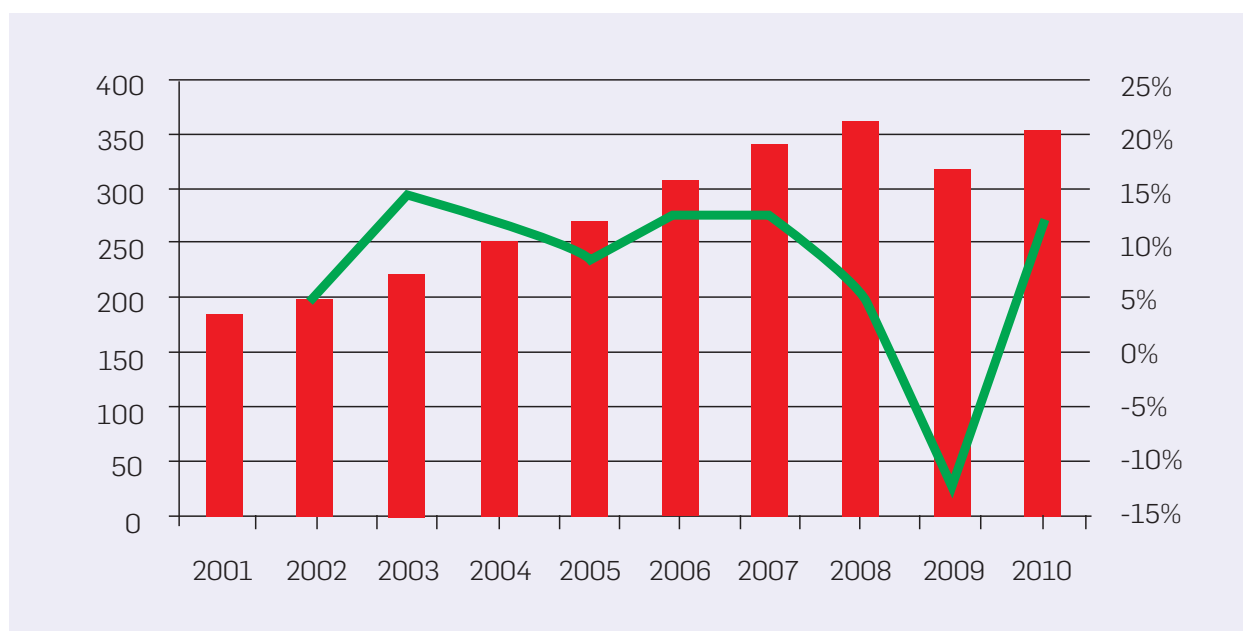
ANNEX II: GARMENTS

Annex II: Garment

Global production and trade

The growth of the global textile and apparel industry is driven by increases in population and disposable income.²⁹ Total revenues from the textile and apparel industry are estimated to have grown by about 30 percent between 2006 and 2010. During this period, trade in textile and apparel grew by only half as much due to the global financial crisis, which reduced demand in both the US and EU. Despite this reduction, trade in textile and apparel increased by more than 100 percent over the last decade (Figure 11). The volume of trade has rebounded in 2010 and 2011 despite the on-going European sovereign debt crisis.

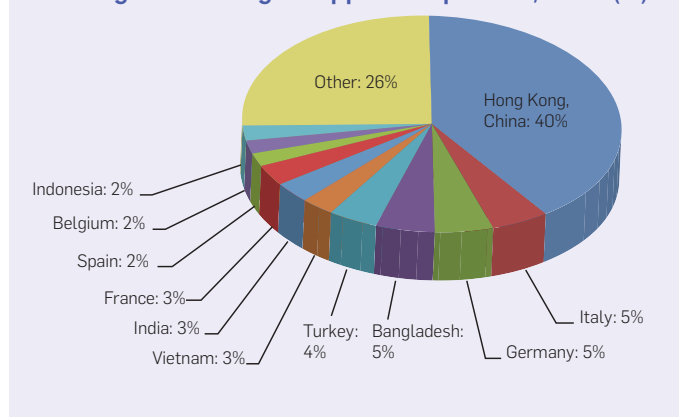
Annex Figure 11: Global trade in garments, 2001-10 (US\$ billion and growth)



Source: UN-Comtrade, 2012(HS-Codes 61, 62).

The growth in trade is a result of the outsourcing of production to low wage countries in Asia. This began in the 1950s and early 1960s with Japanese exports to Europe and the US. The increase in the cost of production in Japan in the 1970s and 1980s led to a migration to manufacturers in Taiwan, Korea and Hong Kong and provided a further stimulus for trade. As the production costs in these countries rose, a migration began in the late 1980s to factories in China. There was a complementary shift to Southeast Asia but this lost momentum during the Asian financial crisis in the late 1990s.

Annex Figure 12: Largest apparel exporters, 2010 (%)

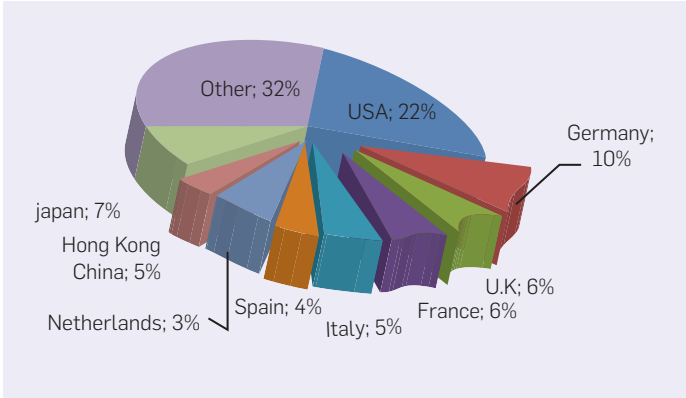


Source: Trademap.

²⁹ Per capita spending on apparel grows less than proportionately with increases in per capita income

The outsourcing had the greatest impact on the US where only 4 percent of its apparel is produced domestically. Europe has been less affected although 85-90 percent of its apparel is still imported. Nevertheless, some European countries continue to export. The largest exporters are Italy and Germany with each contributing 5 percent to global trade. Turkey and France contribute 4 percent and 3 percent, respectively, as shown in Figure 12. When intra-EU trade is considered, Italy is the second largest textile and clothing exporter in the world and is the leader in the high value market, which has a large fashion component. Turkey has been able to achieve strong growth in exports by creating a number of regional brands.

Annex Figure 13: Largest apparel importers, 2010 (%)



Source: UN-Comtrade, 2012.

Asia experienced particularly rapid growth in exports over the last three years while exports from Africa, Latin America and Eastern Europe grew at a slower pace. Eastern Europe is presently repositioning itself towards higher value market segments since their cost structure does not allow them to compete with Asia. Egypt is in the process of revitalizing its garment manufacturing to complement its production and export of cotton and cotton fabrics. South and Central American countries are seeking to maintain their present position.

The principal destinations for exports of garments remain the US and the countries in the EU as shown in Figure 13. While the share of exports destined to the US and EU has remained relatively steady as shown in Table 4, growth in demand in the last few years has come primarily from the larger emerging economies.

Market segments

The market for apparel can be divided into different segments based on the final consumers, the fashion content and the international buyers.

Final consumer

From the perspective of product sophistication, apparel can be classified into five main categories. The traditional categories are men's, women's, and children's clothing. Athletic clothes have emerged as a separate category in recent years. The remaining products include accessories and miscellaneous. Each category has different characteristics as follows.

- *Women's clothing has a significant fashion component and a broader range of products in each of the subcategories from formal to work to casual.*
- *Men's clothing has an increasing fashion component but remains much less than for women. The range of products is also smaller.*
- *Children's clothing is a smaller market with fewer products because of the age range. The fashion component is minimal but increasing, especially in mature markets.*
- *Athletic clothes serve as casual clothes and sportswear. There is an increasing fashion component and strong emphasis on the brand*
- *Accessories include a wide product range most of which has a fashion component.*

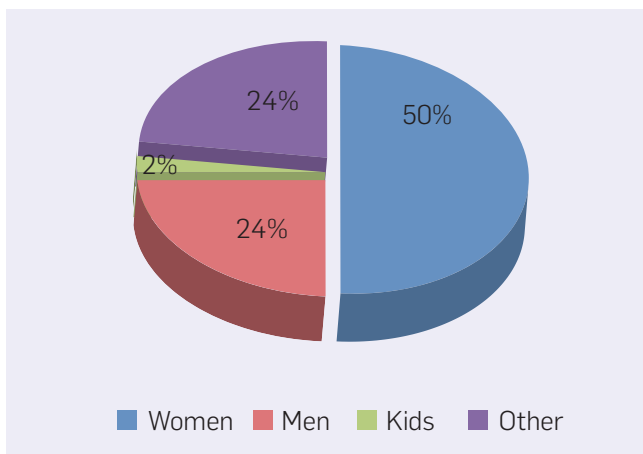
Consequently, women's clothing accounts for roughly 50 percent of global trade, while men's clothing adds up to only 25 percent as shown in Figure 15.

Annex Table 4: Major destinations for garment exports, 2010 (US\$ billion)

	1995	2000	2005	2007	2008
World (US\$ bn)	162.9	208.9	291.2	358.1	375.6
EU-27 (%)	45.5	39.8	45.2	46.1	47.3
United States (%)	25.4	32.1	27.5	23.7	22.0
Japan (%)	11.5	9.4	7.7	6.7	6.9
Russian Fed. (%)	0.0		0.4	0.8	3.9
Canada (%)	1.7	1.8	2.1	2.2	2.3
Switzerland (%)	2.3	1.5	1.5	1.5	1.5
U.A.E. (%)	0.8		0.2	1.5	0.4
Australia (%)	0.8	0.9	1.1	1.0	1.1
South Korea (%)	0.7	0.6	1.0	1.2	1.1
Norway (%)	0.9	0.6	0.6	0.6	0.7
Mexico (%)	1.2	1.7	0.9	0.7	0.7
China (%)	0.6	0.6	0.5	0.6	0.6
Singapore (%)	1.0	0.9	0.7	0.7	0.6
Turkey (%)					0.6

Source: (WTO, 2010); Apparel represented by SITC Code 84 as presented in "The Global Apparel Value Chain, Trade and the Crisis: Challenges and Opportunities for Developing Countries" Gereffi, G. and Frederick, S., April 2010, Research Working Paper 5281, World Bank.

Annex Figure 14: Garment trade by product category, 2010 (%)



Source: General Department of Customs and Excise, 2011.

Annex Figure 15: Fashion pyramid



Fashion content

Whereas, each of these segments has a fashion component, it is most important in women's clothing and accessories. The fashion component can be divided into five categories, which are represented in the fashion pyramid shown in Figure 15. The top of the pyramid, haute couture is the smallest but most expensive, whereas basic garments is the largest in terms of volume but lowest in terms of cost. The characteristics of these five are as follows:

- **Haute couture:** This is the most expensive and exclusive of all segments and consists of custom-made clothing from a small number of firms. Haute couture is sold exclusively at fashion shows and through appointments at the designer's store. Although the market is small it has been expanding due to the new wealth in emerging markets such as India, China and the Middle East.
- **Designer collections:** All couture houses also produce ready-to-wear clothes. The mass-produced ready-to-wear collections are more profitable because they have a larger market, but depend on the haute couture to preserve the brand's image. Examples are Giorgio Armani, Christian Dior, Chanel, Givenchy, Christian Lacroix, Emanuel Ungaro, John Galliano, and Alexander Mc Queen. The designer collections are sold through a small number of branded retail stores located in upscale markets.
- **Fashion Basics:** These mass-produced brands target middle-income households but retain a fashion component. They have a relative short shelf life and generally produce several collections per year. Examples of this segment are Inditex (Zara), H&M, Marks & Spencer, C & A, Next, Benetton, Coach, Polo Ralph Lauren, and Abercrombie & Fitch Company. Fashion basics are sold through a small number of branded retail stores located in upscale markets although the outlets are more widely distributed in metropolitan areas.
- **Retail brands:** These are similar to fashion basics but the brand is associated with the retail chain, which sells a variety of brands. Retail brands are distributed through large retail chains.
- **Basic Apparel:** These are the discount brands produced in large volumes and targeting low-income consumers. They are distributed through large volume retailers such as Wal-Mart, J.C. Penny, Carrefour, Metro, Target, Kohl's etc.

International buyers

Buyers can be divided into four categories depending on their involvement in the downstream activity. These are branded marketers and branded manufacturers, independent buyers and global retailers.³⁰

Branded marketers are directly involved in design and marketing but contract out the manufacturing. They set standards and specifications for the products. They use international third party logistics service providers but their regular manufacturers assume an increasing role in the provision of logistics. Typical examples of brand manufacturers are Nike, Adidas etc.

Branded manufacturers are involved in the entire supply chain. They have their own factories and retail outlets in their major markets. However, many have refocused on their core competency and outsource most or all of their production in order to concentrate on marketing and retailing.

Global retailers such as Wal-Mart, Kmart, Carrefour and others outsource the supply of apparel through buying agents and sell their products exclusively in their own retail outlets

Independent buyers and wholesalers/distributors act as an intermediary between garment producers and large retailers. They oversee production and the logistics between the factory and the retailer's distribution center. They are also assuming responsibility for quality control and social audits. These specialists, such as Li-Fung, are increasing their share in the market as their clients refocus on marketing and retailing

Distribution channels

Basic apparel is distributed through buyers and wholesalers, who sell to large discount chains or outlets. Haute couture is sold at fashion shows and through appointments at the designer's store. Retail brands are distributed through large retail chains. The basic fashions and retail brands are purchased by the retailer either directly or through buying agents.

³⁰ Aboni Study on GVC, UNESCAP, p. 36, 37.

In recent years, distribution channels have evolved as more brand manufacturers and marketers open their own stores. At the same time, large retailers are developing proprietary brands using either in-house design teams or brand marketers. Their production is often outsourced to one or more foreign factories. The large retailers are also using different sources for fashion and basic apparel. While for brand manufacturers quick market response and flexibility are important, large retailers place more value on low costs.

The role of intermediaries in the distribution channel has also changed. Some manufacturers manage their global supply chains and act as direct suppliers to the buyers. In contrast, many retailers use buying agents that provide a broad range of services including basic design and product development, quality control and supply chain management, and monitoring the performance of factories with regards to social and environmental standards.

Finally the relationship between supplier and buyer is changing as the development of global supply networks creates demand for greater reliability. This has led to diversification away from a single source or multiple sources within a single country. At the same time, it has meant a reduction in the number of suppliers and encouraged longer-term relationships with larger suppliers that serve multiple clients.

Value proposition

The branded retail chains used for fashion basics, e.g. H&M, Zara, Gap, Benetton, Diesel, introduced the concept of fast-changing fashions. They increased the frequency of design changes (seasons) and focused on providing an image for their fashion-oriented consumers. This implied a larger design component but focused on trends rather than on original designs. The variety of colors and sizes increased, while prices were kept reasonable. They also significantly improved the performance of their supply chains in order to provide

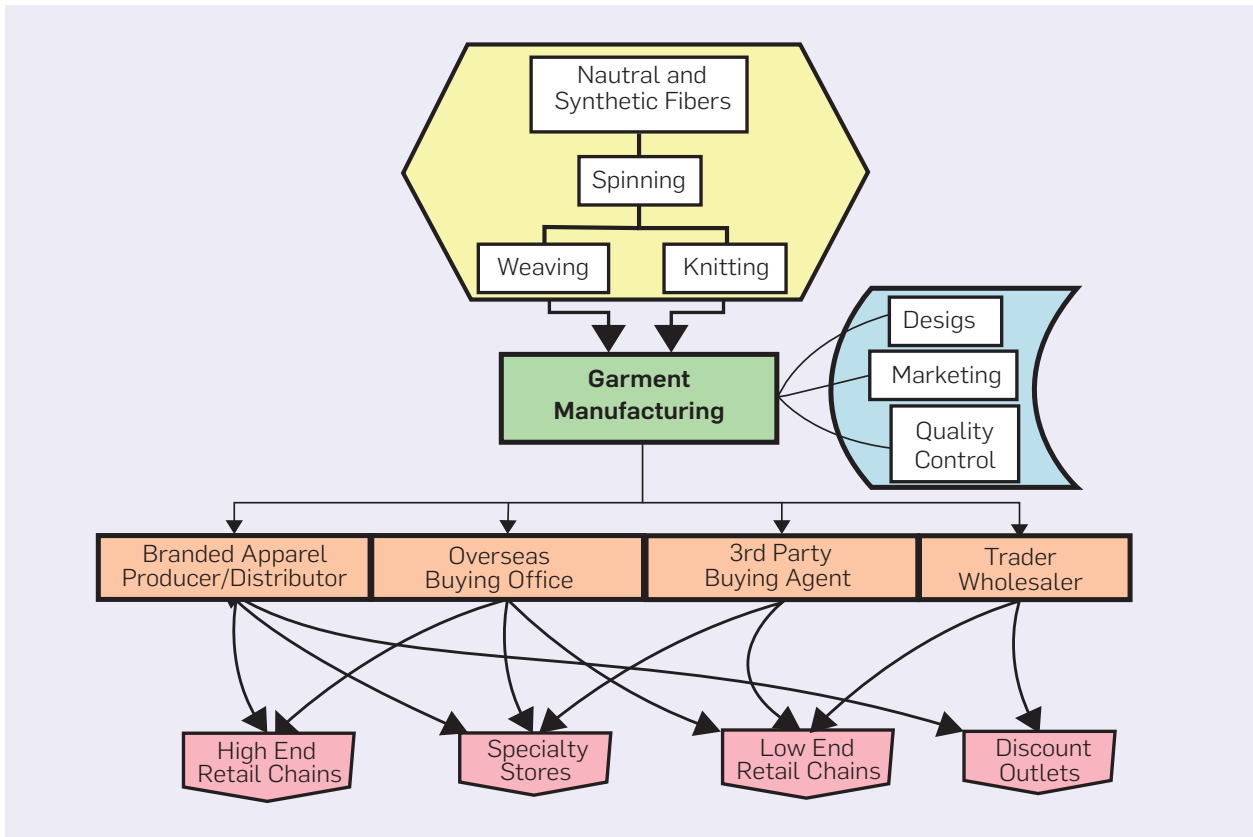
- *Fast development cycles, with smaller batches and greater variety to offer customers the latest designs in limited quantities to provide a sense of exclusivity;*
- *Increased information and supply chain transparency to better monitor in-store stocks, to respond quickly to consumer demand, to supply the design and marketing departments with real-time information on sales and to deliver new fashion lines just-in-time; and*
- *A large retail network covering all major cities of a country/continent. For example, H&M has 2,300 stores (in 43 countries), Mango 2,000 stores (in 103 countries) and Zara more than 1,000 stores worldwide.*

Despite the great reliance on fast production and efficient logistics, not all companies operating in this segment have their own factories. For example, Gap, Mango and H&M do not have their own production facilities and outsource all production while others outsource only part of their production.

Production of garments and textiles

The complete supply chain for apparel begins with the production of the textiles and ends with the distribution of the apparel to different retail outlets as diagrammed in Figure 16. The production of textiles follows the following sequence spinning and either weaving or knitting the yarn then dyeing or printing the fabric and finishing the fabric. For some fabric, dyeing is done before weaving. The finishing process for fabrics includes various treatments to change the appearance, durability, etc. Mechanical spinning is used for natural fibers, while melt spinning of the polymer is used for synthetic fibers. Natural fibers are usually woven while synthetic yarn is normally knitted.

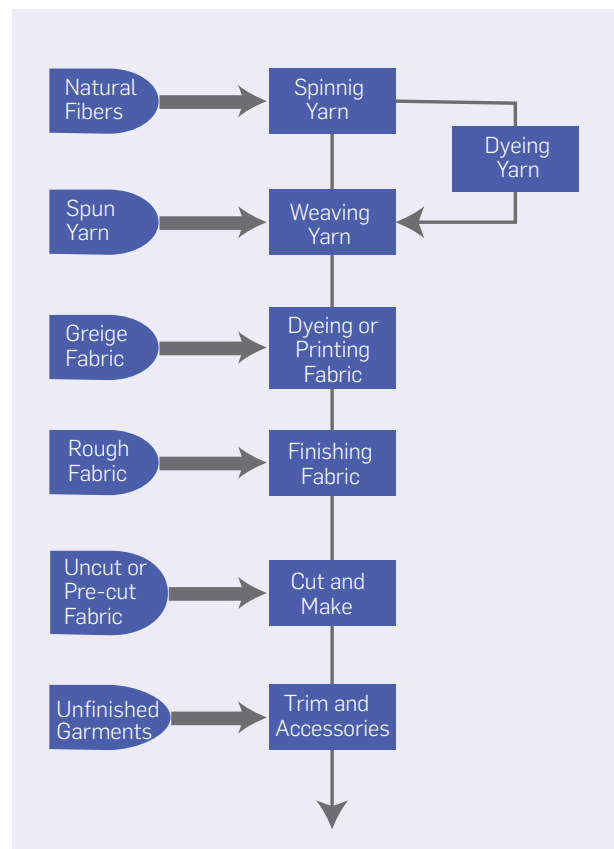
Annex Figure 16: Supply chain from fibers to apparel



The supply chain is usually organized by the buyer or the buyer’s representative who contracts the services of the manufacturer. The principal activities of the garment manufacturer are cutting, making, trimming, packaging and labeling the garment. These separate the supply chain into an inbound supply chain for obtaining inputs and an outbound supply chain for distributing the products. The buyer retains responsibility for design and specification of the inputs and will normally assume responsibility for distributing and marketing. However, responsibility for sourcing or procurement of the inputs may be assigned to the manufacturer. The business models discussed below are based on variations in the assignment of responsibility for the supply chain activities.

One variation involves vertical integration with the manufacturer participating in the production of the fabric. This backward integration can include one or more of the activities in producing the fabric as shown in Figure 17. Dyeing and finishing involves the least investment and labor, but simplifies the sourcing of fabric and reduces the delivery time. Weaving is more capital intensive and also requires a larger labor force.

Annex Figure 17: Input points for the garment production activity



In order to ensure an efficient weaving operation, the garment manufacturer continues to obtain some fabric from other producers and the weaving operation sells part of its output to other manufacturers.

Alternative business models

The extent of backwards integration is one of the parameters that define the business model applied by a garment manufacturer. The other parameters relate to design and marketing.

Assembly/CMT (cut, make and trim) is the simplest model. The manufacturer produces the garments but is not involved in design of the garment or the sourcing of the fabric. The manufacturer is paid a processing fee, and uses fabric sourced, and in some cases produced, by the buyer.

Original Equipment Manufacturing (OEM)/FOB/Package Contractor is a model in which the manufacturer sources and procures the fabric and produces the garments. The buyer provides exact specifications as well as the design. A manufacturer with backwards integration may also produce the fabric.

Original Design Manufacturing (ODM)/Full Package Contractor is a model in which the manufacturer carries out all steps involved in the production, including design, sourcing and procuring fabric, and distribution of garments. The buyer approves the design and material used for production through an exchange of samples produced by the manufacturer. In some cases, the manufacturer may also produce the fabric.

Original Brand Manufacturing (OBM) is a stand-alone business in which the manufacturer sells products that are designed and produced under the company's own brand. The manufacturer may also produce the fabric but the actual manufacturing is frequently subcontracted. The firm may act as the supplier by taking control of the distribution channel but the buyer often retains this responsibility.

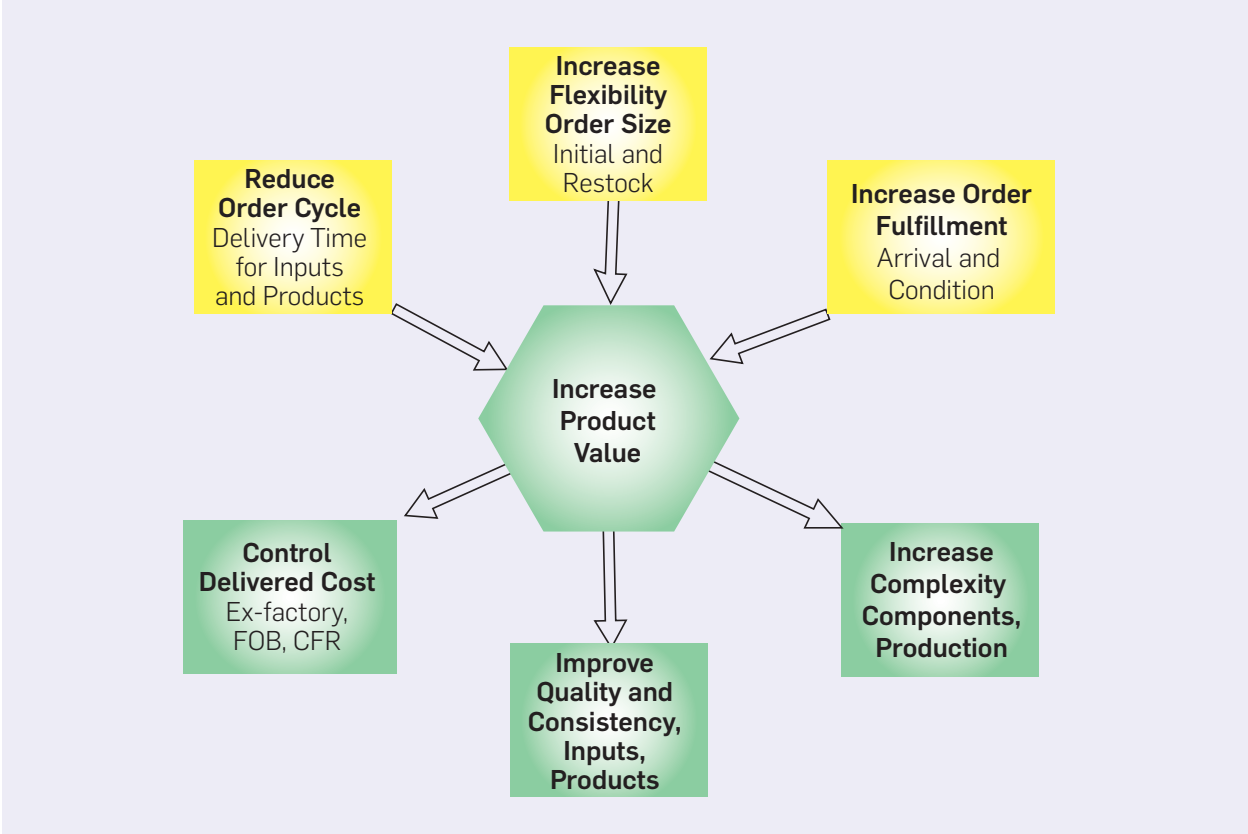
Annex Table 5: Countries applying different business models

Functional Capabilities	Country Examples
Cut, Make, Trim (CMT/Assembly)	Cambodia, SSA, Caribbean, Vietnam
Package Contractor (OEM)	Bangladesh, Indonesia
	Sri Lanka, Mexico
Full Package Provider (ODM)	Turkey, EU, India, China
Service Providers	Hong Kong, Taiwan, South Korea, Singapore, Malaysia

Supply chain performance

The demands on supply chain performance increase as the value of garments rises (Figure 18). Higher value garments have a greater fashion component and, therefore, a shorter shelf life. They require shorter order cycles and, at the same time, greater attention must be given to managing product inventory to avoid either stock outage or overstock. In order for local manufacturers to win orders from producers of higher value garments, they need to improve not only the quality of their production but also the performance of the inbound and outbound supply chains including quality control. In many situations, an increase in garment value is associated with sourcing a greater variety of higher value inputs. It also involves a greater variety of order sizes, both for the initial orders and restocking. These changes require faster setup times for production lines and better management of both inbound and outbound supply chains and the associated transactions. The manufacturer must improve the rate of order fulfillment by providing on-time delivery of products in good condition. While there may be less emphasis on delivered cost relative to delivery time and order fulfillment, the manufacturer still expect the manufacturer to control the costs of both of inputs and production.

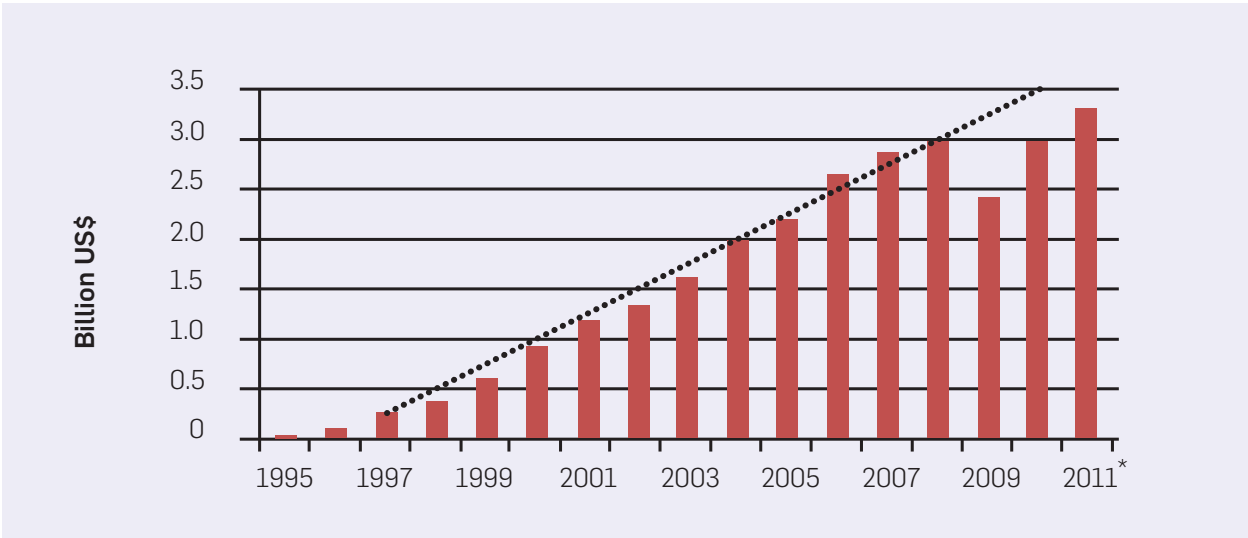
Annex Figure 18: Enhancements to supply chain performance with higher-value products



Cambodia's garment industry

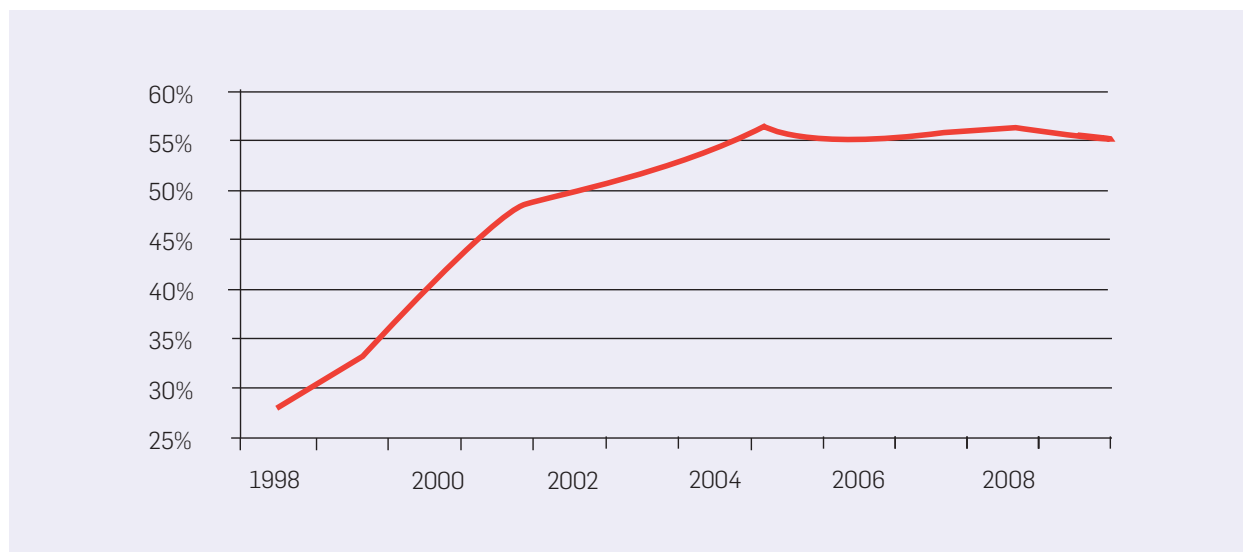
The value of Cambodia's garment exports grew at a relatively uniform rate until the global financial crisis caused a contraction as shown in Figure 19. Its contribution to the global trade rose from 0.33 percent in 1998 to 0.95 percent in 2011. The contribution of the apparel industry to Cambodia's GDP rose from around 1 percent in the early 1990s to about 10 percent in 2009. The apparel and footwear industry accounted for an increasing portion of total industrial output until 2005, when it contribution leveled of at 55 percent as shown in Figure 20.

Annex Figure 19: Cambodian garment exports 1995-2011 (US\$ billion)



Source: GMAC, 2011.

Annex Figure 20: Apparel and footwear as share of the industry, 1998-2009

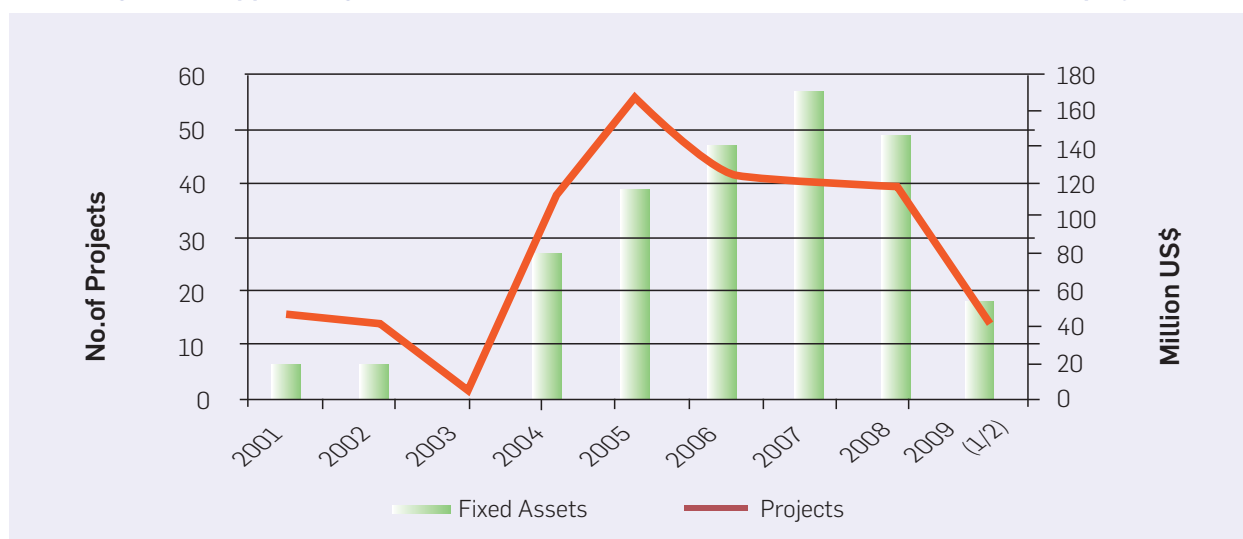


Source: Kimsum, Ministry of Economy and Finance, 2010.

The growth in exports was achieved through an increase in FDI, which led to a rapid growth in the number of factories and associated employment. Beginning in 2008, there was a contraction with the result that new investments came to a halt (Figure 21), and a number of factories closed while others merged. The recovery, which began in 2010, has returned output to pre-crisis level, however, the employment has recovered only slightly and the number of factories remains relatively stable (Figure 22). Current employment is a little above 300,000 of which 92 percent are female.³¹

Only about 6 percent of the garment factories in Cambodia are owned by local investors. The foreign factories are owned primarily by investors from Taiwan, China and, Hong Kong as shown in Figure 23. Most of the foreign-owned firms are vendor factories managed by the overseas headquarters of their parent company. These factories have little discretion over the inputs and minimal contact with the buyer.

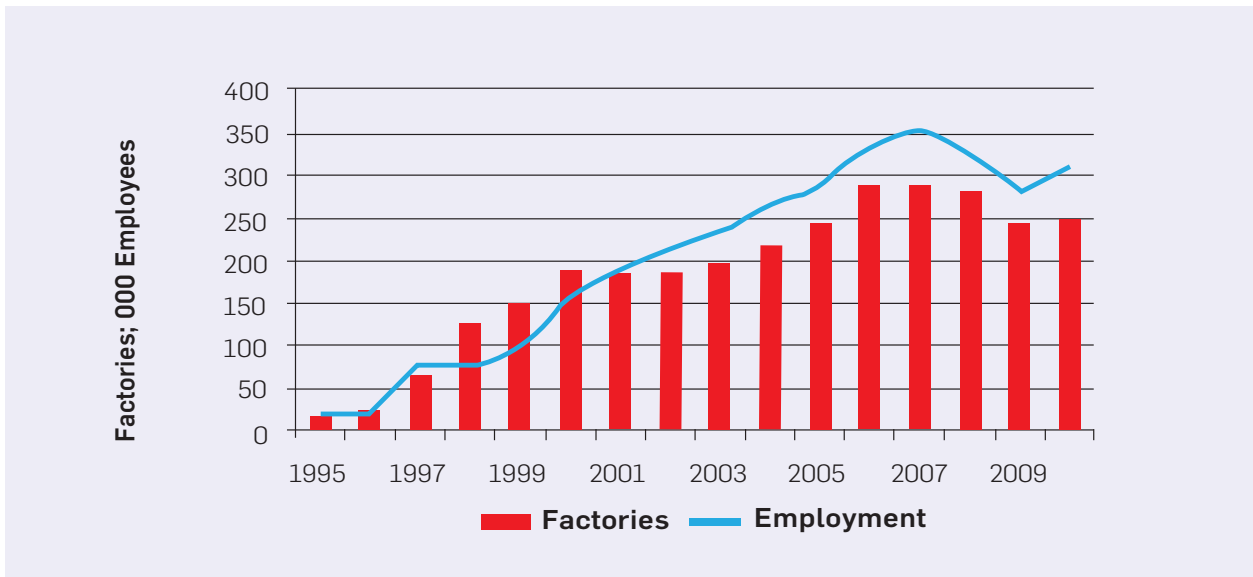
Annex Figure 21: Approved garment investments, 2001-09 (in fixed assets and number of projects)



Source: Cambodia Development Corporation.

³¹ Cambodia Diagnostic Trade Integration Study 2007.

Annex Figure 22: Garment factories and employment, 1995-2010 (# of factories and '000 employees)

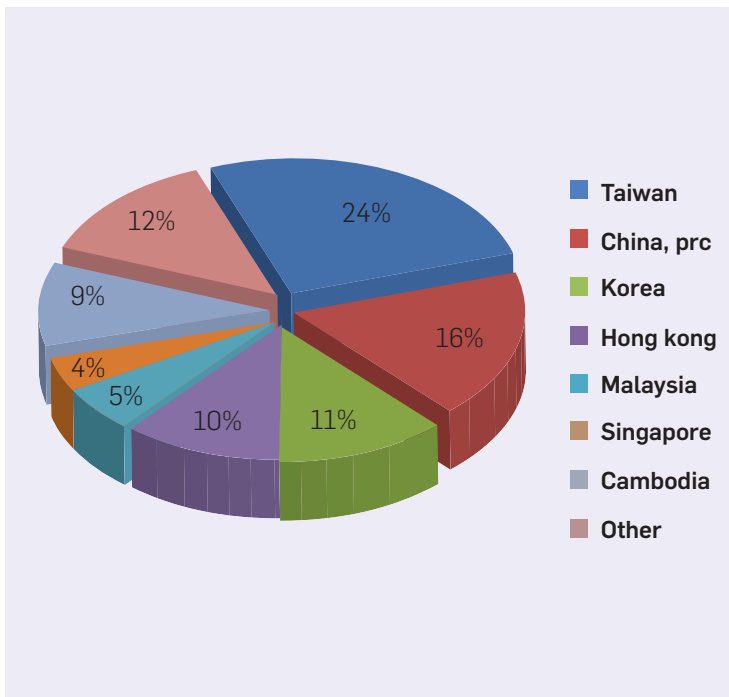


Source: International Labor Organization, GMAC, 2011.

The headquarters allocates orders from the buyers to the factory based on its capacity, unit costs, and skill level relative to the other factories owned by the parent company. It then arranges for delivery of inputs as well as shipping of the exports. As a result, the individual factories have little ability to attract orders or to identify markets into which they could expand.

Most of the factories are located around Phnom Penh or in Kandal Province. While some are located in the Export Processing Zones, most are outside because there is little difference since inputs can be imported duty free.

Annex Figure 23: Ownership of garment factories



Various estimates have been made of the proportion of the factories that are either vendor factories or contract manufacturers involved in CMT/Assembly. The results vary from 60 to 87 percent, in part due to a problem of definition. At least 70 percent of the factories are contract manufacturers or vendor factories, and the latter account for most of them. A small portion of the factories source inputs and prepare samples (see box on following page). There are also some factories that produce their own designs but these are small-scale production of accessories with designs prepared by NGOs and other social enterprises. A number of the smaller factories produce for the domestic market and sub-contract to larger producers.³²

³² GMAC presentation.

Annex Box 1: Cambodia OEM factory

One large company factory in Phnom Penh operates as an OEM. It is part of a Group that most of its operations in South Asia but also has stand-alone factories in Cambodia, Mauritania and Madagascar. The one in Phnom Penh, which has about 3000 employees, serves Gap.

Gap presents various styles to its contract manufacturers and asks for bids. The Group presents bid but factory contributes to cost estimate. The factory will take orders of 10 thousand to 1 million but do not take orders for rapid replenishment. If they require additional capacity, they subcontract other factories.

Gap nominates the suppliers and forwarder. Fabrics are sourced from five suppliers in China, India and Pakistan. The factory arranges procurement from these suppliers because group has no particular advantage since material is not from Bangladesh. The fabric is usually shipped on a CFR basis with payment on receipt in Sihanoukville, CAD using a TT. For this transaction they use HSBC because of limitations on both Bangladesh and Cambodian banks. They do not use a L/C because the Gap effectively acts as guarantor.

Once the order is confirmed, the factory has 90 days to deliver to nominated forwarders. The time for procurement of fabric is generally 30 days plus time to Cambodia for a total of 45 days. Samples are prepared to test for fitting, washing and pre-production and approved by GAP headquarters in SF. These involve relatively short turnaround times. Trim is obtained from a variety of sources, e.g. zippers from HK, buttons from India and thread and packaging from Vietnam, but these require less time for delivery. Production generally requires about 30 days.

Exports are shipped to Gap's distribution center in forty foot containers with ocean transport arranged by GAP's nominated forwarder. Goods are shipped CFA with payment CAD and TT not L/C. When shipments are delayed, they consult with GAP. About 1 percent of the shipments end up being sent via Air-Sea

At present, there is no demand to reduce order time. They could try to produce fabrics locally, but Cambodia has no tradition for textile manufacturing. They could produce their own synthetic knitwear as is done in Bangladesh, but there is no justification for this investment. The factory does some washing and occasional over-dyeing, but see no benefit in trying to establish a dyeing and finishing operation.

Marketing and costing are done at the Group headquarters while merchandising is done through its India office. They use local banks to manage documents and local financial transactions. Otherwise they manage their cash-to-cash from internal funds.

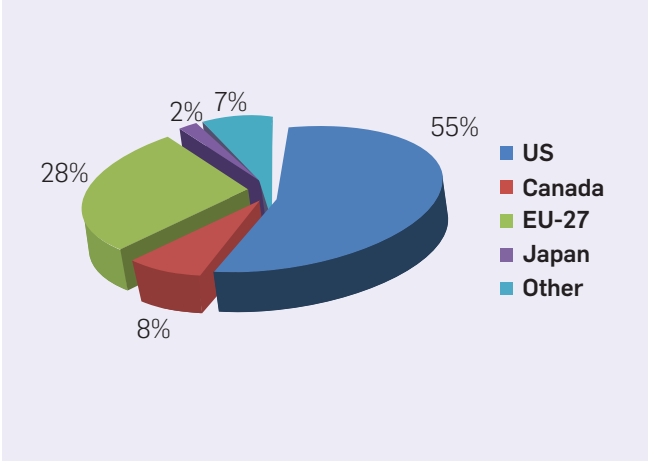
Source: GMAC, 2011.

The average level of employment per factory is about 1100. The largest are those with Taiwanese and Malaysian owners with an average of about 1,500 employees while locally owned factories average less than 600 and Chinese firms about 650.³³ About a quarter of the firms employ less than 500. The largest factories employ 6,000-9,000.

³³ Table 1.3, "Factory-Level Value Chain Analysis of Cambodia's Apparel Industry".

Cambodia has no domestic suppliers of fabrics, threads, accessories and trim. Local inputs are limited to packaging materials. About 70 percent of the fabric is imported from China, Taiwan and Hong Kong and another 16 percent from Southeast Asia. A large proportion is ordered by the large foreign-owned factories, which order from suppliers that have a relationship with the parent company and are very often from the same country. For the factories that procure fabric, most do so according to the buyer's specifications and in many cases, from suppliers designated by the buyer.

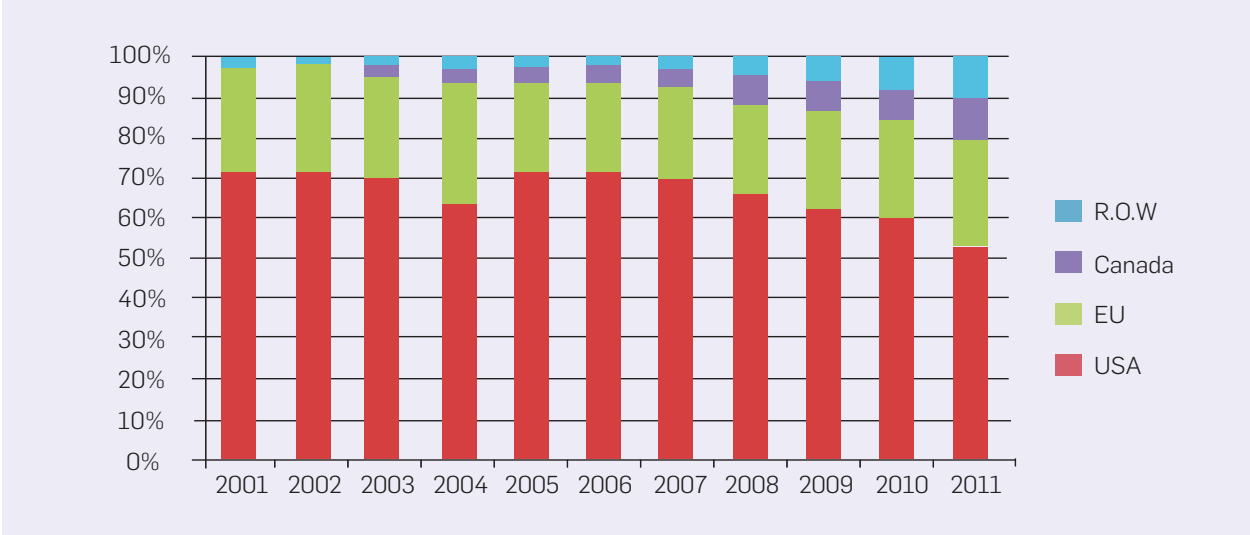
Annex Figure 24: Cambodian garment export destinations, 2010



Source: GMAC, 2011.

A significant majority of the garment exports are destined for the US or EU (Figure 24), however, the proportion going to other markets has been increasing (Figure 25). The concentration of export destinations in the US and EU are encouraged by the various trade agreements providing preferred access such as the Bilateral United States-Cambodia Textile and Apparel Agreement, and the EU's EBA initiative. Because the trade agreement with the EU has restrictions on rules of origin related to double transformation, exports have tended to focus on sweaters and other items that meet this requirement.

Annex Figure 25: Destination of Cambodian garment exports, 2001-11

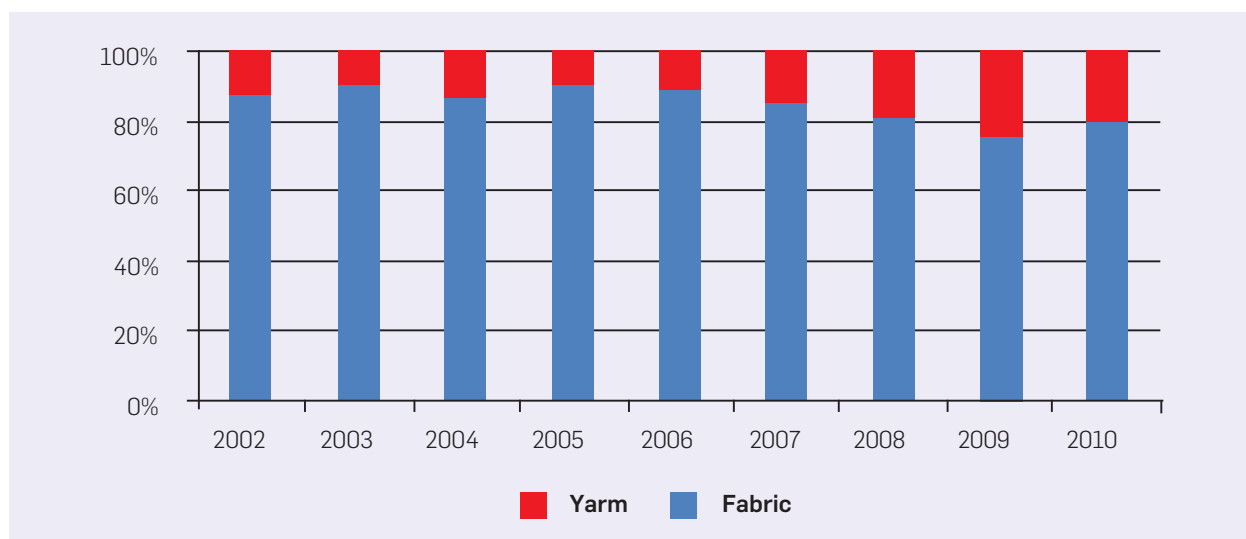


Source: GMAC, 2011.

There are a large number of buyers of the apparel exports. These include retailers from all segments, brand marketers and retail chains. However, GAP is estimated to account for 30 percent of the production and the 15 largest buyers, which include H&M and Levi Strauss, Nike and Adidas and C&A and Target, purchase over half of the exports.

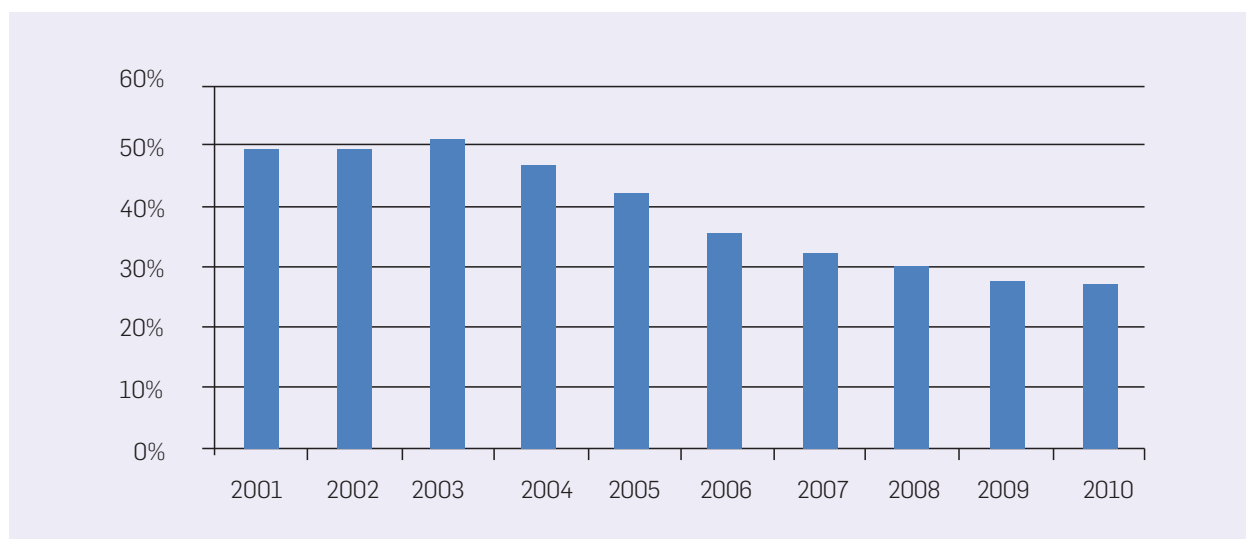
Exports are mostly high-volume, low value-added products intended for the low and medium market segment in the US and to a lesser extent in the EU. Most of the exports are made from imported fabric (Figure 26). The majority of exports are knitted and the proportion has been increasing over the past years as shown in Figure 27. Knitted garments typically include items such as T-shirts, sweaters, sweatshirts and polo shirts while trousers, shirts, and jackets are normally classified as woven garments. Of all the different products, seven account for 60 percent of the exports as shown in Table 6. The majority of the garments are cotton. For the exports to the US in 2010, 75 percent was made from cotton, a small portion from wool and the rest from synthetic fibers.

Annex Figure 26: Imports of fabric and yarn, 2002-10



Source: UN-Comtrade, 2012.

Annex Figure 27: Share of woven garment exports on total exports, 2001-10



Source: UN-Comtrade, 2012 (Import data for Canada, Germany, UK and US).

The contraction in 2008-09 was caused by a number of factors in addition to the global financial crisis and current European debt crisis. These include:

- increased competition from China in the low end of the market (basic garments);
- reduced trade restrictions on Vietnam and China by Europe and the US;
- increasing wages relative to its competitors; and
- higher logistics costs.

Annex Table 6: Top seven products in US and EU

H.S.Code	Description	Apparel Exports (%)
611020	Sweaters, pullovers, sweatshirts	22
611030		8
610462	Women's or girls' trousers	6
620462		11
620342	Men's or boys' trousers	8
610910	T-shirts, singlets, tank tops	5
610220	Women's or girls' overcoats	2
	Total	60

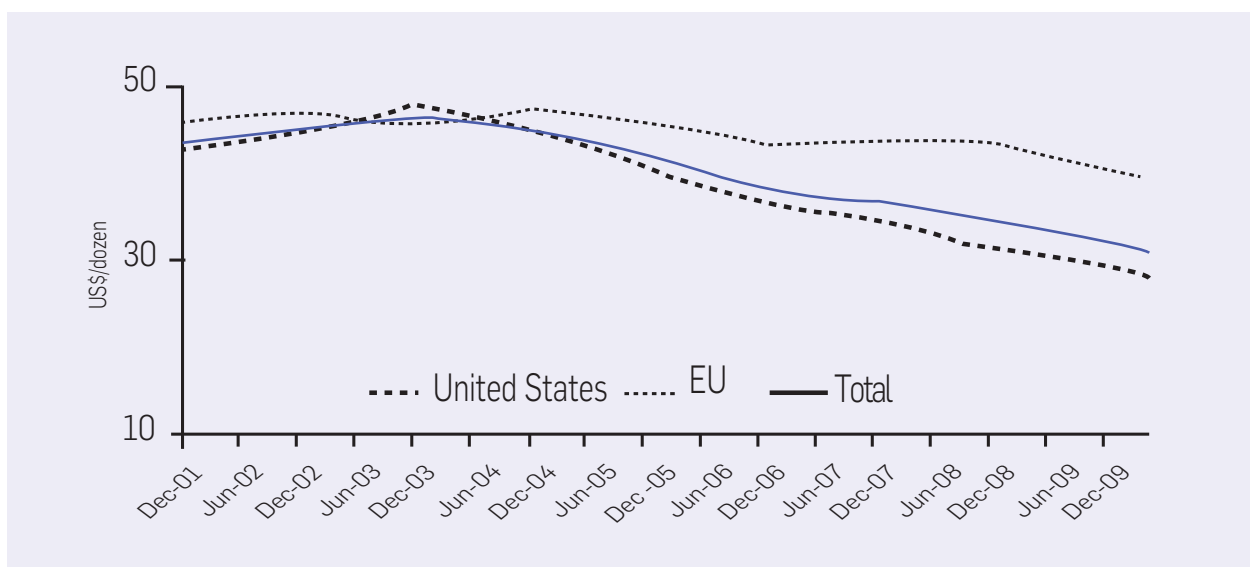
Source: Staritz, USITC

During this period of slack demand, the buyers have been able to negotiate lower prices, introduce more favorable payment terms, shorten their order cycle and require higher rates for order-fulfillment. These changes are unlikely to continue even after the economic recovery.

The challenge for the Cambodian apparel industry, aside from diversifying its market and reducing energy and labor costs, is to adjust its production to changing market conditions. At the same time, it will have to increase the unit value of its exports. Therefore, it must reverse the slide that has occurred primarily in the US market over the last decade (Figure 28).

Cambodia has an extensive network of Special Economic Zones that were developed to attract new investment and provide an environment that would stimulate the growth in exports. However, this has had very limited impact. Most of the Zones are either non-operation or have few locators. Only a few are successful, but these have attracted a potpourri of investors rather than creating clusters which would benefit specific industries. Perhaps most telling is the preference of garment factories to remain outside of these zones allowing them more alternatives in choosing a site for their factories while retaining most of the benefits that the zone offer such as duty free import of inputs and bonded storage.

Annex Figure 28: Decline in value of export prices



Source: World Bank, "Making the Cut", 2011.

Summary of firms surveyed

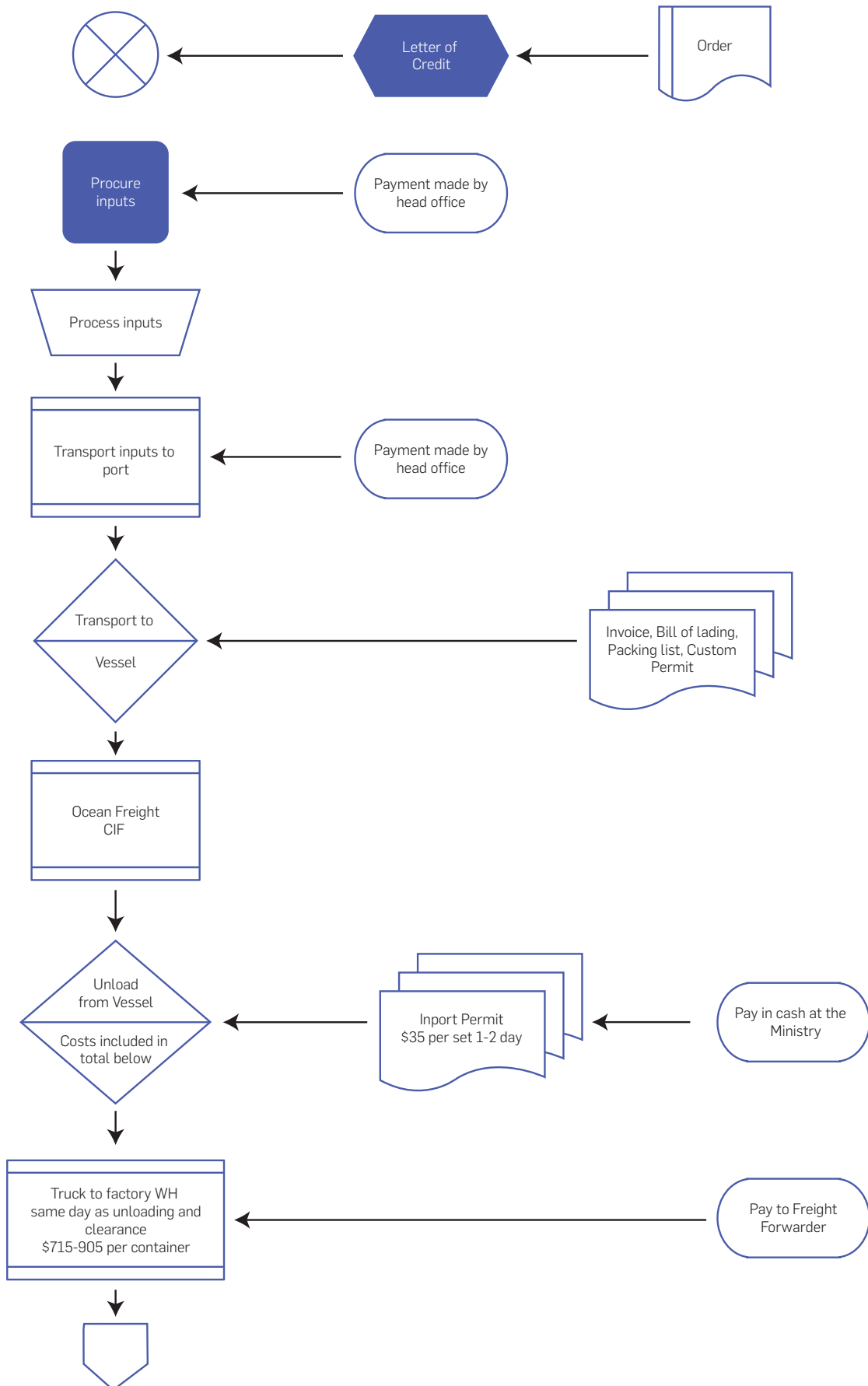
1. Of the five firms surveyed three dealt primarily with knitted fabrics and the others with woven textiles
2. All of the textiles are imported from either the original manufacturer or foreign distributors
3. All the firms use multiple suppliers but predominantly from China. A few firms also use material from Southeast Asia
4. All firms have difficulties with uncertainty of supply and price variations. Problems with delays in delivery or quality control were less prevalent.
5. The firms produce primarily women's' wear for North America but one firm shipped primarily to the EU
6. All production is on a fixed order basis with the exported products ready for retail
7. Demand for the products is subject to seasonal fluctuation, however, most products are not subject to variation in fashion and have a relatively long shelf lives
8. The typical order cycle, up to the point of shipment, is either 45 or 90 days depending on order size and source of fabric
9. The time for international transport up to the buyer's warehouse is typically 14-30 days
10. During periods of peak demand, orders would rise by about 25 percent. In order to meet the additional demand, firms extend their working hours, add production lines and/or subcontract order firms
11. The firms indicated they shipped about 5 percent by air and the rest by ocean
12. While the time for payment vary according to the buy, it was typically 7-30 days after loading onto the transport for export
13. Each of the firms had difficulties with the time and the cost required for import permits and customs declarations, both, however the most serious delays occur when waiting for the certificate of origin which can only be issued after shipment and can take 5-10 days.
14. To obtain approval for Customs declarations for inputs often poses a problem because of the limited availability of Customs officials. This process can take around 5-7 days.
15. The principal financial risk faced by the firms was the variation in demand and pricing. Issues with the logistics were not cited
16. The firms did not distinguish between cost, quality and uniqueness of product in terms of their contribution to competitive advantage
17. The firms expect to grow their business through increasing volume. Only two indicated that they contemplated increasing the unit value of the products they produce
18. The principal constraints to growth are the perceived lack of demand followed by difficulties with retaining skilled labor and securing adequate supplies of energy
19. Difficulties with the inbound supply chain include the availability of inputs followed by customs formalities. For the outbound supply chain, there are problems with certificate of origin and customs formalities
20. Inputs are ordered as both single and multiple shipments
21. The order time for imported inputs range from 21 to 55 days with shipments ranging in value between US\$200,000 and US\$900,000 or 4-12 TEU
22. Inputs are received on a weekly basis with shipments organized by the manufacturer who ships them primarily on FOB basis
23. The firms operate in a duty-free zone and goods are kept there until the time they are exported

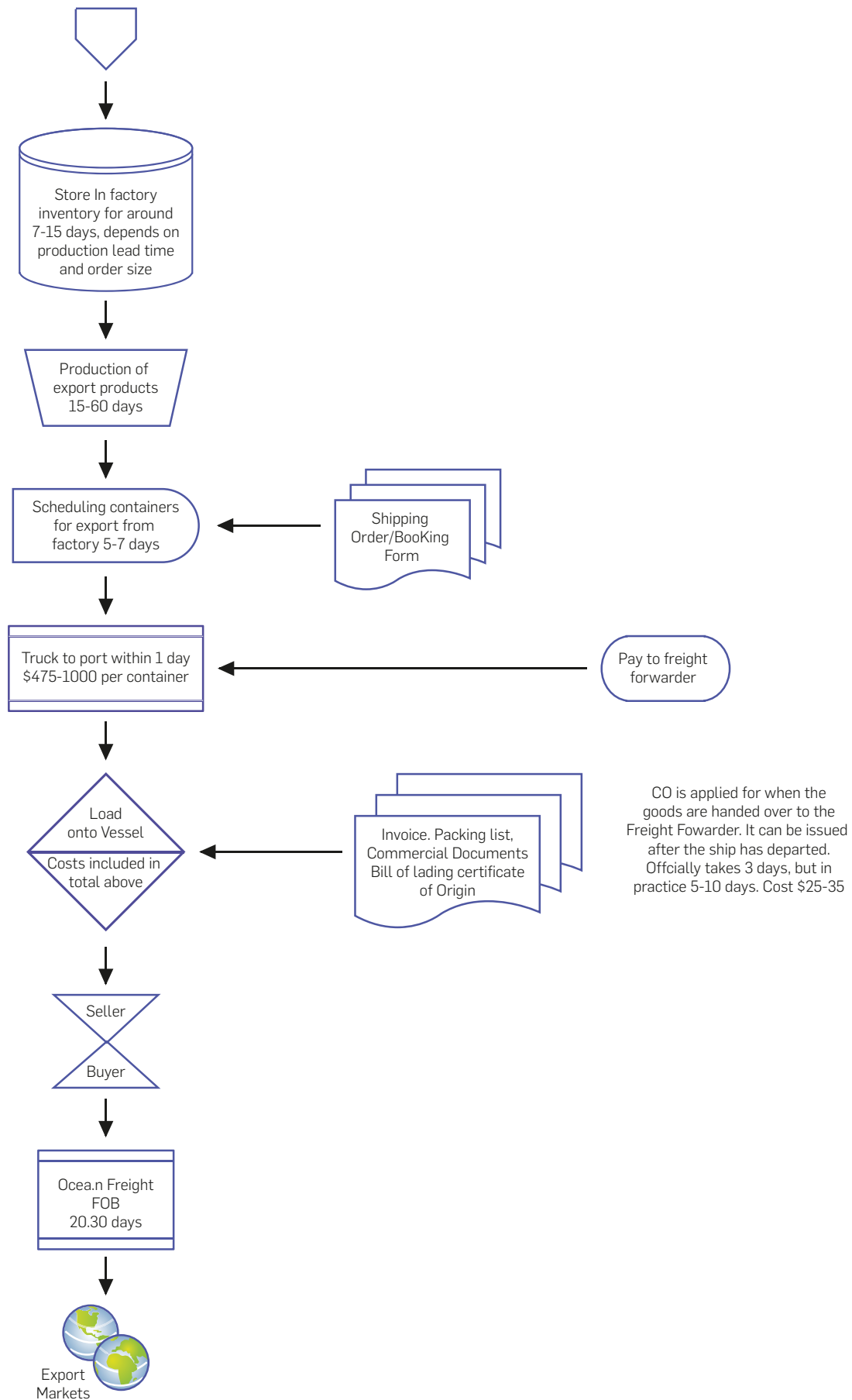
24. The cost for moving the container from Sihanoukville port to the factories warehouse ranges from US\$715-US\$905 which presumably includes the terminal handling charge; for exports the range is US\$470-US\$1,000
25. A major cost of production is electricity. Depending on their size, factories spend between US\$25,000 and US\$117,000 per month
26. A typical shipment ranges in size from 1 to 20 containers. Shipment size depends on the size of the firm and the season, but most firms will not accept shipments less than one container load
27. Products are shipped on a weekly basis
28. During the peak season between May and October volumes increased by 15-60 percent
29. The average value of export shipments varies from US\$110,000 to US\$325,000
30. Between 1 percent and 5 percent of the exports are shipped by air, the rest by ocean
31. Most shipments are arranged by forwarders
32. Trucking firms are given 5-7 days advanced notice for transport from factory to the port.
33. The average time from start of production to delivery to the ports is usually 2 weeks but can extend up to 30 days.
34. Delays occur usually for 3-5 percent of shipments but one firm experienced delays in half of their shipments. These delays are caused by problems in delivery of supplies and delays in production.
35. When a shipment is delayed, the firms notify the buyer and in some cases switch transport modes
36. The rate of rejection of shipments due to shortfalls or damage is 2 percent-5 percent with the result that the buyer merely deducts the amount of the shortfall from the total payment
37. There are problems with obtaining information on current Customs regulations. Sources of information include government, forwarders and GMAC
38. The firms use both forwarding agents and individual customs brokers to clear their goods firms used
39. Customs is seen as the biggest problem on both inbound and outbound supply chains
40. Imports are purchased through direct negotiation of contracts for a specific quantity, however, all inputs are normally provided by the buyer.
41. Payments for imported inputs are made by arranging a specific time after shipment using time drafts (TT). Only two firms used an L/C.
42. Typically the period of payment is 7-45 days after receipt of goods
43. Most communication with the buyer is through fax or e-mail
44. Four of the five firms obtain funds to purchase the inputs by factoring the LC from the buyer
45. Payment for exports is received using a TT with a fixed period after delivery of the goods to the buyer's warehouse. However, in some cases exports are paid according to a fixed schedule.
46. The only cargo insurance is arranged by the freight forwarder.
47. None of the firms have a foreign exchange hedging strategy, potentially because they are foreign-owned factories.

Flow charts

The firms surveyed were all vendor factories. As a result they had very similar supply chains of which an example is shown below. They did not have significant cash flows because all transactions were handled by their overseas headquarters. As a result the principal focus of the factory managers outside of production was the domestic movement inputs and exports and the clearance of imported inputs and exports at the international gateway, which in nearly all cases was the port of Sihanouk Ville.

Annex Figure 29: Vendor factory flowchart





ANNEX III: FOOTWEAR



Annex III: Footwear

Global trade

Global Market and Centers of Production

Global revenue in the footwear industry has increased steadily. In 2005, it was about US\$114 billion and US\$127 billion in 2010, implying an average annual growth of about 2.2 percent. The continuing global financial crisis has depressed this rate with growth in 2010 reduced to 0.8 percent. The impact of the economic situation can also be observed within geographical regions. In 2010, for example, demand was noticeably weaker in Europe's periphery while demand in the US picked up in 2010 only to level off in 2011. Currently, China and Japan are generating significant growth in footwear consumption.³⁴ Over the long term, a steady increase in global shoe production is expected to continue driven both by population and increase in disposable income.

Because the production of footwear, especially shoes, requires a significant input of semi-skilled labor, more so than for the manufacture of garments, there has been a natural gravitation of the industry towards countries that can offer the combination of skills and low wages. This led to the outsourcing of production beginning in Japan in the 1970s. Since the 1980s, there has been a gradual shift in the center of production to Taiwan, then South Korea and China. Now a further shift is the beginning to South Asia. Currently, most footwear is manufactured in Asia, Latin America and Europe although the latter is declining sharply. The largest region producing footwear is North Asia, with China producing about 7 billion pairs (2010) or 57 percent of the world's footwear production. The second largest producing region is South East Asia. Vietnam produced about 1 billion pairs in 2010 or around 8 percent of world production. Indonesia and Thailand were important shoe manufacturers prior to the Asian financial crisis and have only partly recovered since then.

South Asia accounts for about 9.6 percent of world production led by India, which has attracted many investors from US, Europe and Taiwan. They are interested in producing mid-price shoes for both the domestic market and for export. However, the growth rate for India is slower than for China. The second largest producer in South Asia is Bangladesh, which is rapidly expanding its production.³⁵ Latin American accounts for about 6.9 percent of world production with the Brazilian footwear industry accounting for about 90 percent of the production.

Europe provides about 5.3 percent of global production. Italy produces premium-quality footwear accounting for more than a third of Europe's output. Low-cost producers have moved their factories to Eastern Europe, but face strong competition from manufacturers in Asia. Turkey is also a major producer. The North American footwear manufacturing industry has been in decline for several decades. In 2009, the US and Mexico accounted for only 2.5 percent and 1.9 percent of the world production, respectively.³⁶

The major markets for imported footwear remain North America, Europe and high-income countries in Asia e.g. Japan, Taiwan, and Singapore. However, in the future, the share of total production consumed in these countries will decline as consumption increases in China, India, Brazil and Southeast Asia, and other producing countries.

³⁴ Adidas Annual report 2010.

³⁵ The largest shoe factory in the world is being constructed in Chittagong.

³⁶ Market and Trend Analysis (sent by John), page 2-11.

International Trade

International trade in footwear has increased significantly as barriers to trade have been reduced and the relative cost of international transport has declined. Also distribution networks have become more international as consumer's preferences changed.³⁷

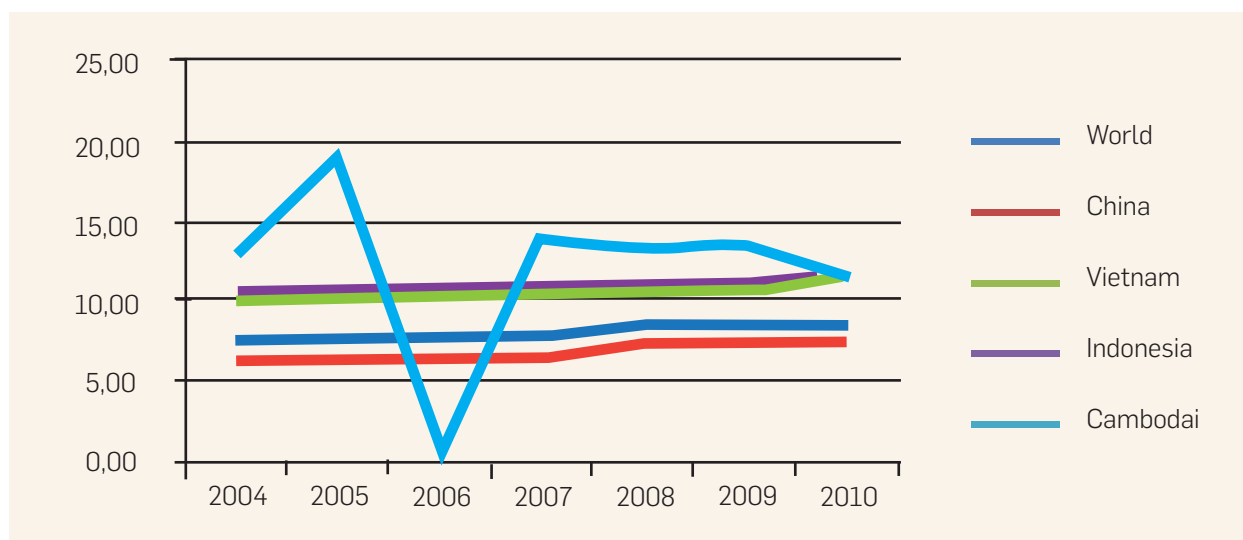
Demand for imports to the US has been relatively stable fluctuating between 2 and 2.4 billion pairs between 2004 and 2010. The majority has been supplied by China (~85 percent) followed by Vietnam (~7 percent). The remainder was source from 19 countries. Cambodia's contribution, while still small, has grown from nothing in 2005 to over 3.2 million pairs.³⁸

A similar picture can be drawn for the European market (EU-27). China is the leading supplier of footwear products with a 72.6 percent market share followed by Vietnam with 11.9 percent. India and Indonesia are also important suppliers with market shares of 3.1 percent and 2.7 percent respectively. In total, the EU-27 countries import about 2.5 billion pairs of shoes. Of this, Cambodia provided about 21.5 million, slightly less than 1 percent of the imports.³⁹

The rate of growth of China's footwear exports has begun to slow in recent years, due to increasing wages, increases in tariffs on imports to the EU, and efforts to diversify suppliers. This led to a migration of export manufacturers to South East Asia, especially Vietnam, to take advantage of cheaper labor and production costs. At the same time, India attracted investments from footwear manufacturers in the US, Italy and Taiwan.

While the trend for both the US and EU markets is a slow increase in the average price per pair for imports, Cambodia has experienced a slight decrease in its average price for exports to the US but continues to export higher value footwear than Vietnam and China. In Europe, Cambodia's exports have experienced an increase in average value and have remained at a higher level than China and Vietnam as shown in the figures below.

Annex Figure 30: Average import price of pair of shoes into the US market (US\$ value per pair)



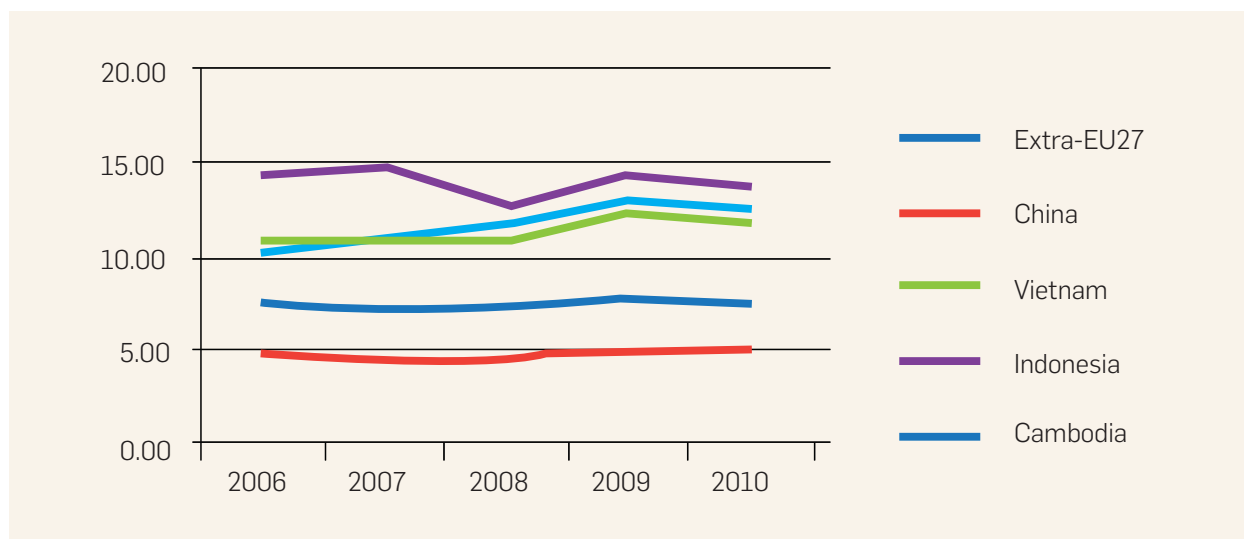
Source: US Department of Commerce and calculations by author.

³⁷ Market and Trend Analysis (sent by John)

³⁸ US Department of Commerce, <http://otexa.ita.doc.gov/FLT/imports/cat10.htm>

³⁹ Eurostat, http://ec.europa.eu/enterprise/sectors/footwear/files/statistics/footwear_en.pdf

Annex Figure 31: Average import price of pair of shoes into the EU market (US\$ value per pair)



Source: Eurostat and calculations by author.

The decisions on where to produce the different categories of shoes depends on labor costs and two other factors:

- *Type and availability of materials*
- *Fashion component*

The first is an important consideration for the production of shoes with leather components since sourcing higher quality leather is difficult and there is considerable competition. The production of hides and tanned leather is typically a small-scale activity and most producing countries depend on local sources for a majority of their production. Synthetic materials, including synthetic leather is relatively easy to obtain given the uniform quality standards for different grades of synthetic resins, the scale of production and the concentration of petrochemical plants in countries that are not major producers of footwear. Fashion is an important consideration as it determines where design is executed. This has allowed high value producers such as Italy to retain market share in terms of the value of exports. However, increasingly the production is being outsourced initially through FDI and now through marketing arrangements.

The importance of these two factors varies with the different segments of the market, but is especially important in the production of women's footwear and athletic shoes.

Market segments

The footwear industry is segmented not only by the materials used but also by the end user. The general categorization is as follows:

In terms of global revenues, women's shoes are the largest product type with a 31.2 percent market share. They have a very high fashion component and style changes regularly. In wealthier countries, women purchase multiple pairs for different occasions. Because a significant portion of the value is in the design, these may be designed and produced competitively in the developed countries, but increasingly production of even the higher-value shoes are being outsourced to developing country producers.

Men's shoes account for roughly 24 percent of global revenues. These shoes have a lower fashion- component and therefore a longer shelf life. They can be mass-produced in countries with low-labor cost using less sophisticated machinery. While synthetic leather has become an increasingly important segment of men's footwear, the demand for leather shoes remains strong and availability of leather limits the countries that can compete in this segment.

Athletic footwear (both men and women) has become the most identifiable segment of the market. It is dominated by a handful of international brand manufacturers, such as Nike and Adidas. These companies design and market their products. They outsource the production but retain a significant role in monitoring production to insure the quality of the product and conformance with health and safety standards and good labor practices.

Children shoes account for only 8 percent of industry revenue. While there is a growing segment that emphasizes quality, design, and, brand, most of the market focuses on cost and durability. As a result, these shoes are usually produced in countries with low labor cost.

Others account for about 8.2 percent of industry revenue. At the low-end are slippers (house slippers, slipper socks and leather slippers). They represent 4.1 percent in terms of global revenues but much more in terms of pairs. These are mass-produced in low-wage countries. At the mid-value level is safety footwear that typically includes steel cap shoes, water shoes and. The remainders are niche products and include higher-value sport shoes (ski shoes, football, ballet, hiking, golf, etc).

Annex Table 7: Product segment in footwear industry

Product types	Percentage
Women's shoes (excl. athletic)	31.2
Men's footwear (excl. athletic)	24.0
Athletic shoes	20.2
Rubber and plastic footwear	8.2
Children's shoes	8.0
Slippers	4.1
Protective footwear	3.3
Other	1.0

Source: IBIS World Industry Report 2010.

Value proposition

The footwear market can be divided into sub-markets differentiated in terms of quality, cost and time for delivery. The most basic division is based on quality. High-value footwear includes men's leather shoes, women's shoes and internationally branded athletic shoes. These require high quality in terms of inputs, fit and finish. Design is also an important source of value especially for athletic shoes and women's shoes. Quality control is important throughout the supply chain, from sourcing of inputs through delivery to the buyer. The average ex-works value of these products ranges from US\$10 a pair and up. The buyers are larger brand manufacturers or high-end retailers. Principal markets are Europe and North America although there is growing demand in higher income developing countries, too. The logistics used for this segment emphasize high reliability both inbound and outbound. On the inbound supply chain, consistency in the quality of inputs are critical whereas for outbound it is important to deliver consignments with many different models and styles at fixed delivery dates.

The mid-value products cover the five basic types: men's, women's, kid's and athletic shoes, and specialty footwear. These use a mix of materials, textiles, plastics (including synthetic leather) and rubber. The inputs are mid-value but consistent in quality and the level of automation varies with product type and scale. The designs are variations on standard designs. Buyers are wholesalers and large retail chains and logistics strike a compromise between cost and reliability.

Lower-value footwear includes simple shoes and sandals produced from plastics. These use less expensive inputs and are less durable. The designs are standard. Production of those allows for more automation as well as higher volumes. The average value ex-works ranges between US\$2-4 per pair. Buyers are primarily wholesalers selling to low-end retailers. There is strong demand for these products both domestically and for export but there is also strong competition from manufacturers in China. As for the logistics requirements, volumes are large and value in terms of cost per pair is low. For inbound logistics, priority is given to on-time delivery to support a lean production schedule. For outbound logistics, the volumes are large with consignments having only a few models but a full range of sizes and colors and the emphasis is on minimizing cost while maintaining reasonable delivery times.

Global production and employment

While the number of pairs of shoes produced between 2006 and 2010 increased by about 4.5 percent, employment in the sector is estimated to have grown by about 6.5 percent. During this period wages as a proportion of total revenues declined from 18.3-16.5 percent due to the migration of production to lower wage cost countries continued. Premium-quality, high-value shoes continue to be produced in Western countries. Based on value, nine European countries are among the top 15 exporters of footwear. Italy, Spain and Portugal account for about 23 percent of total export value. On the other hand, most of the production in China, Indonesia and other large manufacturing countries are predominantly low or low- medium value. Only a few countries such as Thailand and Brazil produce med-high value shoes.

Footwear supply chain

There is a distinct division of activity in the footwear industry. Production takes place primarily in developing and emerging market economies while design and marketing takes place in North America, Europe and East Asia.

Countries that were major production centers in the past e.g. South Korea and Taiwan, have managed to convert themselves from domestic manufactures to managers of overseas factories and distributors of footwear manufactured overseas. They are a significant source of FDI for new factories in developing countries and manage the distribution of branded products. Hong Kong and other trading centers act a buying agents and wholesales for unbranded footwear produced by local manufacturers.

The brand is built and managed by global and regional headquarters with support from large distributors, especially in less developed markets. The inputs, quality and design, are strongly related to the product design and hence the marketing of the product.

Sourcing of raw materials is generally arranged at the manufacturing level subject to quality requirements developed as part of the design. As indicated previously, the sourcing of leather is the most challenging. This involves acquiring from slaughterhouses hides of suitable quality from various animals, tanning the hides (an environmentally challenging process), and processing the leather to obtain a suitable finish. Acquiring and tanning the leather is relatively low skill unlike producing finished goods.

Footwear production

The sequence of footwear production begins with sourcing of material, accessories and components. The suppliers include leather tanners, manufacturers of synthetic resins, canvas and other textiles, and producers of insoles and outsoles, shoe lasts, and accessories. The insoles and outsoles are made of different materials including rubber, PVC and polyurethane. These can be purchased in molded form (most common), pre-trimmed in standard sizes or in uncut sheets. Shoe lasts are obtained from both local producers or imported. Materials such as chemicals, buckles, threads, foam, etc., are usually sourced locally but include some imported materials.

The production sequence begins with preparation of samples either at the request of individual buyers or to promote existing models. The designs may be obtained from the buyer, especially for high value footwear. For footwear with a limited fashion component, manufacturers often revise existing designs sourced from magazines, retail stores and other sources.

Once an order is received and confirmed, procurement of materials begins. Only a few of the inputs are maintained in inventory. First, the patterns and lasts are prepared for the required sizes. Once all inputs have been delivered, production begins. The materials are cut based on patterns. This is done manually by craftsman except for manufacturers handling very large orders. Machines are used for skiving and sewing. The next step is the assembly process, which involves shaping the uppers on the lasts and attaching the inner sole and then the outer sole. Once assembled, the shoe is taken for roughing, finishing and final quality checks before being shipped. Complete production of a pair of shoes normally takes two days. A typical footwear firm using manual production produces an average of 1,000 pairs per day. This volume can increase to 3,000-5,000 pairs with semi-automated processes. Large factories in China, Bangladesh and elsewhere can produce over 10,000 pairs per day.

Annex Figure 32: The global value chain

<p>Firms</p> <p>Infrastructure</p>	<p>Identification of local reliable tanners, imported hides, lead time to import, financing of import hides, shoes lasts and components, transportation services</p>	<p>Accurate cutting of materials according to specs (major component of profit margin)</p>	<p>Treering and padding of goods per carton Delivery to stores. Online information with retail outlet</p>	<p>Telecommunication Counter service Transportation service</p>	
<p>Procurement</p>	<p>Inbound materials Sourcing material/parts Picking/delivery Inbound inspection Inbound receiving Inventory material Management Storing</p>	<p>Scheduling production Scheduling subcontractors Equipment maintenance Material/ part distribution Assembly Monitoring Quality inspection testing Reworking Packaging</p>	<p>Delivery/collecting of finished goods from sub- contractors Warehousing Order processing Scheduling of delivery to buyers stores Inspection and delivery Billing/collection Payment</p>	<p>Pricing Quotation Buyer visit Retail store Display Networking Clustering Branding</p>	<p>Repair/ assessment of damaged products</p>
<p>Main Activities</p>	<p>Inbound Logistics</p>	<p>Operations</p>	<p>Outbound Logistics</p>	<p>Marketing & Sales</p>	<p>Services</p>

Source: State of the sector report, Peart 2 Project, Philippine footwear, 2003.

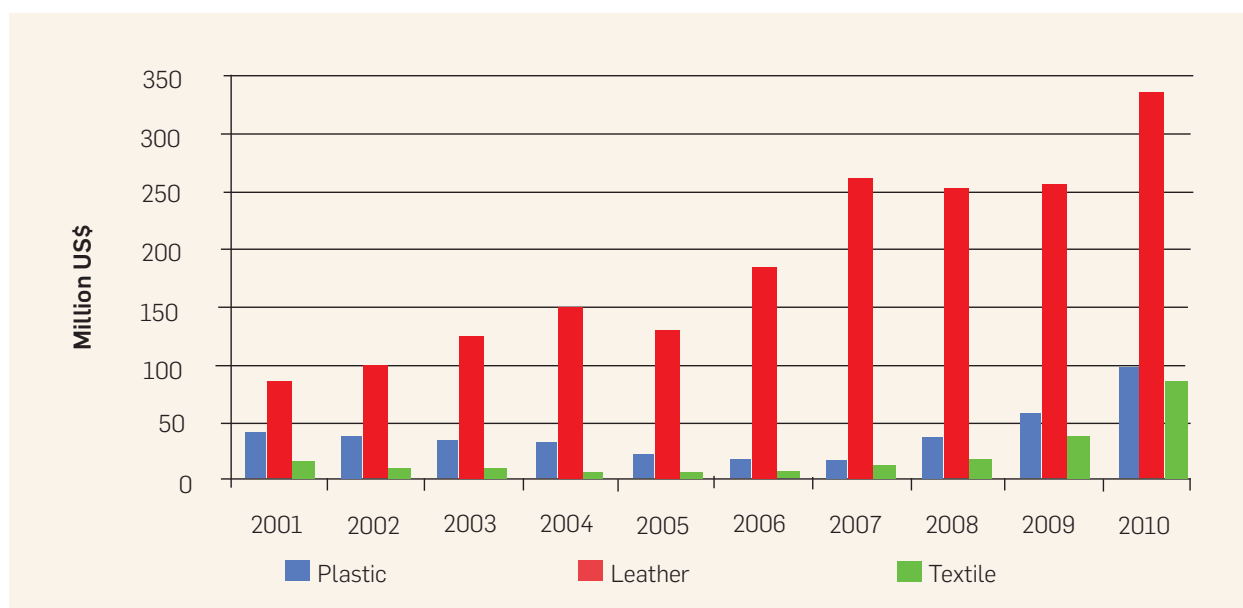
Cambodia's footwear industry

In Cambodia, the footwear industry is relatively small consisting of about 37 export-oriented factories. Most are owned by investors primarily from China, Taiwan, Hong Kong and Japan. In recent years, the number of factories has increased rapidly. Twenty plants have been opened since 2008, most of them in the past two years that were branches of existing firms. Over the next five years, the industry is expected to continue its expansion, growing by another 50–80 percent. Most of the plants are located in Phnom Penh and Kandal Province. Total production is around 50 million pairs, less than 0.4 percent of total current world production.

Most factories are merely production facilities managed by their owners, who also control the input supply chain. However, some of the facilities operate as OEMs and produce products directly for the buyers.

These factories produce primarily leather shoes as shown in Figure 33. The average value per pair has been increasing (Figure 34) but remains very low at about US\$4.25 per pair. Textile shoes have an average value of US\$9, which is still relatively low. The typical factory has about 1,500 employees but some manufacturers employ up to 6,000 workers. Total employment in the sector amounts to around 70,000. Wages are slightly higher than in other industrial sectors because it is more difficult to find and retain qualified personnel. The average monthly wage is US\$61 base wage and US\$30–40 in overtime and bonuses. These are slightly higher than in China. Average productivity per worker is between four and eight pairs per day.

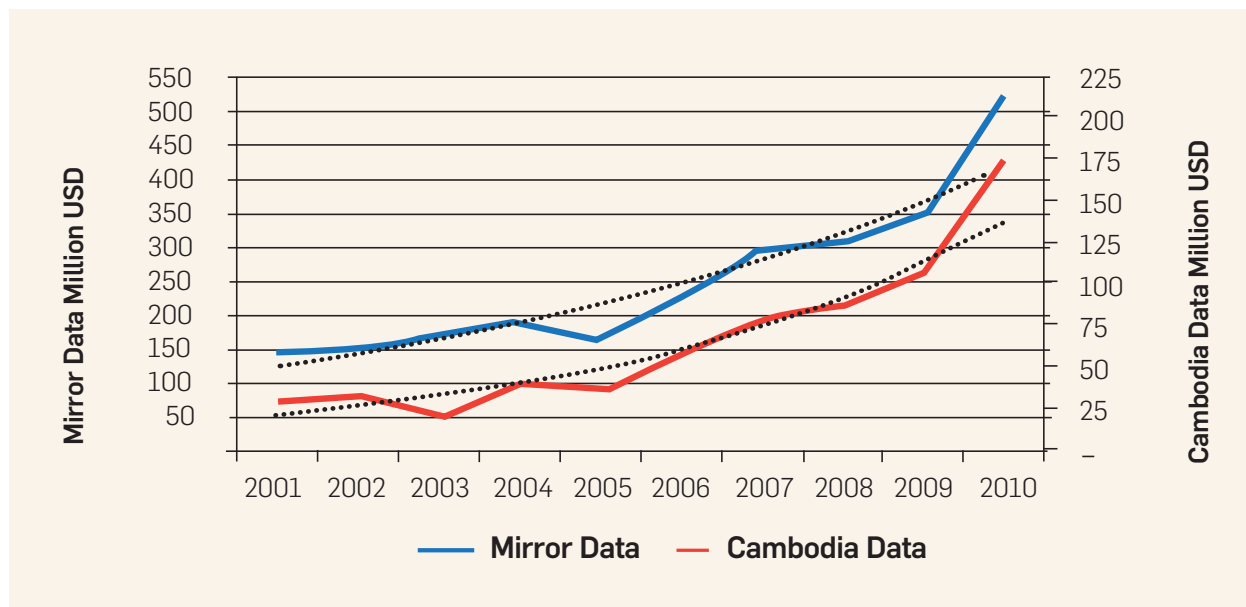
Annex Figure 33: Cambodian footwear exports by product group 2001–10 (mirror data in US\$ million)



Most of the inputs including soles and the leather for the upper parts are imported. In 2010, the Cambodia customs reported exports of footwear amounting to about US\$180 million. The data from the importing countries indicated about three times this amount. Some of the discrepancy can be explained by the difference between FOB and CFR prices, but it still suggests a significant under-reporting. More importantly, there is a significant difference in terms of commodity classification, primarily for plastic/synthetic footwear. Both sets of data indicate the dominance of leather shoes, but the mirror data suggests a growing proportion of plastic and textile footwear.

The EU is the principal destination accounting for around 60 percent of total exports. The United Kingdom (23 percent), Germany (15 percent) and Italy (6 percent) are the largest individual markets within the EU. Other large buyers are Japan (16 percent) and the United States (9 percent). Most of the shoes produced are casual shoes, sports shoes and sandals with some waterproof and safety shoes. Around 60 percent of all shoes are for women, 30 percent for men and 10 percent for children. About 80 percent are made with leather uppers and 10 percent each for synthetic and textile uppers. There is only little variation in demand by season.

Annex Figure 34: Cambodian footwear exports, 2001-10 (mirror data and Cambodian Customs data in US\$ million)



Source: UN-Comtrade, 2012.

Characteristics of firms surveyed

1. The five factories surveyed are all production facilities for foreign vendors who manage the orders from the buyers.
2. These factories use imported leather and fabric obtained from Asian sources, primarily from East Asia, China, Taiwan and South Korea.
3. The leather is obtained directly from the tanneries whereas the fabric is ordered from suppliers nominated by the buyers.
4. The principal difficulty with the inputs is the consistency and quality especially for the leather. This delays production and deliveries.
5. These factories produce a mix of products but generally specialize in one or two, e.g. men's shoes, women shoes, kids shoes.
6. The principal destinations for exports are Japan and the EU.
7. Most of the output is purchased by the factory's foreign headquarters rather than directly by the buyers.
8. The products are produced against fixed orders and manufactured ready for retail.
9. The shelf life of the products is 3-6 months reflecting seasonal demand.
10. Order cycle from when the initial order is confirmed to when the first shipment is loaded onto the vessel is 60-90 days for new orders and 30 days for repeat orders. Another 12 to 20 days is required for the transport by ocean to the importers warehouse.
11. During peak periods, the increase in orders are handled by extending the working hours.
12. The percent of shipments outside the region that use airfreight varies from less than 3 percent for three of the factories to 10-20 percent for the other two.

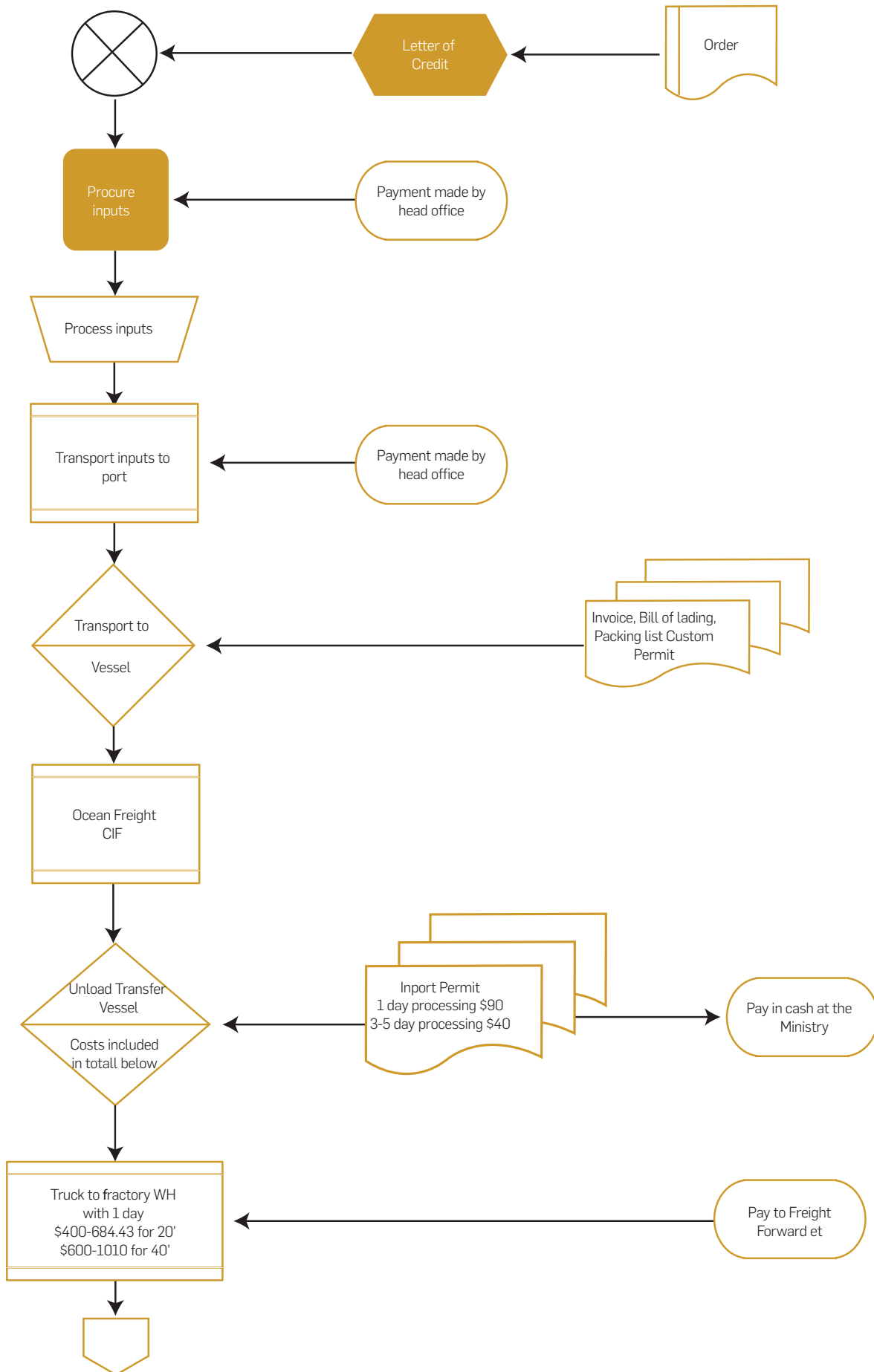
13. Payment for exports account received within 7-30 days after shipment, either ex-factory or when the goods are loaded on the vessel.
14. The documents that present the greatest problem are the permits and technical certificates for the imported inputs. The time for obtaining the permits is supposed the only one day but normally takes 3-5 days.
15. For the exports there are difficulties with both the certificate of origin and the customs declaration. For the former there are additional problems associated in with correcting minor mistakes. For the latter customs will clear could setup factory.
16. The major financial risks are those associated with not only fluctuation demand and prices also fluctuation in exchange rates.
17. The current approach to growing the business is to increase the volume of orders by improving the quality of the product, reducing the cost and speed of delivery. The reduction in cost includes the transport costs although these are not major cost components.
18. The principal factors limiting the growth of the factories are the availability of skilled labor and reliable energy.
19. Financing for investment and working capital are not important since this is the responsibility of the headquarters.
20. The factories varied in terms of the amount of imported inputs delivered by air. The maximum was 60 percent for one of the factories but two of the others use no airfreight.
21. The average time for delivery of the imported inputs was 30-45 days.
22. Some of the orders involve multiple shipments.
23. These shipments are received on a weekly basis.
24. Shipments are arranged by the supplier but are shipped FOB.
25. These inputs are imported duty-free.
26. The smallest size shipment of exports is 1-2 TEU or 3,000-5,000 pairs.
27. An average shipment has a value between US\$110,000 and US\$550,000.
28. Exports are shipped on a weekly basis.
29. Peak shipments occur between June and October when the volumes shipped increase by 45-100 percent.
30. All shipments arranged by forwarders or shipping lines and nearly all are shipped in containers which are loaded at the factory.
31. In general 5-7 days were required to arrange the domestic transport to the ports/airport.
32. Delayed shipments were 5 percent or less for three of the factories but 20-50 percent for the other two with the principal cause being delays in receiving inputs often complemented by delays in production.
33. When this occurs, the factory notifies their headquarters which in turn informs the buyer.
34. Only one of the factories reported having a high rate of rejection of their shipments due to damage or shortfalls. This results in an average discount of 8 percent on the payment.
35. The principal certification for the exports is the certificate of origin which requires 3-5 days to obtain.
36. The inputs are ordered through long-term contracts.
37. Typical value for inputs range from US\$15,000-US\$55,000 per container.

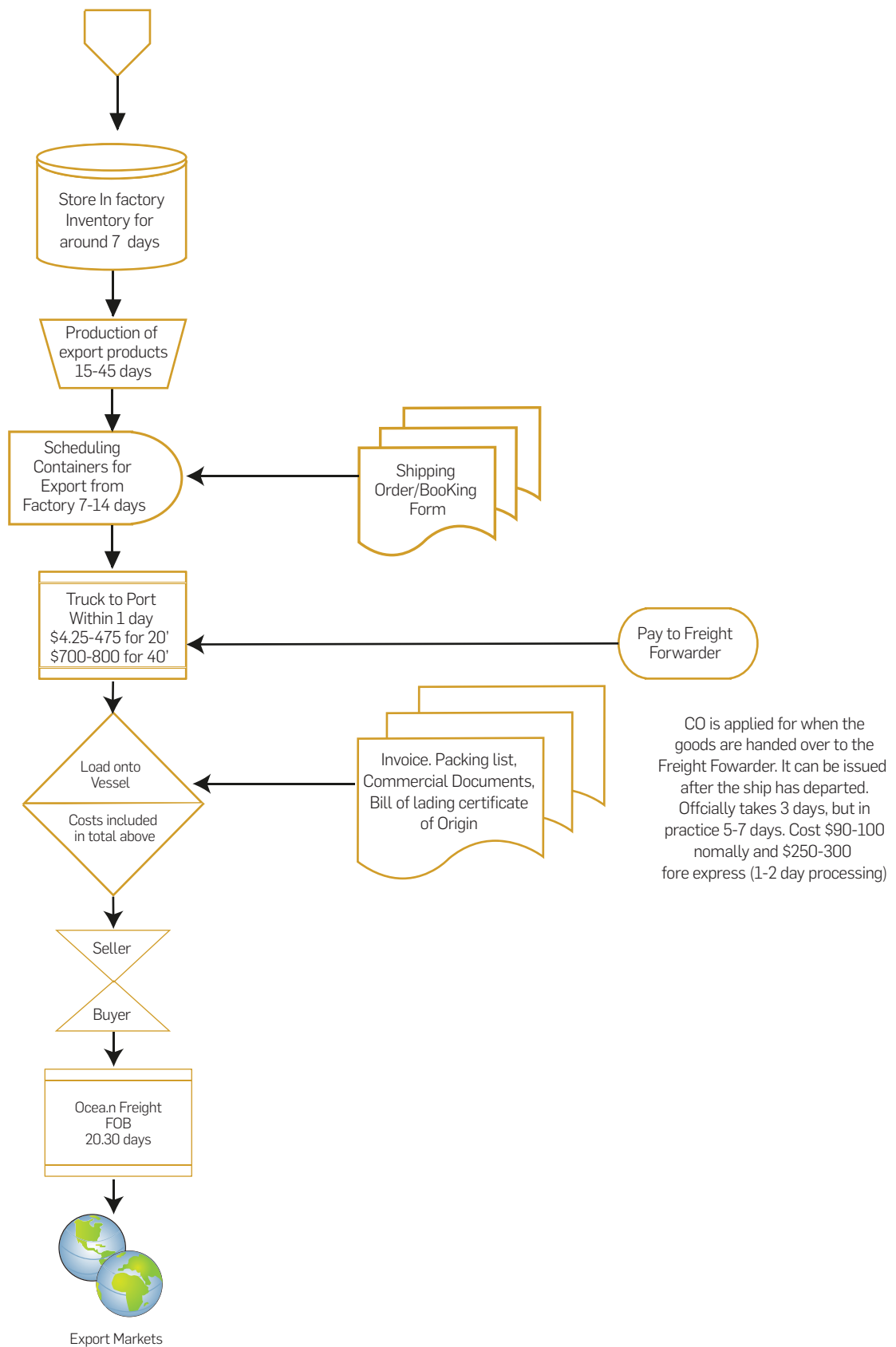
38. These are paid for using a TT with payment made at the time of delivery to the forwarder's warehouse or the vessel or a specified time thereafter, 15-40 days.
39. Most orders are handled through fax or e-mail.
40. The cost of delivering the container from the port to the factory is US\$400-US\$700 for 20-foot container and US\$600-US\$1,000 for a 40 foot container.
41. A similar cost is incurred for the movement of the goods from the factory to the loading ports/ airport.
42. Cargo insurance is arranged by the forwarder.

Supply chain

The supply chain for a vendor factory is shown in the following flowchart.

Amtext Figure 35: Supply chain flowchart







ANNEX IV: SILK

Annex IV: Silk

Global production and trade

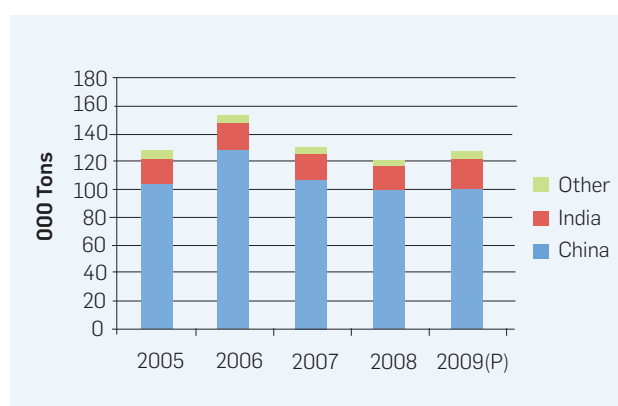
Production

Silk production has its origin in China, where it is produced for a few hundred years. Today more than 60 countries in the world produce silk. Most producers are located in Asia, which accounts for roughly 90 percent of mulberry silk production and almost 100 percent of non-mulberry silk. However, in recent years, mulberry silk production has also been established in less-traditional silk countries such as Brazil, Bulgaria, Egypt and Madagascar.⁴⁰

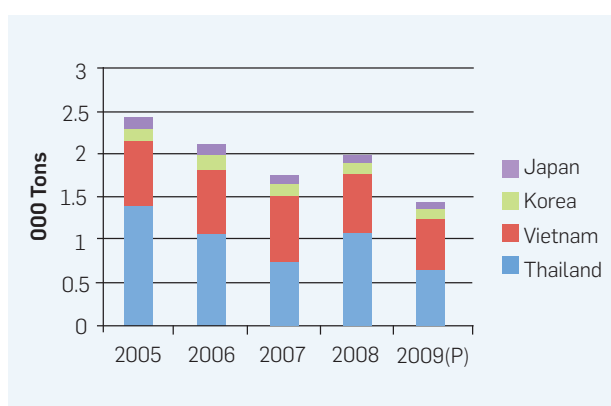
The role of developing countries has increased strongly in the production of silk over the past decades. The silk sector employs an estimated 1.8 million people, mainly in rural areas. More than half of them, around 1 million, produce silk in China. Silk production is particularly important to rural areas, as not much land or capital is required. Also sericulture provides an income opportunity for woman and older family members and therefore counteracts urbanization.

Annex Figure 36: World raw silk producing countries, 2005-09

Raw Silk Production



Other Asian Raw Silk Producers



Source: Silk industry in China, ISC Website (January 2010).

As can be seen in the chart above, global silk production is by far dominated by China and India (both by value and weight). Together they accounted for a production of about 124,000 tons in 2009. The next largest producer, Uzbekistan, Brazil, Thailand and Vietnam produced a total of only 2.8 million tons.⁴¹ Cambodia produced somewhere between 250 and 350 tons.

International trade

A large portion of silk production is consumed locally, however, there is significant trade in intermediates with cocoons exported to producers of silk yarn, silk yarn exported to produce of silk textiles and silk textiles exported to producers of silk garments. Even countries such as India, which produce the full range from cocoons to garments, import a significant level of intermediate goods. Most large producers of silk textiles, with the notable exception of China, import silk yarn. Countries such as Thailand and India do so in order to supplement their own production.⁴²

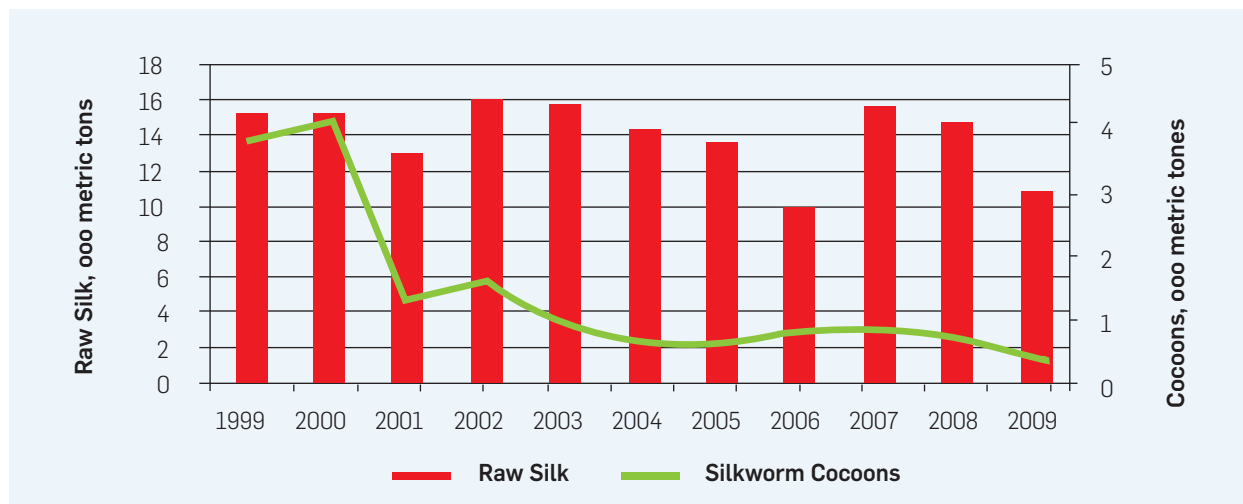
⁴⁰ <http://www.fibre2fashion.com/industry-article/38/3793/the-global-silk-industry1.asp>

⁴¹ FAOSTAT 2009

⁴² Thai silk sector analysis, p. 34

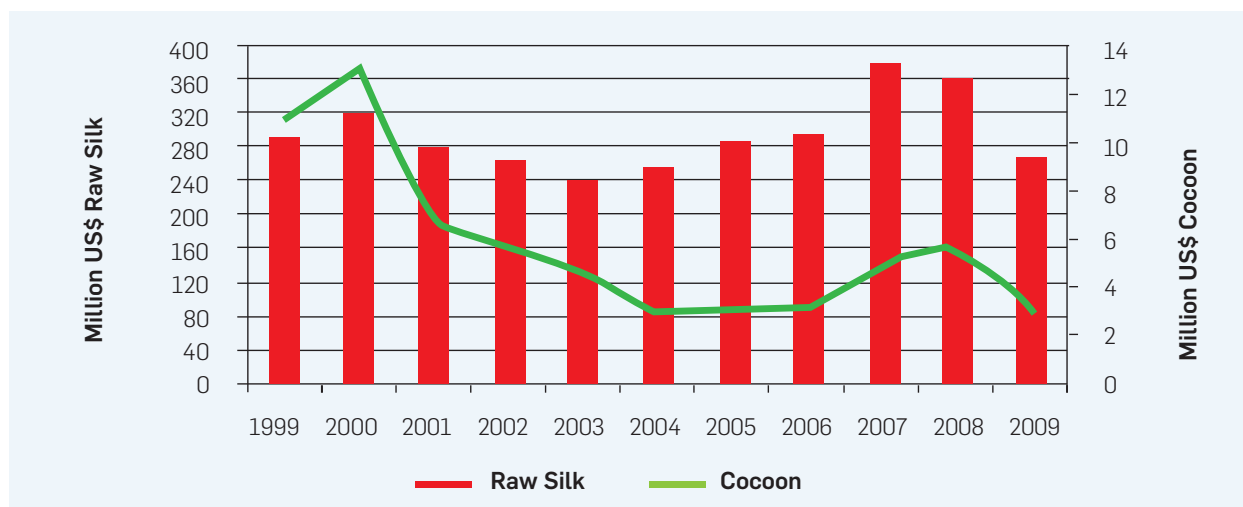
The global trade in silk can be divided into four categories: cocoons, raw silk, silk textiles, and finished silk products. The growth in trade of the first two categories is shown in Figures 37 and 38. In the last ten years, trade in silk yarn has fluctuated between 10,000 and 16,000 tons with values between US\$240 and US\$390 million.

Annex Figure 37: Value of global raw silk and cocoon trade



Source: FAOSTAT, 2011.

Annex Figure 38: Weight of global raw silk and cocoon trade



Source: FAOSTAT, 2011.

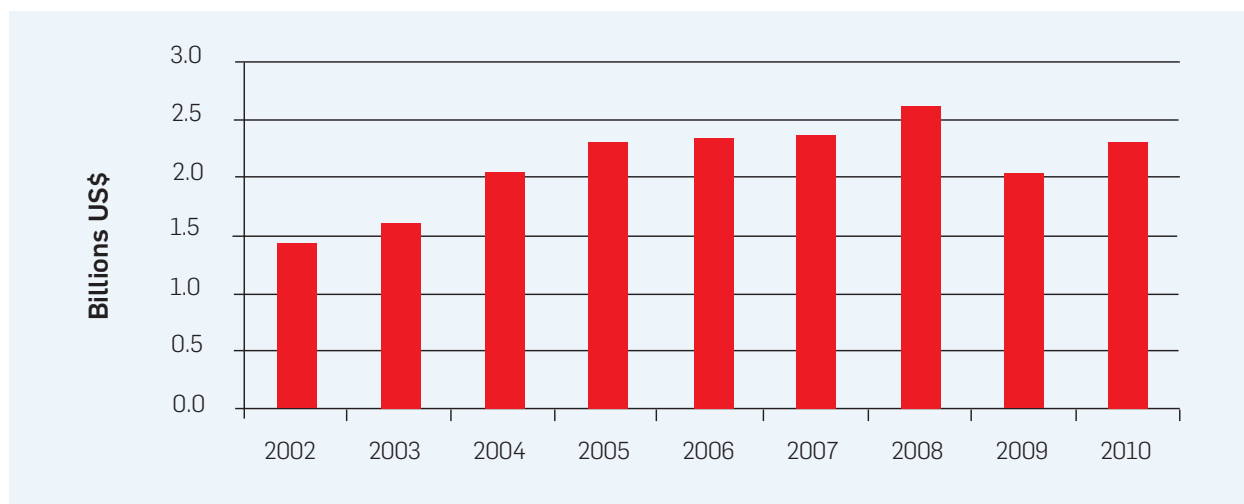
The trade in silk textiles grew rapidly up until the global financial crisis but appears to be recovering as shown in Figure 39. The trade in silk apparel has grown along with the growth in apparel but at a slower rate due to limitations on supply. Silk textiles and apparels remain a luxury good and account for a very small portion of the global trade.

The largest exporter of silk yarn and silk products is China, which accounted for more than half of the trade in 2010. China remains the leading source of silk yarn, but is increasing its exports of finished products. The next largest exporters are Italy and India, accounting for roughly 11 percent and 10 percent by value, respectively.⁴³ Cambodia has a minimal market share of silk trade, less than 0.05 percent.

Cambodia's trade in silk products increased from US\$2.2 million in 2001 to US\$3.2 million in 2010, (Figure 40). It reached a record-high of US\$3.5 million in 2009, but has since declined due to the current sovereign debt/Euro crisis.

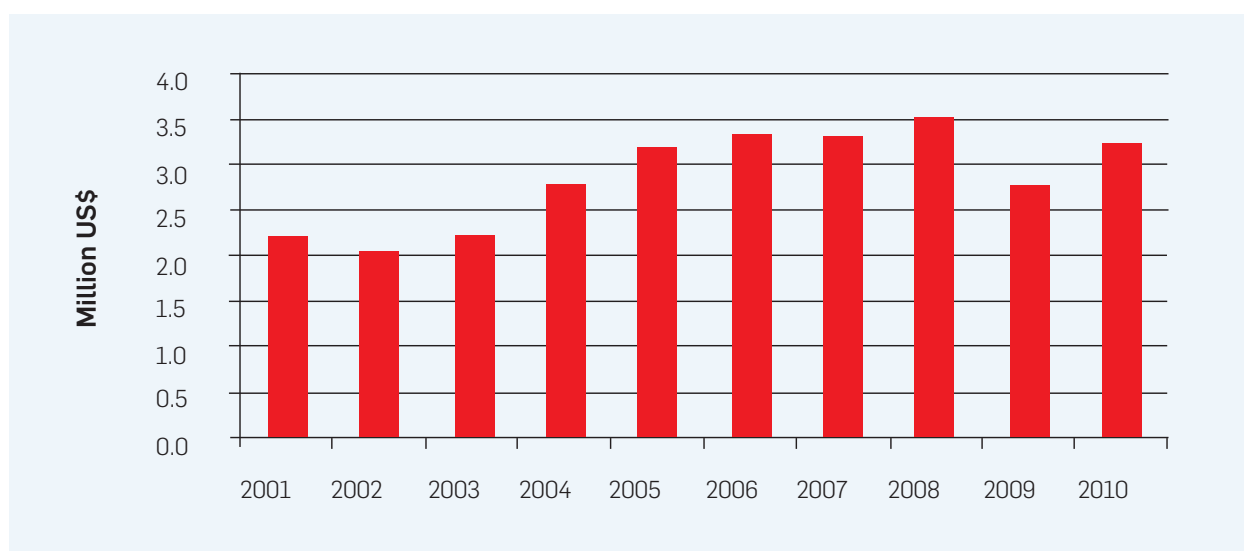
⁴³ UN Comtrade.

Annex Figure 39: World trade in silk fabrics



Source: UN-Comtrade, 2012.

Annex Figure 40: Cambodian silk exports



Source: UN-Comtrade, 2012.

Production process

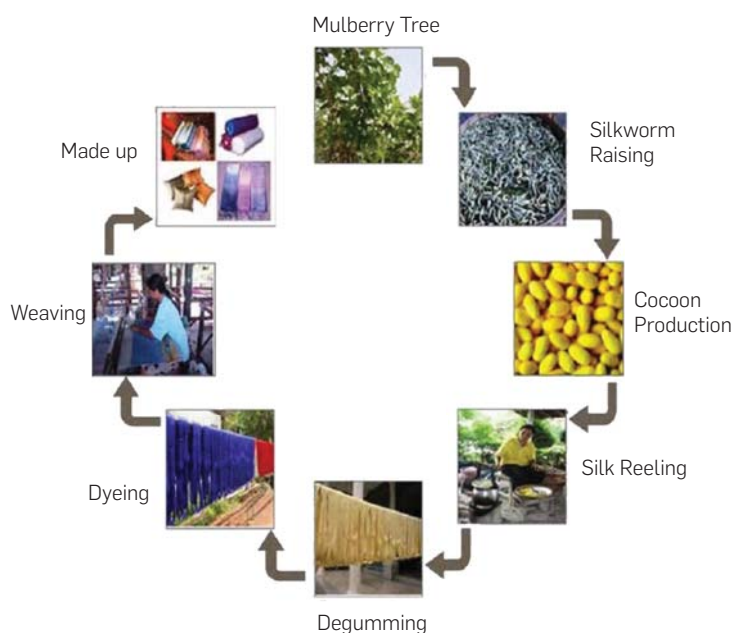
The silk production process is complex and involves a diverse set of activities (Figure 41). The production cycle can be divided into sericulture, production and distribution. The former represents the inbound supply chain that delivers silk yarn for weaving. Production refers to weaving and the manufacture of textiles and garments. Distribution refers to the outbound supply chain and includes marketing and can include downstream value addition.

The activities in the inbound supply chain are shown in the diagram below. It begins with the production of cocoon and the reeling of silk yarn. There are three types of silkworms commonly used for producing cocoons.

Native mulberry silkworms are traditionally produced by farmers and are based on egg stocks that are maintained by the farmers themselves. The native silkworms offer low cost and greater disease tolerance but have lower yields than other varieties. These are used by small-scale farmers to supplement their income.

Foreign hybrids (bivoltine) produce larger, usually white cocoons that can be reeled in factories. The eggs can usually be hatched at any time. Their silk filament can be as long as 1500 meters and therefore has a high yield that provides quick return. However, the eggs are expensive and are more susceptible to diseases so that breeders must be trained in their use. These hybrids are promoted by private companies and used by medium-sized farmers who breed silkworms commercially.

Annex Figure 41: Production process of silk



Local hybrids (poly-bivoltine⁴⁴) are inexpensive but limited in supply. In addition, their quality is inconsistent and they are more susceptible to diseases. These are promoted by government and used primarily by small-scale farmers but in some cases are used in commercial breeding.

Most of the world production of silk (90 percent) is obtained from bivoltine, which has the same agricultural schedule and the same intake of mulberry leaves, but generates a thread over ten times longer and enable the mechanization of the various stages production. In Southeast Asia, the traditional variety is "Bombyx mori", also referred to as Golden Silk because of the color of the cocoons. This is usually a polyvoltine hybrid.

The primary inputs to the production of the cocoons are the silkworm larvae and the mulberry leaves to feed the silkworms. Improved varieties that produce many more leaves have been introduced but they require improvements in cultivation techniques and irrigation.

Silkworm cocoons are purchased from the breeders by reelers who produce the yarn. The reeling technology depends on the type of silkworms. Traditional and poly-voltine varieties require hand-reeling, while foreign bivoltines can be machine-reeled. The difference can be seen both in terms of quality and quantity: hand-reeling produces a lower yield of uneven yarn. After reeling, the silk de-gummed, bleached and dyed. Traders at the village level act as a middlemen between reelers and dyers in their village or within short proximity of their village. Provincial and district traders then sell the yarn to weavers.

The production of fabric and garments is organized as a traditional cottage industry or as a small scale commercial activity. For the former, the breeders reel their cocoons, weave the yarn and produce silk fabrics, usually on handlooms. This type of arrangement is maintained in relatively few countries, specifically India, Thailand, Indonesia, Lao PDR, and Cambodia. For the latter, the breeders sell the cocoons to silk reeling factories, which then sell it to weavers either directly or through a trader.

⁴⁴ Bi-voltine refers to silkworms that can have two generations per year. Polyvoltine, also called multivoltine, refers to silkworms that can have more than two generations (life cycle) in a year.

The weavers may be individual craftsmen but are more often part of cooperatives or employees of private firms manufacturing silk handcrafts. Depending on the silkworm, weaving can be done with traditional handlooms, modernized handlooms, or semi-automatic looms. Local traders sell the dyed yarn to small producers or a spot basis while provincial or district traders sell to larger producers under longer-term arrangements. Some of the larger traders may also be involved in the production of textiles.

From the weavers the silk product goes to garment manufacturers or home textile producers. These have different levels of involvement in the supply chain. The larger ones generally exert greater control over the supply chain (starting from the silkworm production), while the smaller ones limit their involvement to purchasing silk from weavers or traders.

There are several types of products that can be made from silk or silk blends including home textiles and interior decorations, fashion garments and accessories, and both modern and traditional garments. These are sold primarily in medium and high value markets. The principal distribution channels are local stores and hotels that cater to tourists, Internet sales and foreign boutique outlets and small chains.

Annex Table 8: Models for silk production

Cooperatives silk handcraft cottage enterprise	Private silk handcraft cottage enterprise
<p>Silk Yarn Purchasing: The groups buy silk yarns from members who reared silkworm and reeled silk yarn, farmers' groups from other villages, and reeling factories. Beside the silk yarns, other inputs such as dyes and chemicals are also purchased by groups.</p>	<p>Silk Yarn: There are two types of silk yarn used in the factories:</p> <ul style="list-style-type: none"> - <i>hand reeled yarn from the farmers;</i> - <i>silk yarn from reeling factory;</i> - <i>machine reeled yarn.</i>
<p>Silk Yarn Processing: The silk yarns, produced need to rewinding, doubling and twisting before the degumming process.</p>	<p>Reeling factories provide twisting and doubling as well as dyeing the yarn for weavers.</p>
<p>Design: There are two ways to design products. The first is individual design where farmers' groups provide silk yarns to members who design patterns and color by themselves. Most of their products are traditional designs, which are followed by generations. The members have their own designs and special skills according to their wisdom and knowledge. The Government trains them on new techniques, which they can then apply to their works, to improve product quality.</p> <p>The second way is to provide custom designs and colors, where weaving groups process products according to their orders. There are many types of traditional silk handcrafts that are produced by these groups. However, about 20 percent of the total silk products are modern silk fabrics such as plain and batik silk fabrics.</p>	<p>Products: The main products are traditional fabrics, modified fabrics for home textile, plain fabrics, batik fabrics, printing fabrics, carpets and rugs, garments and silk products.</p> <p>Design Pattern: Medium scale silk handicraft factories, which have a section to design patterns and colors of products, both apply traditional and modern patterns. Some patterns are custom-designed for individual orders. Often designers use computers to produce high quality output. Small factories do not have a design section, instead the owner does it.</p>

Degumming/Dyeing: Both of chemical and natural dyes may be used by the groups. After products are designed, the members receive dyes and chemicals from the groups for chemical dyes. However, members need to prepare raw materials by themselves for natural dyes. Skeins of processed silk yarn are degummed and dyed.

Degumming and dyeing: At the degumming and dyeing stage, low cost equipment is mostly used by small silk handicraft cottage factories. Medium scale factories often invest in automatic dyeing machines, which produce higher quality of dyed yarn than typical dyeing machines.

Weft Yarn Preparation: After finishing with dyeing, the strings are then untied and the thread wound on small spools. The small spool is put one by one into shuttle as in order at the final stage of weft yarn preparation.

Weft: Factories hire laborers to do yarn preparation in the factory. They may use motorized winding equipments.

Warp yarn preparation: Warp yarn is produced by wounding it on a wooden board with knobs around which yarns are led so that a length of warp can be obtained without tangles. The number of warp yarns is related to specific beaters that are used for weaving. In the next step, the warp yarn is removed from the frame and each yarn is subsequently passed through the string heddles by twisting it together with the warp end left from the previous weaving.

Warp: The same method of warp preparation as model 1 is adopted by small-scale silk handicraft cottages. A warp preparation tool is used in medium scale silk cottages.

Weaving: Typical hand looms are used to weave. The looms are located in individual member's houses, only 5– 10 looms at group's office for demonstration. The members weave fabrics in their homes and the fabric is collected and sent to the group where it is checked for length and quality and stored.

Loom: Handicraft cottages industries use traditional loom/ hand throwing shuttle handloom or fly shuttle handloom. Traditional handlooms with low weaving speed and are used for delicate patterns and designs of traditional fabrics. A fly shuttle loom is used in industrial weaving because it is about 2-3 times faster than a traditional loom. However, fly shuttle looms cannot be used for complex designs or patterns.

Weaving management: The factories employ laborers to weave fabrics at the factory. Wages are paid according to meter of fabrics woven and according to design/pattern. However, factories also make informal contracts with weavers outside their employees to weave fabrics. The weavers usually have experience of at least six months and receive further training at the factory . Contract weavers work at home on their own looms. The factories are in full control of the production volume and home producers are required to finish their job at a certain time. Contract weaving is widely adopted because it requires less capital for investment than other systems. However, a good relationship between the factory and contract weavers is critical.

Quality Control: Within this process all woven silk fabrics, both those weaved by factory weavers and home weavers, are checked for number of meters, patterns, design, texture etc.

<p>Processing: Silk fabrics are sent to finishing factory or shops for finishing. Most SMEs do not have silk fabric finishing section.</p>	<p>Printing: SME factories do not have printing facilities because of the high capital cost. If printing is required, the fabrics are sent to a printing factory. The printing factories usually have patterns for weavers to select from. They charge according to pattern and by the number of meters.</p> <p>Finishing: Woven fabrics are sent for the finishing process to a finishing factory. The cost of the finishing process depends on the number of meters.</p> <p>Garments: Most weaving factories have a direct partnership with a retail outlet. The garment shops order silk fabrics from weaving factories which they design and process.</p>
<p>Marketing: The prices are set based on the complexity of design and labor input.</p>	<p>Marketing: The markets for silk fabrics, garments and products are mainly for export, wholesale and outlets with small volumes sold domestically.</p>

Adapted from "International Workshop on Silk Handcrafts Cottage Industries and Silk Enterprises Development in Africa, Europe, Central Asia and the Near East", Second Executive Meeting of Black, Caspian seas and Central Asia Silk Association (BACSA), Bursa, Turkey, 6 -10 March 2006

Annex Table 9: Number and location of Cambodian silk weavers, 2010

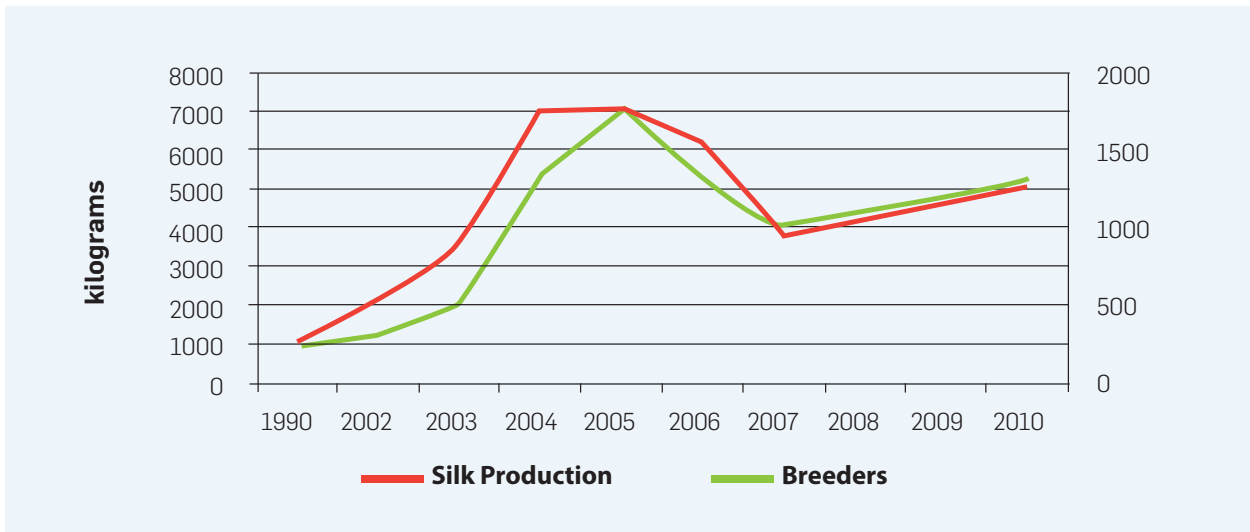
Area	Number	Weavers Specialization
Takeo	12,584	Hol (86 percent), Plain Fabrics (8 percent), Krama (6 percent)
Kandal	4,513	Phamuong , Chorobab, Lberk
Kampong Cham	770	Hol (95 percent)
Prey Veng	2,037	Plain Fabrics/Organza (83 percent), Krama (17 percent)
Northwest Area	321	Plain Fabrics, Blanket, Krama (70 percent)

Source: Khmer Silk Villages (April, 2010)

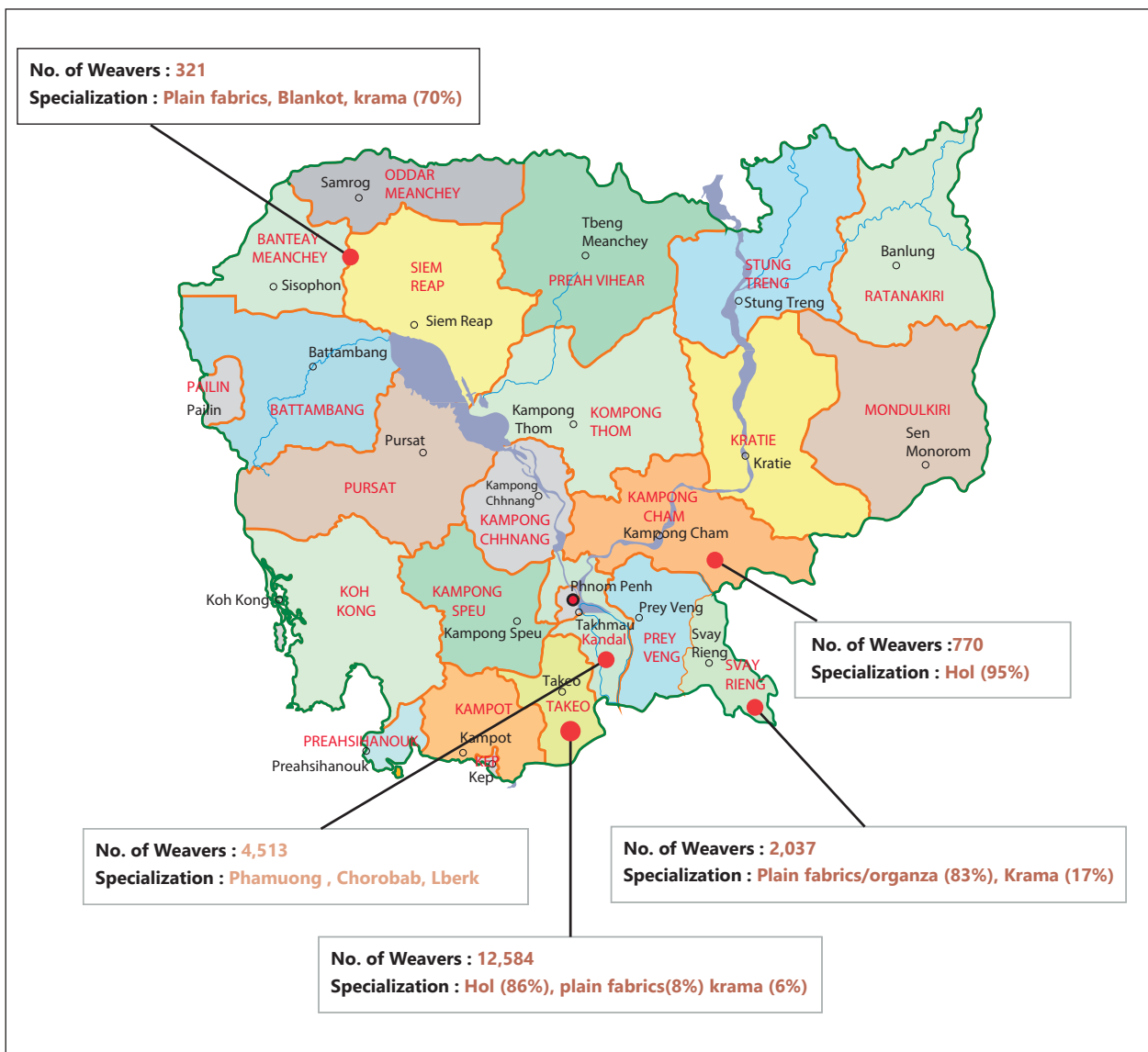
Cambodia's silk industry

Cambodia participates in all three activities of the silk trade. At present there are about 1300 breeders and 160 hectares of mulberry trees that produce approximately 5 metric tons of silk yarn per year. This is considerably less than the 50 metric tons produced during the 1950s. The loss in production is due in large part to low productivity in silk production and higher returns from other crops. However, the number of breeders has increased slightly in recent years are shown in Figure 42.

Annex Figure 42: Domestic silk yarn production (kg)



Annex Figure 43: Number of weavers and their specialization in Cambodia



The region most suitable for mulberry tree cultivation is in the northwestern region in Oddar Meanchey and Preah Vihear provinces and in the eastern region in Prey Veng, Kampong Cham, Kratie, Stung Treng, Rattanakiri, and Mondulakiri provinces. Some mulberry plantations have been established in Banteay Menachey and Siem Reap provinces.

Production of the yarn is concentrated in the Northwest while the weaving of the yarn takes place in the south (see map). The total number of weavers is estimated to be between 18,000 and 20,000, most of whom are concentrated in five areas: Takeo, Kandal, Kampong Cham, Prey Veng and the Northwest area (Figure 42). Cambodia produces about 2.4 million sq m of fabric, which requires it to import about 400 metric tons of the silk yarn. The yarn is sourced from Vietnam with smaller amounts from China and Uzbekistan. Gross output of the sector is about US\$50 million, of which about US\$25 million represent the cost of yarn import. Most of the production is for domestic consumption. Less than 10 percent is exported.

The majority of manufacturers of finished products are located in Phnom Penh. The sector is dominated by small producers and NGOs but there are also a number of joint ventures and foreign-owned companies. Their capacity for design and product and market development is limited.

Thai silk industry⁴⁵

Most of Thailand's silk is destined for the domestic market (about 70 percent). The rest is exported and consist of intermediate products such as silk fabrics and yarns (64 percent of exports) and finished goods including garments and accessories (24 percent) and home textiles (12 percent). The value of its exports is around US\$31 million.

Thailand has two silk supply chains, one for polyvoltine (producing multiple generations in a year) and one for bivoltine (producing two generations per year). These are used to produce hand and machine reeled yarn. Polyvoltine varieties cannot be machined reeled and are rougher and thicker, whereas bivoltine varieties can be machine woven. Thailand produces only about 1,400 tons of silk yarn per year. Of this about 1,080 tons are handicraft production from polyvoltine and poly-bivoltine cocoons, while 320 tons are industrial production from bivoltine cocoons.

The supply chain for the former starts with the production of cocoons by rearers farmers. The three main stages of processing, cocoon rearing, yarn reeling and weaving are all performed at the farm level. About 117,000 farmers produce an average of 80kg of cocoons. About 15kg of cocoons produce about 1kg of yarn of which 60 percent is sold to traders and the remaining 40 percent is degummed and woven into fabric. Thus the total yarn available for weaving on traditional wooden looms is around 265 tons, which produces about 1.15 million yards of woven fabric or 4.3 yards per kg of yarn. Some 30 percent of this is kept for own consumption and combined with 180 thousand yards of fabric coming from the poly- bivoltine chain to produce more than half a million yard yards for domestic consumption. The other 70 percent of fabric produced in the polyvoltine marketing chain is sold to small fabric traders who also purchase fabric from the poly-bivoltine chains. Half of the about 1.225 million yards is sold.

The polyvoltine cocoons are reeled by hand and used for weft yarn. Machine reeling is done in factories using bivoltine cocoons purchased from contract farmers to produce both weft and warp yarn. Most of the weft yard is produced locally while a significant portion of the warp yarn is imported (often smuggled) from China and Vietnam, The power loom sector dominates the production of fabric in the country, accounting for more than 90 percent of the total fabric production.

⁴⁵ Source: This section draws heavily from "The Case of Thai Home Textiles: Building Export Competence of a SME Dominated Value Chain", Chiang Mai University, November 2007, www.value-chains.org/dyn/bds/docs/657/ThailandSilk071107.pdf

The poly-bivoltine supply chain involves about 31,500 breeders that produce about 130kg of cocoons per farm and sell around 70 percent of their yarn. Most is sold to other farmers who reel weft yarn. Only about 15 percent is sold to reeling groups and reeling factories. After degumming their yarn the poly- bivoltine producers have around 80 tons of yarn to weave. This is augmented with another 40 tons of yarn purchased from local traders and woven to produce about 5 yards of fabric per kilogram of yarn. About two-thirds of the fabric is then sold to small traders.

The traders combine the fabrics from poly-voltine and voltine silk and sell about half through street vendors and the rest through formal retail trade.


Thailand has also evolved two general business models based on village-level production of the silk yarn. One relies on a cooperative and the other on a private firm to organize the production and sale. The marketing channels are similar but with slight differences as shown in Table 10.

Annex Table 10: : Markets for different business models

Cooperatives silk handcraft cottage enterprise	Private silk handcraft cottage enterprise
Export	
	Factories obtain their export order through international fairs, outlets and e-commerce. Weaving factories join international road show and trade fairs which are promoted by the government.
Wholesale	
<p>Producers sell their products directly to traders, silk processing shops, and exporters. Then they order their products from networks with SMEs in the local area.</p> <p>The traders buy silk fabrics as a raw material and process it into finished goods.</p> <p>The exporters make patterns and designs and order production of the products for delivery at a fixed date.</p>	<p>The main customers for wholesale are traders, silk processing shops, garment factories and exporters. They purchase fabric through formal and informal orders.</p> <p>Factories receive orders through their website, international and local trade shows and retail outlets.</p>
Retail	
<p>Silk fabrics are sold through street vendors and formal retail trade. Most of SME silk handcraft producers establish outlets to present their products for order and sale. Tourists and local people are the main customers.</p> <p>The formal retail trade is the most important market. Several fairs and exhibitions are organized by government both at national level and provincial level.</p>	<p>Most factories have outlets in the capital, big cities, resorts etc. to present their products. Tourists, local people are the main customers.</p> <p>Some weaving factories have their outlets in the fairs for marketing.</p>

Characteristics of firms surveyed

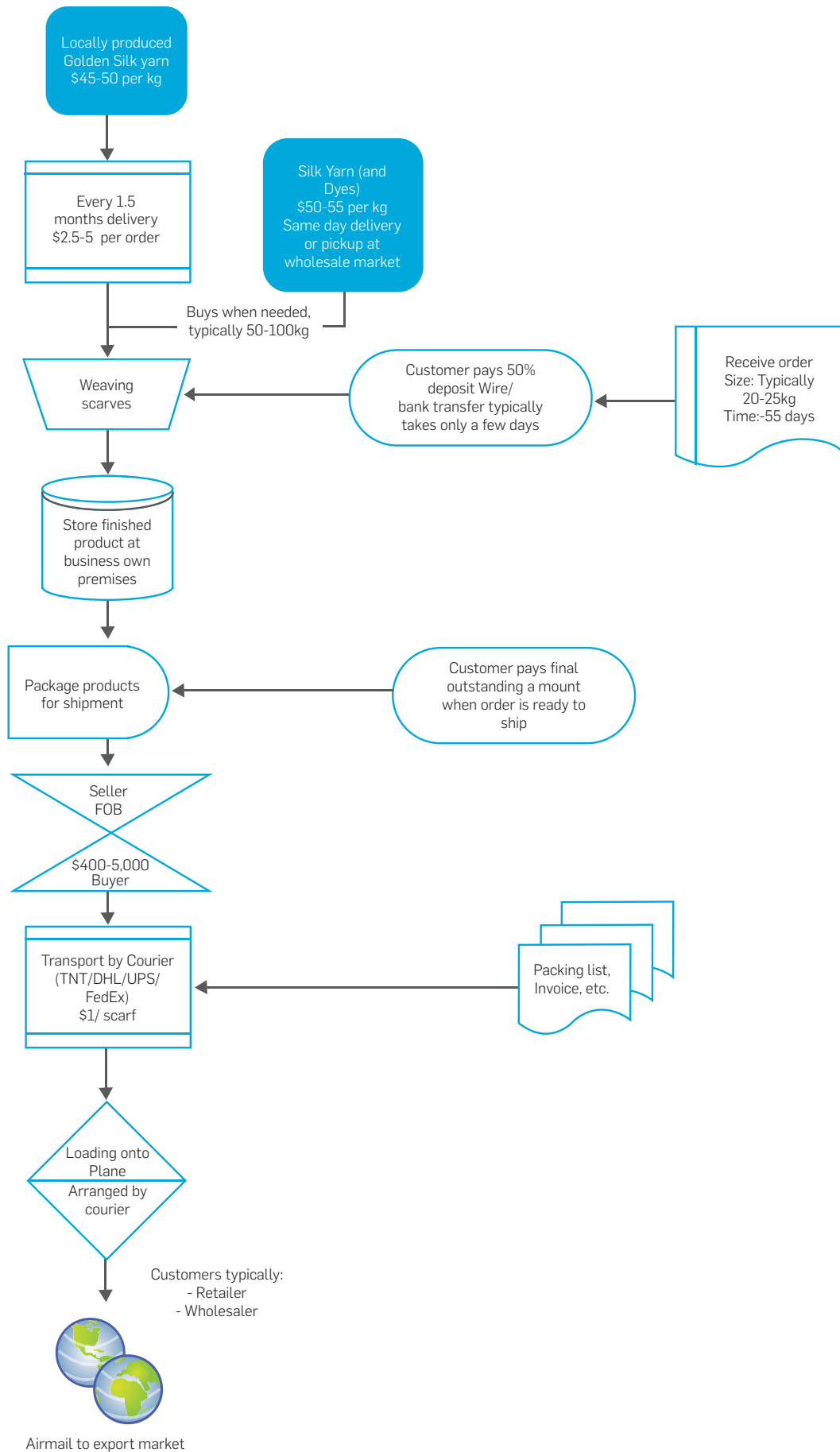
1. Three small producers of silk garments were interviewed.
2. They import either silk yarn which they weave or cloth which they used to produce garments.
3. They also import chemical dyes as well as some natural dyes primarily from the region.
4. The imported silk and silk yarn is purchased from local wholesalers who deliver the yarn and cloth to the factory and are paid cash on delivery.
5. There is a problem with the availability of supply as it varies from month to month and has inconsistent quality. However, this does not appear to have a significant impact on their ability to fulfill orders.
6. They produce scarves, bags, shawls and also fabric for export.
7. The major markets are developed countries in Europe, North America and East Asia.
8. These products are sold on an FOB basis to foreign wholesalers and retailers.
9. Producers receive a 30-50 percent advance payment at the time of order confirmation.
10. They produce to order except for one small producer who maintains export inventory.
11. Firms vary in terms of mode of shipment with one firm using only airfreight, another shipping 70 percent by air and the third shipping two-thirds by sea.
12. The order cycle can be as little as 1-2 weeks with airfreight but by sea 3 months for distant destinations.
13. The firm's principal source of competitive advantage is the uniqueness of their product, the quality and the cost.
14. All 3 firms are looking to increase the volume of orders as a way to grow their business. For this purpose are attempting to improve the quality and diversity of products.
15. The greatest constraint to grow is lack of demand followed by limited working capital, production technology and quality control, as well as the availability of labor.
16. The outbound supply chains do not pose any challenges other than the cost of domestic transport.
17. The consumption of inputs is only about 50-100 meters of cloth month, which is delivered within a few days by road from the local wholesaler.
18. Deliveries are relatively small and correspond to size of the producers output, nevertheless inputs are delivered weekly.
19. Export shipments are relatively small, with 100-700 pieces.
20. The average value of an export shipment is US\$2,000-US\$10,000 although it can be as small as US\$400 and as large as US\$30,000.
21. A forwarder selected by the producer arranges for export shipments, but in certain cases the buyer nominates the forwarder.
22. Exports are shipped from the factory in cartons by road with the movement arranged by the forwarder.

- 
23. The goods produced are ready for retail.
 24. Two of the three firms have very few late shipments but 30 percent experience delays due to delays in production.
 25. The yarn costs about US\$50 per kilogram and the cloth about US\$10 per meter based on the spot market price.
 26. The inputs are purchased on a cash basis and paid at time of delivery.
 27. The delivery time is generally one-day for fabric and yard but most dyes require up to 15 days.
 28. The producers rely on their own funds to manage their cash flows.
 29. The export sold on a shipment by shipment basis.
 30. Communication with the buyers by e-mail.
 31. Payment for the goods occurs at the time of delivery or one week thereafter and is paid by TT or bank transfer.
 32. Letters of credit are not used in this trade.
 33. The cash-to-cash cycle is only about 2 weeks.

Supply chains and cash flows models

Three business models were examined. The first uses local yarn together with imported yard in its weaving. The second uses exclusively low yarn while the third uses exclusively imported yarn. All produce silk products for retail and are distributed both locally and internationally.

Annex Figure 44: Silk model A



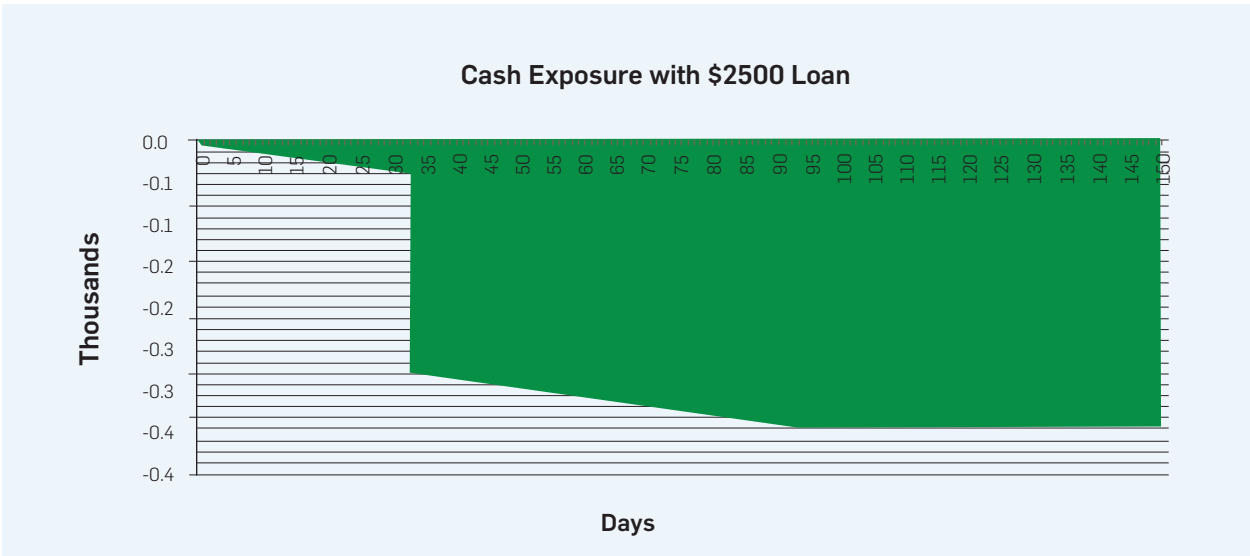
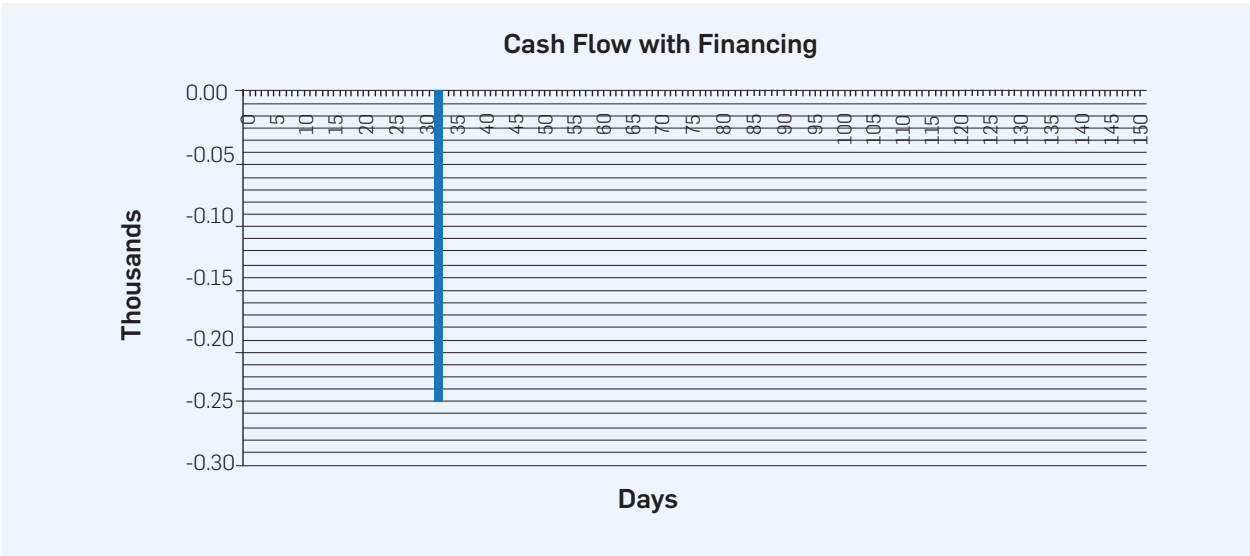
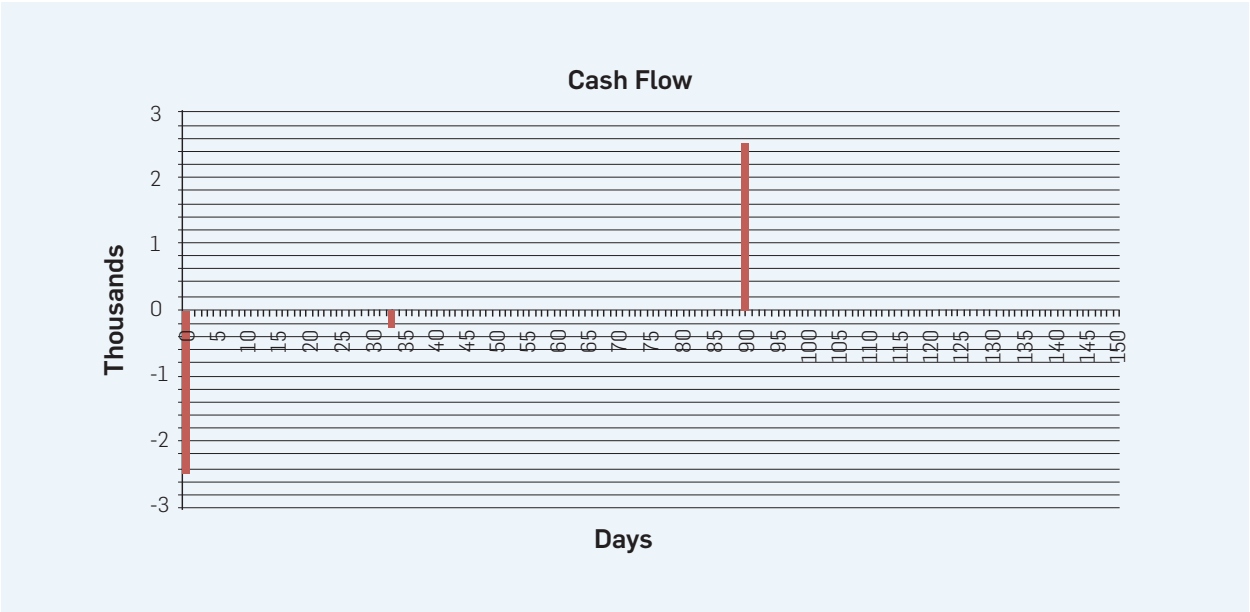
Annex Table 11: : Cash flow for model A

Events	Day
Purchase locally produced yarn from growers	0
Receive order	30
Receive initial payment	32
Purchase additional yarn from market	33
Produce scarves	33
Prepare scarves for shipment	88
Receive final payment	90
Hand over shipment to Freight Forwarder	91

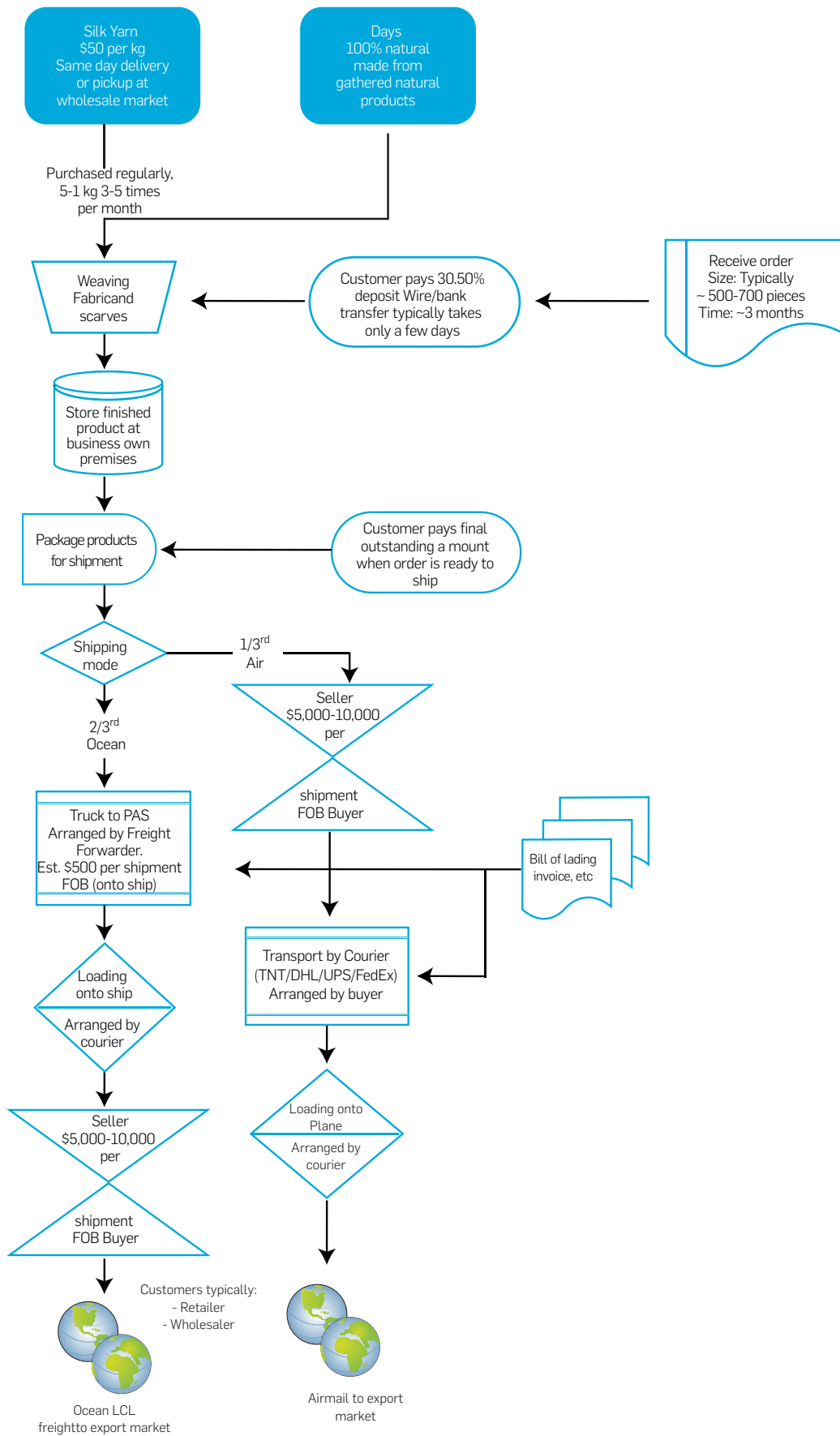
Direction	Transactions	Amount	Event	Offset
1	Purchase local yarn	2,500	1	
2	Receive initial payment	2,500	3	
1	Purchase additional imported yarn	2,750	4	
2	Receive final payment	2,500	7	

Financial Instruments	Amount	Start		End		Fee	Interest	Collateral
		Event	Offset	Event	Offset			
Loan for working capital	2500	1	0	7	0		15.0%	

Annex Figure 45: Cash flows for silk model A



Annex Figure 46: Silk model B

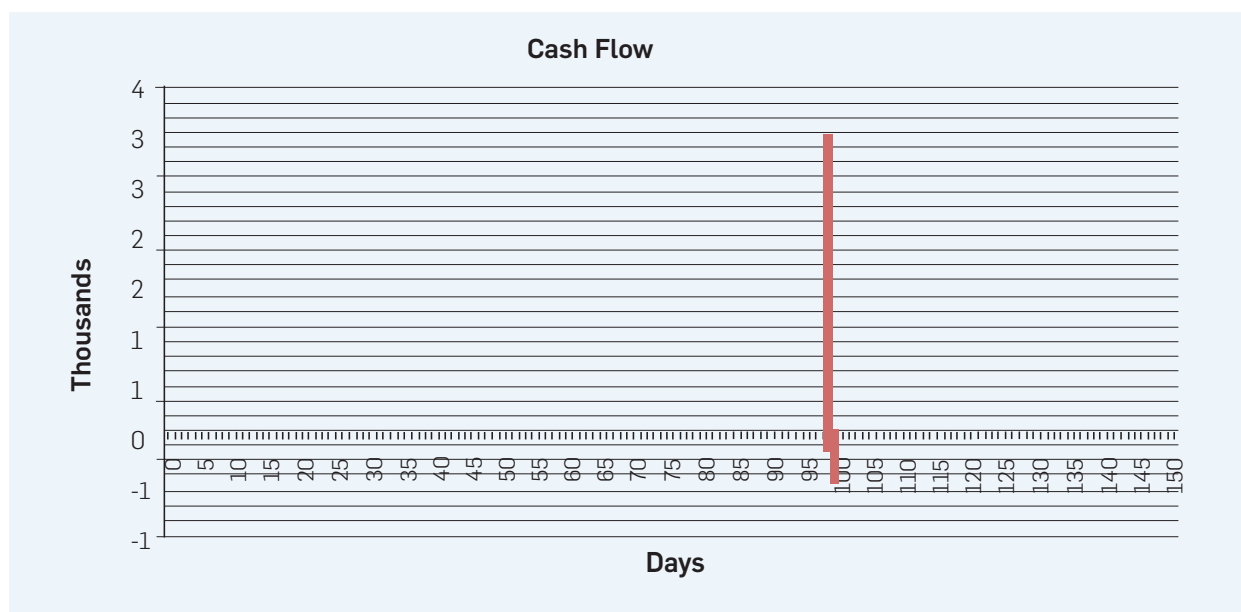


Annex Table 12: Cash flow for silk model B

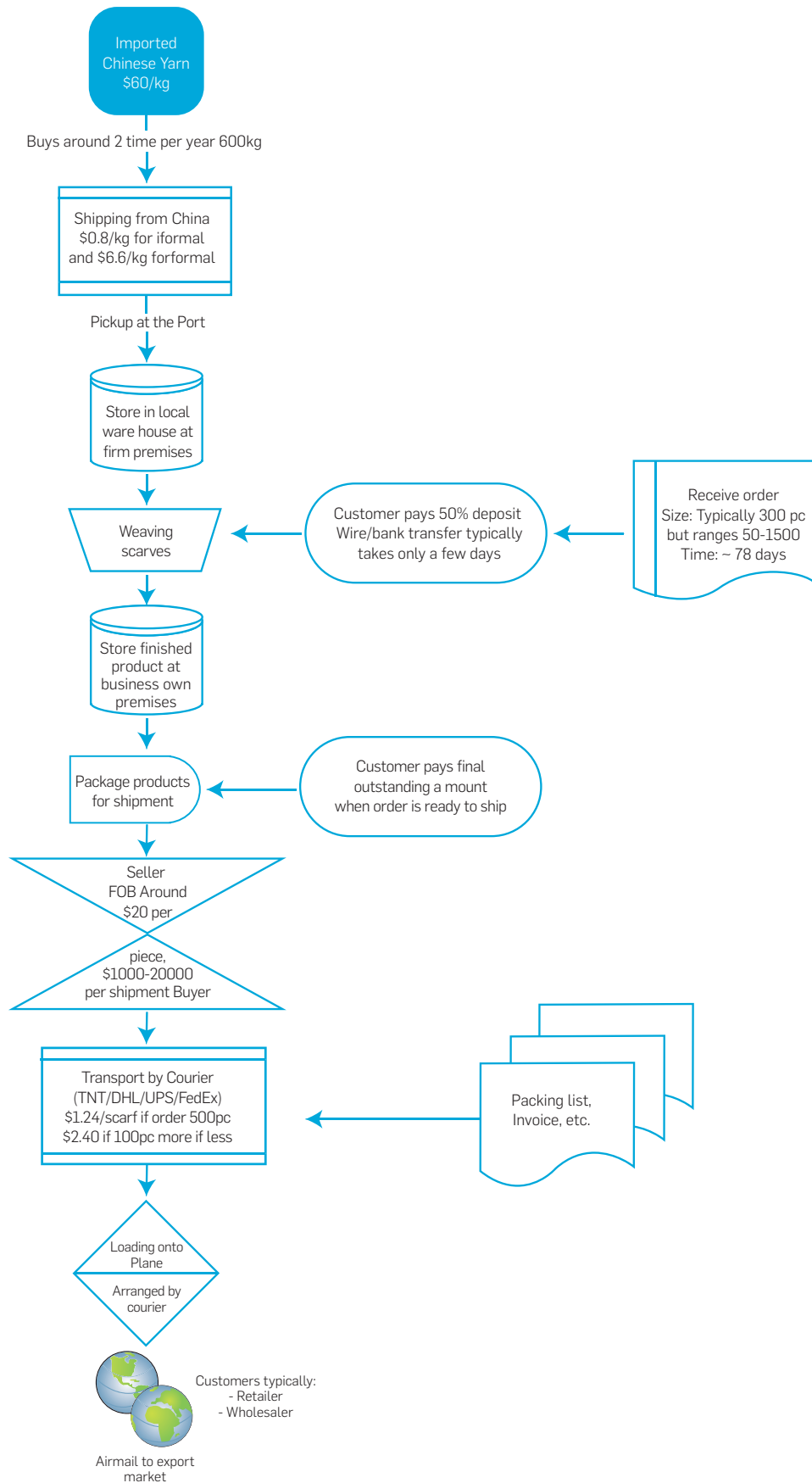
Events	Day
Receive order	0
Receive initial payment	2
Buy inputs at local wholesale market	3
Weaving	4
Package products for shipping	94
Receive final payment	96
Hand over shipment to Freight Forwarder	97

Transactions	Amount	Event	Offset
Receive initial payment of 50 percent	2,500	2	
Purchase inputs at market	2,500	3	
Receive final payment	3,000	6	
Pay freight forwarder for shipping and handling	500	7	

Annex Figure 47: Cash flows for silk model B



Amtex Figure 48: Silk model C



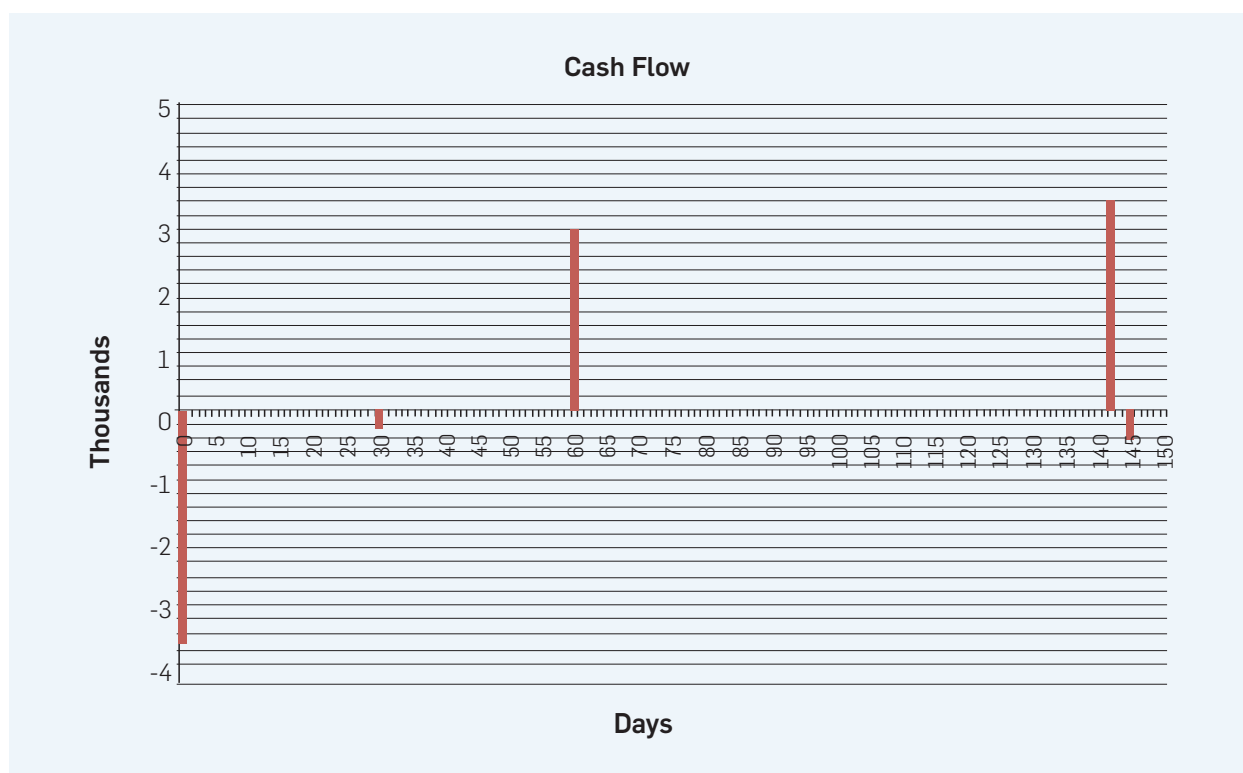
Annex Table 13: Cash flow for model C

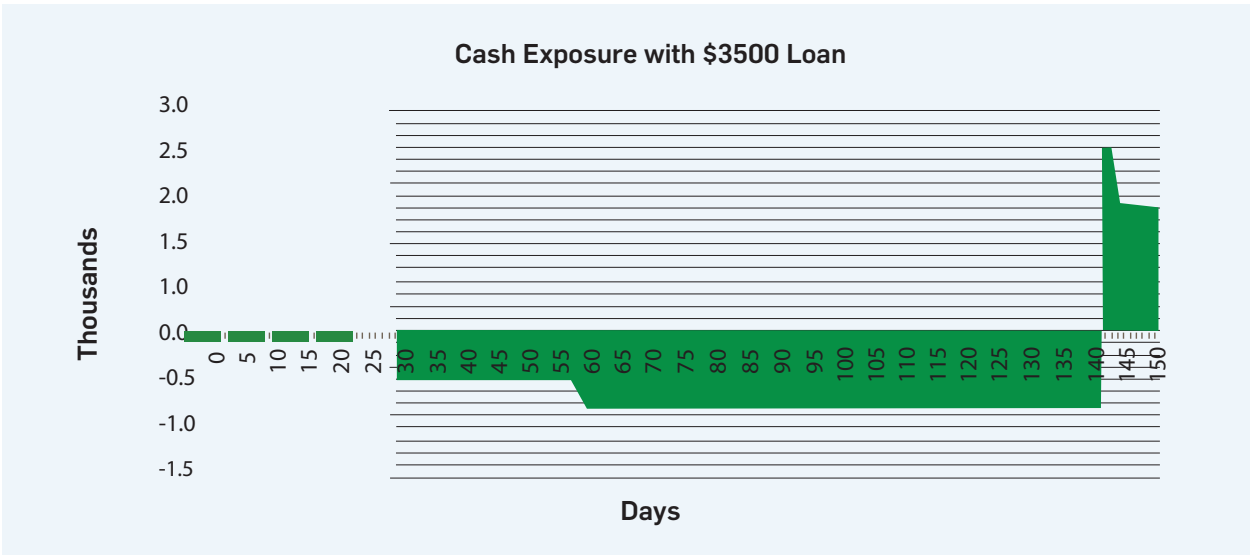
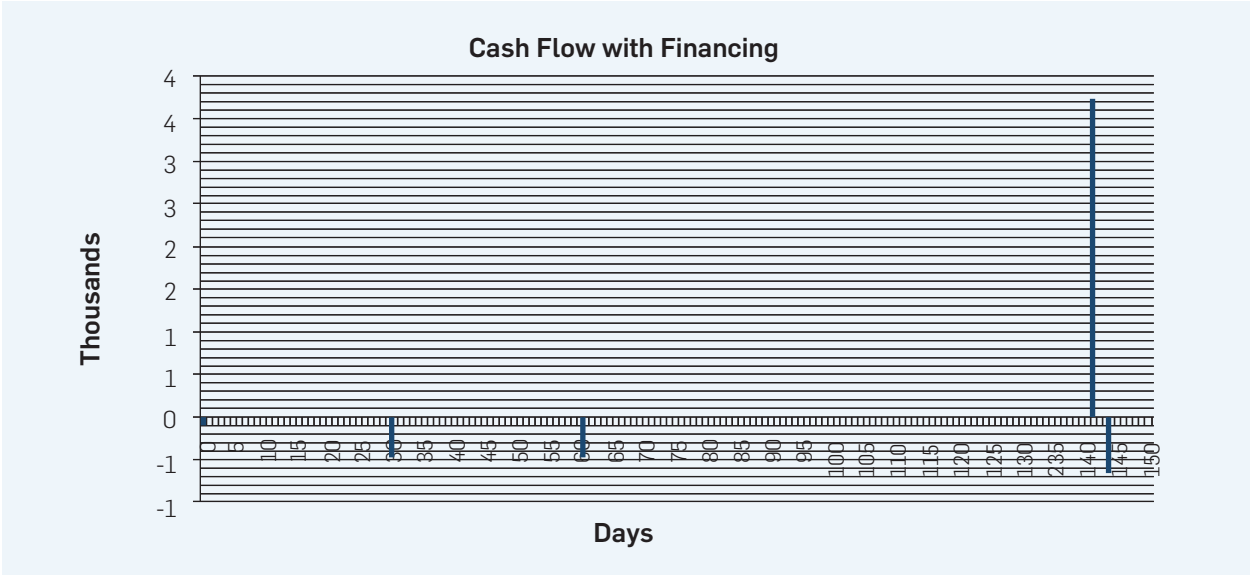
Events	Day
Order silk yarn inputs from China	0
Pick up yarn from port and store in warehouse	30
Receive order	60
Receive initial payment	62
Produce silk scarves	63
Pack and prepare scarves for shipment	141
Receive final payment	143
Ship scarves to customer	144

Transactions	Amount	Event	Offset
Pay for imported silk yarn	3,600	1	0
Pay informal import	480	2	0
Receive initial payment	3,000	4	-2
Receive final payment	3,720	7	-2
Pay freight forwarder	720	8	0

Financial Instruments	Start		End		Fee	Interest
	Amount	Event	Offset	Event		
Loan for working capital	3,500	1	0	4	-2	15.0%

Annex Figure 49: Cash flow for model C





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