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Market survey Vietnam - Climate Controlled Logistics

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1 Executive Summary

Vietnam is becoming a marketplace for fresh and processed foods, backed by solid gross domestic product growth rate averaging 7 percent annually for the past five years. In 2008, the country's official trade data showed imports of \$79.4 billion, up from \$60.8 billion in 2007 and exports of \$79.37 billion in 2008, up from \$40.8 billion in 2007. The market for consumer-ready foods has witnessed significant growth since 2005, and in reality its volume is much higher than official figures, as many products cross the Vietnamese border without being officially recorded.

The Vietnamese market is unfamiliar to many exporters, especially from the United States and Europe. However, two-way trade between the United States and Vietnam in agricultural, fish, and forestry products has almost doubled in the past few years to reach approximately 20 percent of all trade volumes as of 2008. Most of this has been in the form of exports of agricultural, seafood, and other consumer-ready products.

Vietnam became the 150th member of the WTO in January 2007. It has been plagued by infrastructural issues, which in turn is hampering the growth of its logistics industry in general and climate controlled logistics industry in particular. The growth of the logistics industry has largely been due to the growth in industries such as construction, manufacturing, seafood exports, mining, textiles, and agricultural processing. To ensure that the logistics industry's grows alongside the growth in the logistics end-user industries, a number of infrastructure projects for air, road, and sea modes of transportation are underway across Vietnam. Nevertheless, the technologies used within logistics such as in case of climate controlled logistics remain obsolete. As a consequence, various quality issues have surfaced quite frequently in the climate controlled industry.

Vietnam's export of agricultural products, seafood, fruits, and import of pharmaceuticals needs an advanced climate controlled logistics industry. The total revenues of the industry are estimated to be marginally below \$1.0 billion and are growing at a rate faster than the country's GDP. New niches such as flower exports have been promising and have the potential to cross the billion dollar figure soon.

Major retail chains worldwide regularly source from Vietnam. Apart from that, Europe largely exports pharmaceutical products to Vietnam. With new international participants entering Vietnam and FDI restrictions expected to be relaxed, climate controlled logistics service industry is projected to grow at a double digit rate till 2012.

Although regulations for foreign businesses seem fairly unclear and cumbersome to follow at present, the Government is expected to streamline and relax the regulations to encourage foreign investors to invest in Vietnam. A testimony of Vietnam as an investment destination for international companies is the set of business enablers, including skilled manpower availability, lower or exemptions on corporate income tax, rise in demand for advanced industrial parks for warehousing technology, and rise in customer base for climate controlled logistics. These, together with rise in domestic and international demand for Vietnamese perishable products, point toward significant potential for climate controlled logistics industry in Vietnam.

Dutch companies already have the know-how and expertise to provide international standard climate controlled logistics services in Vietnam. Leveraging existing expertise along with intelligent use of the Vietnamese low-cost market will help Dutch companies establish a niche for themselves in the booming Vietnamese climate controlled logistics market.

2 Logistics Market Overview

Vietnam Transportation market has been growing at a rate of close to 8 percent per year. The freight transport traffic has increased by 8.5 percent between 2003 and 2008. The market is expected to grow at a faster rate than the country's GDP growth rate, primarily due to the Free Trade Agreement of Vietnam with various countries.

The Vietnamese climate controlled logistics industry has a high degree of regional disparity in terms of infrastructure development. Logistics infrastructure in a few parts of the country, for example the central highland, is still very underdeveloped and the growth in such areas has been slow.

The Vietnamese logistics market lacks qualitative end-to-end integrated service providers. The supply chain consists of many participants and this result in significantly increasing the risks of spoilage and shrinkage of product in transit.

The export of food and manufacturing industry has been the key driver for the logistics market in Vietnam, however, complex certification procedures need to be streamlined to continue the growth. Well-trained human capital and international expertise are likely to result in faster growth of the logistics industry. The logistics industry faces serious challenge in areas of logistics infrastructure development to keep pace with the economic growth of the country.

2.1 Industry Life Cycle, Structure, and Current Market Size

The logistics and freight transportation sector in Vietnam is still at a nascent stage. It largely consists of local transportation agencies and state-owned enterprises. Although the industry is moving from being fragmented in the early part of the century to an integrated one, the presence as well as entry of international logistics companies has been sluggish in the past decade. Around 90 percent of the total transportation volumes are catered to by the local enterprises. However, this trend is fast changing, as the GDP growth for the transportation sector is outpacing that of the country. While the transport sector GDP has been estimated to have grown by 8.0 percent in 2008, the country's GDP growth rate was 6.2 percent in the same year. As a result, the industry is steadily witnessing increase in entry of international logistics service providers.

Road is the primary mode of freight transportation across Vietnam, followed by railways. Use of sea and air transportation modes, although not as extensively employed, have gradually witnessed steady rise over the past five years. As of 2008, road freight transportation accounted for 7.5 trillion tons kilometer, followed by railways at 1.8 trillion tons kilometer. Sea freight (inland water-ways and maritime) accounted for 9.4 billion tons kilometer in 2008, while air freight was the lowest at 209 million tons kilometer. Overall, the freight transportation traffic, measured in million tones kilometer, rose by an annual average of 8.5 percent during the period 2003 to 2008.

From logistics service perspective, transportation and warehousing continue to be the most outsourced basic services. Most of these basic services are provided by local and state-owned enterprises, transport agencies, and warehousing specialists. Third Party Logistics (3PL) is a new concept in Vietnam and it is rarely employed by small and medium sized, local industries. International companies, such as Kraft, Kellogg's, Coca Cola, Pepsi Foods, and Nestle, operating in the fast moving consumer goods (FMCG) segment are largely the end users of 3PL services provided by international logistics service providers present in Vietnam. On the supply side too, not all companies offer 3PL solutions. Local companies are not equipped to offer specialized 3PL services such as inventory management, vendor management, order processing, climate controlled transportation and

warehousing services, and so on. As a result, multinational logistics and freight forwarding companies such as Maersk Line, FedEx, DHL, APL, and Schenker are the exclusive providers of specialized logistics services in Vietnam.

Vietnam's economy is favourable to new entrants. Vietnamese government has an increasing focus on international trade through signing of Free Trade Agreements (FTA) with key economies such as the South Korea, the Japan and the United States. In addition, current international companies are also evaluating opportunities to expand their range of services within the logistics domain. As a result, the range and quality of services offered by logistics companies are also expected to be more in favour of specialized services. For example, niches such as climate controlled transportation and warehousing growth is expected to outpace the growth in basic transportation and warehousing services. Of all the specialized services within the logistics domain, climate controlled transportation and warehousing has witnessed significant activity in the past three to four years. However, the industry still consists of individually-owned cold chain warehouses and retail outlets. Notwithstanding this, the strong growth in local demand for consumer perishables and rising exports of the same to high-cost, developed nations such as the United States, are expected to boost the influx of specialized climate controlled logistics service providers, especially from Europe.

2.2 Contribution to GDP and Key Logistics Hubs

The logistics industry is one of the fastest growing industries in Vietnam. It comprises 4.4 percent of the country's GDP, and is estimated to grow at a pace faster than the GDP growth rate. The total value of the logistics and freight transportation sector as of 2008 stood at \$10.6 billion. This represents 4.4 percent of GDP (Purchasing Power Parity) logistics industry in Vietnam provides employment to over 1.1 million people. To support and ensure the growth of the logistics industry, investments for a wide range of transport infrastructure projects are in the pipeline. This includes road, rail, air, and sea modes, and new airports, seaports, and interstate highways being planned. This has helped the Vietnamese Government attract much needed foreign direct investments (FDI) for infrastructure development projects in some of the major cities to develop logistics capabilities.

Hanoi, Da Nang, and Ho Chi Minh City are the current major logistics hubs in Vietnam, in northern, central, and southern regions, respectively. Each region also has emerging hubs. The Vietnamese Government plans to use the smaller provinces of Hai Phong (north), Nha Trang (central) and Binh Duong and Dong Nai (south) as supporting hubs for the larger ones, once the existing hubs reach congestion point. Investments for infrastructure and industrial development are being directed to increase the logistics competencies of these smaller provinces. The chart below indicates the current and emerging hubs in Vietnam.

Hanoi, in north of Vietnam, is symbolized by the presence of high number of consumer goods manufacturing and textile industries, which are direct customers for the logistics industry. Besides, construction activity, mainly residential and industrial construction, has also been at its peak in the last two years in Hanoi.

Hai Phong, in the north, is the fastest emerging industrial location, attracting significant investments from local and foreign cement, steel, chemicals, food and paper processing industries. In addition, Hai Phong has access to one of the largest seaports in Vietnam, the Hai Phong Port. This city has registered a strong growth of 40 percent in logistics activity in 2008, over that in 2007. This growth is expected to continue till 2010.



Source: CIA World Fact Book

Da Nang, the biggest city in central Vietnam, is also a logistics hub, with an important strategic location. Da Nang is the only city with a big port, the Da Nang Port, which is a gateway to central Vietnam. The city is home to agricultural processing, software, and IT industries and is also a key location for seafood exports.

Nha Trang, although a tourist destination, is attracting significant FDI for industrial development. In 2008 alone, the province registered FDI worth \$370 million for new industrial projects and \$545 million toward infrastructure development projects.

Ho Chi Minh City, in southern Vietnam, is the biggest logistics hub in Vietnam as of 2008, accounting for 70 percent of freight transportation and 60 percent of overall logistics industry share, that is, \$6.3 billion. Up to 600 logistics companies manage their operations from Ho Chi Minh City. Access to major seaports, airports, and national highways as well as the comparatively developed transport infrastructure in each of these modes of transportation, is instrumental in establishing the city as the largest logistics hub in Vietnam.

Logistics infrastructure in the form of good quality highways is being developed in emerging southern provinces of Binh Duong and Dong Nai, as these are largely industrial provinces. On the bases of strong FDI for over 100 new projects in these provinces as well as proximity to Ho Chi Minh and its neighbouring seaport and airports, these provinces are emerging in logistics park services with integrated warehousing facilities; including specialized climate controlled warehousing services.

2.3 Logistics Outsourcing Trends

The very structure of the logistics industry, where around 90 percent of the freight transported is through local participants, is indicative of the outsourcing trend for logistics services in the industry. The small, local logistics participants do not possess the capabilities to offer high value services to end-user companies. As a result, transportation and to some extent, basic warehousing are the main services provided by local participants. Handling transportation services for larger local companies as well as multinational companies is also a common feature for smaller participants. In certain cases, a group of smaller participants also collaborate to form a bigger coalition for certain types of exclusive services such as road haulage and freight forwarding, or a combination of such services. However, the lack of strong financial backing restricts the services offered by the local companies and deems them unfit to compete with the financially much stronger multinational service providers.

On the other hand, specialised services such as inventory management, vendor management, order processing, customs service and support, warehouse management, climate controlled logistics and so on, are provided largely by international or large Vietnamese logistics companies. These companies often cater to the very few of the manufacturing industry and thus outsourcing of specialized services is common for multinational as well as for large local companies.

The table highlights the current outsourcing trends in Vietnam in comparison with the expected trend in 2012.

Logistics Service Classification	Logistics Services	Percentage outsourced	
		2008	2012
Basic Services	Outbound transportation	85%	91%
	Outbound warehousing	71%	85%
	Inbound transportation	69%	88%
	Inbound warehousing	33%	56%
Specialised Services	Inventory management	28%	48%
	Warehouse management	19%	67%
	Order processing	14%	43%
	Vendor management	11%	23%
	Custom information and support	9%	13%
	Reverse logistics	7%	19%
	Climate controlled logistics	5%	21%

Source: Frost & Sullivan

The table indicates the percent outsourced for each services currently being offered by logistics service providers in Vietnam. Outbound transportation and warehousing are the most outsourced services with 85 and 71 percent of the industry outsourcing these services, respectively. Inbound transportation and warehousing are the other most outsourced services. Most of these services are offered by local logistics enterprises.

Specialised services are currently offered only by international logistics companies to multinational end-user companies. Most of the specialised services are generally not outsourced as individual services, but as a part of the complete 3PL package.

For instance, DHL, one of the 3PL operators for Kraft Foods Limited in Vietnam, offers inventory management, warehouse management, order processing, customs information, and support services as part of the complete 3PL package.

Warehouse Management, one of the specialised services, is expected to witness the maximum growth during the period 2008 to 2012. Currently, only 19 percent of the industry is outsourcing warehouse management services, which is expected to increase to 67 percent by 2012. This service is expected to be outsourced as a package, along with the inbound and outbound warehousing services, in future. The key reason for this increase is the considerable change in the outlook toward warehousing technology, across provinces in Vietnam. Warehouses, which were earlier looked upon as mere stocking area for cargo, are currently considered as strategic locations to segment and channel the flow of goods to achieve supply chain optimization and maximum reach within the nation. Besides, increasing number of international property developers investing in warehousing centres across Vietnam is expected to enhance warehouse connectivity to major seaports, airports, railway stations, and highways. To add to this, significant improvements in the warehousing infrastructure, coupled with new technological provision in the warehousing segment, are expected to promote warehouse management as a logistics service. Air conditioned warehouses, refrigerated and climate controlled warehouses, built-to-suit warehouses with uninterrupted utilities of power, water, sewage, and telecommunication systems in place are some of the emerging warehousing services.

In addition, higher presence of multinational manufacturing and construction companies since 2005 has given rise to the emerging trend of integrated industrial and logistics parks. Industrial parks are industrial zones where companies across various industries setup manufacturing or assembling units. These parks offer advantages such as proximity to seaports, airports, and highways at competitive rentals for over 40 years. Some parks are also located in free trade zones (FTZ) offering tax exemption and other subsidies. Logistics parks may or may not be present within industrial parks, but offer integrated warehousing services across a variety of transportation modes. Developed by commercial property developers, integrations between sea-rail-road modes and air-rail-road modes are some examples of the features of these parks. Emergence of such integrated warehousing facilities in Vietnam is highly likely to influence the demand and supply of specialized logistics services in Vietnam.

2.4 Drivers, Restraints, Challenges and their Implications

The following tables specify and rank the drivers and restraints of the market and challenges of the logistics industry in Vietnam, in the order of importance. Implication of each of these factors details the impact on the logistics industry.

Market Drivers

Rank	DRIVERS
1	<p>Vietnam's main sector, construction is currently growing and expected to grow at a rate of over 7 percent up to 2012. Growth in this as well as the manufacturing sector will result in a corresponding growth in transportation and logistics.</p>
	<p><u>Implication:</u> The construction and manufacturing sectors are major end users of logistics services in Vietnam. These sectors extensively use rail, road, and sea modes of transportation. Of the three modes, road and sea are the major ones employed in importing required manufacturing machinery and equipment. The growth in these sectors is likely to increase the need for logistics and facilitate a rise in imports and exports, largely through seaports.</p>
2	<p>Wide range of transport sector investment projects are in the pipeline across road, rail, air, and sea. Government initiative is the main driver for these infrastructure projects.</p>
	<p><u>Implication:</u> The need for logistics is growing at a rapid pace in Vietnam. The modes of transportation adopted by the logistics industry such as road, rail, air, and sea, currently face major infrastructure-related concerns. With the Government-initiated infrastructure projects along with private sector investments and FDI, a number of infrastructure projects are in the pipeline across the country. Developments of these modes would in turn lead to higher accessibility within Vietnam as well as to other developed economies in Europe and Asia Pacific, thereby enhancing the trade capability of the country.</p>
3	<p>FDI attraction from South Korea and Japan for Vietnam's infrastructure projects for development of road and seaport infrastructure would ensure a speedy development.</p>
	<p><u>Implication:</u> Japan and South Korea are known for their seaport, airport, and road infrastructure. Investments from companies in Japan and South Korea would bring in much needed, IT-related skill-sets into the Vietnamese labor force. In addition, the stringent adherence to deadlines followed by Japanese and South Korean companies would ensure timely completion of infrastructure projects. Involvement of foreign infrastructure development companies would thus ensure rapid development and faster benefits for the logistics industry.</p>
4	<p>Competition in the logistics sector currently remains limited to state-owned enterprises (SOEs) with a few foreign participants. For companies who manage to negotiate the unsupportive market factors, in Vietnam, there exists a lot of scope for steadily increasing their market share.</p>
	<p><u>Implication:</u> In the long run, smaller or state-owned logistics enterprises suffer from lack of infrastructure, expertise, financial strength, and IT-based assistance. Such enterprises concentrate most of their resources toward traditional transportation and warehousing services. Multinational companies, who manage to negotiate their way into entering Vietnam, thus have significant scope for growth. Virtually the whole spectrum of expert services, such as inventory management, vendor management, customs service and support, climate controlled logistics services, bar coding, tracking and integrating various modes of transportations, are open to the foreign companies.</p>

5	<p>Vietnam has a long coastline, has borderlines with China, Laos, and Cambodia, which can bring favorable conditions for providing transport services, especially the multi-channel transport, an important factor in logistics service chains.</p>
	<p><u>Implication:</u> There is a lot of scope for Vietnam’s logistics industry to expand in all modes of transport. Bordering with Laos and Cambodia, two emerging investment sectors for the logistics industry, and with the economic giant China, is likely to facilitate huge volumes of trade, once the infrastructure of the country is in place. Currently, although the rail network is the most developed, airport, seaport and road networks are undergoing substantial developments. Vietnam, being close to these three countries, can also benefit from being a multi-channel transport hub for trade between the countries, as it is one of the fastest developing countries in terms of infrastructure in Asia Pacific, after China and India.</p>

Market Restraints

Rank	RESTRAINTS
1	<p>Significant negotiations and procedures necessary to operate a business in Vietnam as a foreign entrant fend off foreign participants in the freight transport sector. As a result, strong presence of SOEs is a key feature of this sector.</p>
	<p><u>Implication:</u> Vietnam’s seemingly non-friendly foreign policies deterred international companies from setting up operations in the country in the past decades. Though policies at present are friendlier for foreign companies, certain procedures continue to delay the entire process. Currently, for foreign companies, significant negotiations and procedures are required to enter the country, discouraging companies from setting up operations in the country, thereby indirectly promoting the presence of SOEs, which occupy a major chunk of the transportation sector.</p>
2	<p>Poor state of road network persists despite construction of new highways. On an average, across the year only about 15 percent of road network is considered to be in good condition, of which, only close to 30 percent is being tarred and equipped with more than two lanes per side.</p>
	<p><u>Implication:</u> In order to attract multinational logistics service providers, Vietnam needs to put in place infrastructure matching international standards. A major glitch in the present infrastructure is the road network that continues to be poor and constitutes bulk of the transportation time. Despite construction of new highways, secondary roads and internal road system continues to be poor. This eventually leads to higher transportation time and costs, thereby discouraging potential foreign investors to other developing countries in the region.</p>
3	<p>Importance given to national and interstate highways across the country from north to south is having a contradictory effect on the secondary roads leading into the cities at major consumer locations. This is primarily because most road development projects are aimed at national and interstate highways as compared to these equally important secondary roads leading directly to consumer markets.</p>

	<p><u>Implication:</u> Although highways are vital for urban development, secondary roads, which from an integral part of the transportation chain, continue to be in poor condition. Considering that manufacturing companies stress on their products being made available in every possible outlet in the city, the poor road conditions lead to longer transportation time, higher costs and in many cases, damage to cargo, thus discouraging international logistics investors. Alternatively, some of the international logistics companies present in Vietnam either focus on transportation activities outside the city borders and outsource the internal city transport to local transporters, or outsource the complete transportation services to local companies, while focusing on other specialized aspects of supply chain.</p>
4	<p>The SOEs that make up almost 80 percent of the total logistics companies have average staff strength of three to ten including managers, no representative overseas offices, and a capital of around \$300,000. With such a weak financial back-up, these enterprises cannot meet the requirements of international logistics companies, leading to domestic participants losing significant import-export business opportunities.</p>
	<p><u>Implication:</u> Smaller or state-owned logistics enterprises do not have the infrastructure or the expertise to handle multiple logistics functions. Such enterprises concentrate most of their resources in one or two types of services, the most common ones being transportation and warehousing. With low financial standings, such enterprises cannot invest in long-term assets as frequently as the multinational companies. They also refrain from expanding into other specialized supply chain functions. In the long term, such companies focus only on their core services and prefer not to venture in new and advanced areas of supply chain. Therefore, such companies are less likely to go for any merger or affiliation with new multinational companies</p>

Industry Challenges

Rank	CHALLENGES
1	<p>Higher initiative and faster pace of developments in one particular mode of transport such as ocean freight transport can lead to diversion of freight movement away from other slow developing modes such as road and rail networks.</p>
	<p><u>Implication:</u> The logistics industry in Vietnam faces the challenge of synchronizing development and investment initiatives across all modes of transport. For the industry to grow as a whole, it is crucial for different modes of transport to develop simultaneously. The significant development activities witnessed at seaports and airports are much faster than for railway terminals and roads. As various modes of transport have to be well connected to each other, within the complete transportation spectrum no single mode of transport can suffice and ensure prompt delivery of freight to consumer markets. Thus, it is a challenge to keep a steady pace and synchronize the developments across various modes of transport for an effective logistics transport infrastructure.</p>

2	With growth of the logistics industry expected to continue, the Government of Vietnam is faced with the challenge of developing the road network, which remains as the most critical mode of transportation. At present, over 10 percent of the villages are inaccessible by road for at least one month, annually.
	<u>Implication:</u> Within the country's road network, infrastructure development agencies have ensured speedy development of highways and expressways linking major cities and transportation hubs. With all the development focused to the bigger roads, secondary roads leading to villages and towns have been neglected throughout the development period, across the country. The situation in over 10 percent of the villages is critical, as they are still inaccessible by roads during the monsoon season, every year. This slow rate of development of roads in villages, where a major consumer base for manufacturing sector is situated, is likely to restrict growth and reach of the logistics industry.
3	Easing up of entry barriers in future for foreign companies is likely to attract large number of multinational logistics participants into the market. This is likely to result in local SOEs losing business and this imposes grave survival measures such as mergers and acquisitions.
	<u>Implication:</u> Opening up of entry regulations for foreign companies would bring in a group of foreign service providers waiting to enter Vietnam. Many such companies are likely to be from China, due to its proximity to the country. This is likely to form an important part of China's international trade, especially export to the United States and Europe. Simultaneously, European companies in specialized supply chain function such as climate-controlled logistics, warehouse management, and much more, are likely to enter Vietnam to cater to the foreign manufacturing establishments. Thus, the only option for SOEs to survive would be either to be partially taken over by foreign companies or cater to transport and warehousing needs of the multinational companies.

2.5 Competitive Analysis

The logistics industry in Vietnam is entering the growth stage. It is quite fragmented with more than 800 logistics service providers providing trucking, warehousing, shipping, and customs clearance services. Up to 85 percent of the logistics market in Vietnam is unorganized with the presence of small and local participants. Local logistics service providers suffer from lack of capital investment capacities and find it difficult to survive over a long term. These local enterprises are currently witnessing strong competition from multinational organizations. There is lack of good experience among local companies, and relatively bigger Vietnamese logistics service providers are not financially strong enough to compete with their international counterparts. However, strong competition within the industry is largely restricted to transportation and warehousing services, which are the most outsourced logistics services in Vietnam, by local companies. Most of the large end-user companies outsource specialized and value-added logistics services to multinational companies. The presence of multinational logistics companies in Vietnam is limited and majority of small- and medium-sized local enterprises compete on basic transportation and warehousing services.

Local Competition

The local companies are plagued not only by lack of capital, but also by the lack of skilled manpower. Competition from multinational as well as large Vietnamese logistics companies is expected to increase. In addition, the increasing presence of international manufacturing companies is expected to drive the demand for customized and specialized services, which only the multinational companies are

capable of successfully offering. In such a scenario, the future for small local enterprises seems grim. Grave survival measures such as acquisitions or tie-up for transportation and warehousing services could be the only options for these enterprises. On the other hand, larger local companies such as Gemadept, Vinatrans, So Trans, Vinalink, Minh Phuong, AATranslog and Sanco Freight Ltd., Vinashin and Vinalines are expected to grow in sync with the industry's growth rate. These companies handle the bulk of logistics services for large Vietnamese manufacturing companies, apart from catering to some international companies with base in Vietnam.

Services offered by these domestic companies are largely centered along basic logistics functions. The list of services offered by local companies is given below.

- **Customs clearance services** are offered either individually or as part of freight forwarding services with local companies handling all customs formalities documentation and clearance of consignments for companies.
- **Door-to-door delivery** includes delivery of documents and smaller parcels from door-to-door for commercial and residential clients.
- **Express cargo delivery** is offered for non-bulk cargo delivery within Vietnam, where transportation is largely in smaller cartons and boxes.
- **Freight forwarding** involves services such as booking transporters, booking space at airlines, shipping liners and warehouses, completing all documentation formalities on behalf of the shipper or importer.
- **Household and office relocation services** include services such as removal and relocation and setting up of households and offices across major cities in Vietnam.
- **Project cargo services** include all logistics services offered as part a large project such as construction of bridges, commercial industrial parks, and railway lines. Common services offered are trucking and temporary stocking of construction material required for the project.
- **Transportation service** is the most basic form of services largely revolving around delivery of freight from point to point. It also includes feeder services offered by transport companies to avoid movement of empty trucks on their return path from a consignment delivery.
- **Warehousing services** offered are largely basic. Refrigerated and climate controlled, air conditioned and sub unit warehousing are largely not offered by local companies.

Although customs clearance and project cargo services are similar to the ones provided by international service providers, the outsourcing levels of these services are comparatively lower as compared to international participants. In addition, most domestic participants provide basic IT- and software-related services, such as vehicle or cargo tracking services. Competition amongst local enterprises is strong, largely due to the capability to provide only a limited range of services, with trucking being the most common service.

International Competition

Likewise, competition among international logistics service providers is also strong, with every provider competing on similar specialized services, while the numbers of end-user companies available to outsource these services remain limited. With growing importance and need for improved warehousing services, competition is certainly expected to intensify in warehousing and warehouse management services offered by international companies. In addition, the large market for seafood and fresh produce exports is also likely to increase the influx of international companies offering cold chain and climate controlled logistics services, for both transportation as well as warehousing. The large scale

infrastructure development and easing up of entry regulations in the past few years have opened up the market and managed to attract some key international service providers in the logistic segment in Vietnam.

Currently, there are around 20 to 25 international logistics service providers operating in Vietnam. The key ones are APL Logistics, DHL, FedEx, Kuehne Nagel, Maersk Line, OOCL, Panalpina, Schenker Logistics, TNT, and UPS. Other known international logistics companies present in a comparatively smaller capacity are NYK Logistics, Nippon Express, Toll Logistics, and Linfox. In addition, several large Chinese companies such as China Ocean Shipping Company (COSCO) and Sinotrans are also present in Vietnam and expected to offer their full range of services by 2010.

The large multinationals logistics companies such as DHL, FedEx, Schenker, and Maersk Line provide the bulk of specialized and international freight forwarding services to manufacturing, construction, and industrial companies in Vietnam. They have branches in most of the key logistics hubs such as Hanoi, Ho Chi Minh City, Da Nang, and Hai Phong and handle sizeable freight volumes through all modes of transportation, air, sea, and road. These companies also thrive on inter-modal and customized IT-based specialized services. On the other hand, the international companies which are present in smaller capacity are generally present only in the larger hubs such as Ho Chi Minh City and Hanoi. Their freight volumes across various modes are comparatively lesser, with relatively low scope for inter-modal services. With freight transportation volumes expected to grow at a rapid rate, the scope for these companies to expand their operations is also significant.

2.6 Expected Future Trends in Logistics (until 2012)

Considering the economic development, investments in infrastructure projects and existing as well as new industries; the future for Vietnamese logistics industry seems bright. The total value of the logistics and freight transportation sector is expected to reach \$17.4 billion by 2012, growing from \$10.6 billion as of 2008. Road transportation would remain the most employed mode, transporting around 11 trillion tons-kilometer of cargo in 2012, as compared to 6 trillion tons-kilometre as of 2007. Rail is expected to follow with 2.6 trillion tons-kilometre, sea freight with 13.8 billion tons-kilometre, and air freight with 327 million tons-kilometre in 2012.

During the period 2008-2012, the logistics industry is expected to grow at a faster pace than the GDP growth. For this period, the growth of the logistics and freight transportation sector is expected to outpace the economy as a whole. It is expected to achieve an average annual growth rate of 8.7 percent as compared to the 8.4 percent for overall GDP growth, with the industry likely to employ 1.2 million people in 2012, as compared to 1.1 million in 2008.

The core client sectors for the logistics industry would continue to be construction, manufacturing, textile, and seafood exports. New investments for expansion activities from these industries are also anticipated to increase the demand for integrated 3PL services and advanced transportation and warehousing services by 2012.

In terms of specialised services, cold chain or climate controlled logistics services have been gaining significance in the past two years in the country. The primary drivers for the rise in demand for climate controlled logistics have been the growth and expansion of user industries such as seafood exports, flower, agro foods, pharmaceuticals, and electronic industries in Vietnam. These industries will be instrumental in the rise in demand for climate controlled logistics up to 2012 and beyond. Although the segment seems lucrative for foreign companies providing climate controlled logistics services, the pace of entry of foreign companies will be slowed by regulations such as joint ventures in the ratio of 51 is to 49 in favour of local companies, thereby discouraging foreign providers of climate controlled logistics services.

However, the emerging trend of logistics parks or distriparks (other name for Distribution Parks or Centres) with integrated warehousing and transportation facilities has attracted significant foreign investments in the manufacturing as well as logistics space. A service such as climate controlled logistics in the form of transportation or warehousing is expected to thrive in such parks, where investments, construction, management, and maintenance of the parks are governed by foreign developers. Moreover, these parks are better equipped to provide international standard facilities to logistics service providers in the form of connectivity, infrastructure, and equipment at competitive rentals. With demand for climate controlled warehousing on the rise, such logistics parks are well equipped to attract investments from providers of climate controlled logistics services in the form of transportation as well as warehousing.

2.7 Identifying Immediate and Future Needs of the Logistics Sector

The logistics industry in Vietnam is poised for significant growth. However, certain factors such as poor logistics infrastructure, low rate of outsourcing of specialized services, and lack of skilled manpower across the logistics domain will act as restraints for growth. The industry thus needs to tighten certain aspects within its domain to optimize opportunities and ensure sustainable growth to match up to or compete with international standards. The following list highlights certain immediate needs of the logistics industry which, if utilized appropriately, can lead to sustainable growth in future.

Higher Outsourcing of Specialized Services;

The Vietnamese logistics industry thrives on outsourcing of basic functions. Among all functions outsourced within the logistics domain, the basic functions of transportation and warehousing are the most commonly outsourced with 85 and 71 percent of the companies outsourcing both functions, respectively. The figure significantly drops to 28 percent for the highest outsourced specialized service in the form of inventory management.

Climate controlled logistics, for instance, is one of the least outsourced services, to a genuine organized service provider with only 5 percent. As the most common form of climate controlled transportation is in the form of ice cartons and boxes, there is a need to change the approach of companies to move toward more organized service providers with stronger service offering and international clientele experience. This would, therefore, ensure better service and infrastructure for end-user companies outsourcing their logistics services with minimal cases of pilferage and damage.

Better Transport Infrastructure Across All Modes;

Developments in modes of transport such as sea and air have outpaced the developments in other modes such as rail and road. Due to lack of synchronization in development plans across modes of transport, the country suffers from frequent bottlenecks that lead to time and revenue losses. Inter-modal transportation is thus a challenge for logistics companies to execute. Therefore, there is a need to synchronize development plans across transport modes to ensure smooth flow of consignment across modes, thereby facilitating inter-modal transportation.

Better Warehousing Infrastructure to Boost Overall Supply Chain Efficiency and Minimize Losses;

At present, warehousing centers in Vietnam demand relatively high cost of warehousing and service fees as compared to the infrastructure provided. Inappropriate infrastructure slows the entire process, leading to higher overall cost of logistics. In addition, international standard infrastructure for specialized warehousing services such as climate controlled warehousing is rare. Even provinces known for agro and seafood exports such as Da Nang, suffer from lack of good climate controlled warehousing system.

What Vietnam thus requires is not only good warehousing infrastructure, but also integration of such infrastructure with other logistics functions such as transportation, inventory management, cold chain, and warehouse management. For instance, presence of integrated climate controlled warehousing services as part of industrial parks with good internal transportation, customs facilities, and connectivity to multiple modes of transport, developed by internationally recognized developers is certain to add value and attract potential tenants of warehousing space. In addition, good internal infrastructure will reduce maintenance and service costs for developers and tenants, thereby reducing overall warehousing costs for tenants at such centers.

Introduction of Manpower Development Programs for Logistics Functions;

In the past few years, universities in Vietnam such as The Vietnam-Singapore Technical School (VSTS) have introduced programs in logistics solutions. Although these programs offer international exposure, they are fairly expensive and attract few local students. This has left the logistics industry with scarce skilled manpower within the logistics domain. Most companies look up to recruits from countries such as Singapore, Malaysia, Japan, Australia, and the European region to provide the competitive edge to their business within Vietnam. The industry thus needs advanced and affordable logistics programs to be introduced in universities across the nation, to attract local students, thereby boosting the influx of local skilled manpower within the industry.

3 Climate Controlled Logistics Market Overview

The growth in pharmaceuticals, food processing, electronic components, and flower export industry has been the key driver for the growth of climate controlled logistics market in Vietnam. However, significant level of spoilages happens in the various legs of climate controlled supply chain. Quality and reliability have been the key concerns for the industry.

The climate controlled logistics industry lacks participants providing end-to-end supply chain solutions. Local companies are primarily involved in the last leg delivery and custom clearances, whereas the international participants are involved in international shipments, packaging, and warehousing. A typical supply chain of a climate-sensitive product could involve multiple participants in Vietnam.

The key drivers for the climate controlled logistics market in Vietnam would be the increase in FDI and joint venture with international companies globally. However, concerns about the climate controlled logistics infrastructure and technologies in Vietnam act as major challenges to the growth of the industry.

WTO agreement is likely to remove the restrictions on FDI in logistics and the market is expected to witness influx of more international logistics participants' domestic climate controlled logistics. This is expected to provide an integrated supply chain solution provider to the industry, which would significantly reduce the spoilages in the supply chain of perishables.

3.1 Industry Life Cycle, Structure and Current Market Size

Vietnam is one of the most promising developing nations not only in terms of logistics, but also in terms of consumer markets. It has a large and fast growing domestic and international consumer market. The growth of Vietnam is leading to higher consumption of perishables such as animal protein, dairy products, and frozen foods. In addition, Vietnam is also recognizing the fact that it is important for it to develop a more robust climate controlled logistics infrastructure.

Vietnam's climate controlled logistics market is fairly underdeveloped, leading to large quantities of fruits and vegetables being spoilt. Underdeveloped infrastructure, very few quality service providers, and lack of human capital are some of the major reasons for such spoilages. The government controlled Trade Union Federation of Vietnam is the only labor organization in Vietnam. However no formal labor union run by labor association is operational in Vietnam for the logistics industry. The minimum age for full time employment is 18, with special provisions for those between 15 and 18 years of age, but many children still work in violation of this law. International Labor Organization (ILO) has been working with the Vietnamese Government to improve the situation of labor in Vietnam. In 2002 Vietnam government released the amended labor code to ensure the rights and privileges for the labor in Vietnam such as the minimum wage structure. However in an independent survey it was found that more than half of the labors employed in Vietnam were unaware of the labor code.

From a real estate perspective the opportunity for climate controlled logistics facility is largely in the coastal regions in Vietnam. In all probability major ports serve and will continue to serve as gateways for climate controlled logistics services in Vietnam. The refrigerated warehousing market in particular will need massive development in order to cater to the growing market of fruits and vegetables inside and outside the country.

The structure of climate controlled logistics industry in Vietnam is a mixture of local and international participants. Local participants are largely involved in warehousing and internal distribution of products

in Vietnam. On the other hand, international logistics companies cater to international distribution, export, and import of climate sensitive products.

Till date, Vietnam has recognized eight sectors including infrastructure, distribution, and logistics as restricted FDI businesses. This has helped in promoting the presence of more domestic participants for activities within these businesses. However, the WTO agreement is likely to change these restrictions and the market is expected to witness influx of more international logistics participants being involved in domestic climate controlled logistics.

Major international participants operating in Vietnam in the climate controlled logistics space are:

- Panalpina;
- Kuehne Nagel;
- Swire Cold;
- Schenker;
- Agility;
- APL;
- K-line;
- Maersk Logistics;
- Konoike.

Major domestic participants in Vietnam in the climate controlled logistics include:

- Quang Minh;
- Hoang Ha;
- Minh Phuong;
- Vinafco.

Prices are a sensitive subject in the climate controlled logistics market in Vietnam, as the market is driven more by price concerns than quality concerns. However, prices vary according to the goods transported. For instance, imported pharmaceutical products go through much more scrutiny and thus need more advanced climate control measures. There are very few providers of such advanced climate controlled services in Vietnam and therefore, prices of climate controlled logistics services for pharmaceutical products are higher than products from other industries, which require similar service.

On the other hand, a logistics supply chain for seafood undergoes relatively lesser degree of scrutiny. Therefore, the cost and quality of the climate controlled logistics for seafood are lesser than pharmaceutical products. Therefore, the prices in the climate controlled logistics sector depend mainly on:

- Kind of product;
- Quantity of product;
- Number of intermediaries in the logistics chain;
- Extent of technology needed for the product;
- End destination of the product (as some regions in Vietnam are better connected than others);
- Climate controlled logistics providers.

3.2 Key Products Needing Climate Controlled Logistics in Vietnam

Fisheries/Seafood

Vietnam is the world's eighth largest seafood exporter. Fish production in 2008 continued its year-on-year growth and was valued at 4.60 million tonnes (2.45 million tonnes from aquaculture and 2.13 million tonnes from combined capture of fisheries from marine and inland waters). The aquaculture

production showed an increase of 15 percent over 2007. This is in line with the global trend toward more production expected from aquaculture than captured fisheries.

In terms of value the total fisheries export amounted to \$4.5 billion in 2008. This represents an increase of \$700 million from the 2007 figures. The major export commodity was shrimps, with a total of around \$1.5 billion as of 2008. This represents an increase of 20 percent by volume and 9 percent by export turnover over 2007. Pangasius export reached \$1.4 billion in 2008. This represented an increase of over 50 percent over 2007 in terms of volume and export value.

Post 2008, Vietnam has been forced to diversify its fisheries exports. This diversification is mainly due to Technical Barrier Trade (TBT) and concerns from the United States and Russia, about the quality of seafood. Exports to the Russian market were closed at the end of 2008. However, this ban was lifted in February 2009, once an agreement was reached with the Russian Government. This was possible after inspectors from Russia inspected Vietnamese processing plants and approved the adherence to food quality regulations. European Union accounted for 25 percent of Vietnamese aquatic product export turnover. European Union share marked a 28 percent increase in terms of value from 2007 figures. Japan was ranked second, accounting for 18 percent of exports, followed by the United States, which accounted for 16 percent of Vietnam's exports. At the same time diversification resulted in Vietnam exporting to new countries such as Ukraine, Middle Eastern countries, and African countries. As a result of the growing purchasing power of local consumers, domestic market for seafood consumption also grew in 2008. The table below indicates the rise in seafood industry produce over the period 2000-2008.

Seafood Industry Produce (2000-2008)

Year	Total in '000 Tonnes	Caught in '000 Tonnes	Farmed in '000 Tonnes
2000	2,251	1,661	590
2001	2,435	1,725	710
2002	2,647	1,803	845
2003	2,859	1,856	1,003
2004	3,143	1,940	1,203
2005	3,466	1,988	1,478
2006	3,721	2,027	1,694
2007	4,198	2,075	2,123
2008	4,602	2,136	2,466

Note: Figures have been rounded; Source General Statistics Office of Vietnam Analysis: Frost & Sullivan

The table above indicates the rapid growth of seafood industry in Vietnam. The total production has increased by over 300 percent. Important point to note is the production of farmed seafood has surpassed the seafood catch figures. This shows the trend of increased production for specialized seafood processing centers. This increase is a promising sign for the growth of the climate controlled logistics service in Vietnam.

However, on the negative side, processing plants only operated at around 40 percent capacity in 2008. In addition, Vietnam imports raw seafood material from China and India for processing. High input costs, including those of fuel and raw material have resulted in the Government subsidizing the fishing effort policy. This subsidy has been detrimental to the growth of the industry, mainly due to the fact that this has encouraged continued use of fuel-inefficient vessels with poor cold storage capacity. Therefore, quality concerns of Vietnam's fisheries have not been addressed at the level it should have been.

Vietnam's fisheries industry still has ample scope for improving the quality of its seafood. Especially high value marine products such as tuna need lot of improvement in terms of quality. At the same time, quality concerns over pangasius and shrimps still persist.

Agro-based Production

More than 70 percent of Vietnam's population lives in rural areas. Agriculture significantly contributes to the country's GDP, accounting for close to 22 percent. The year 2008 was an exception in terms of rice production. The total agriculture production for 2008 was 38.6 million tonnes. The Vietnamese Government curbed export due to fears of food security. Ample production inside the country was not able to take advantage of surged global prices. World price for rice touched \$1,100 to \$1,200 per tonne. This gave rise to frustration among the local traders and farmers. With speculation in domestic market, rice supply witnessed shortage and resulted in price surge across the country.

Vietnam Agricultural, Vegetable, and Fruit Production (2000 to 2008)

	Total in \$ Billion	Cereals and Pulses in \$ Billion	Vegetable & Bean in \$ Billion	Fruit in \$ Billion
2000	5.09	3.09	0.35	0.34
2001	5.20	3.08	0.38	0.36
2002	5.49	3.34	0.44	0.39
2003	5.70	3.42	0.45	0.39
2004	5.96	3.56	0.46	0.41
2005	6.04	3.58	0.50	0.44
2006	6.25	3.59	0.53	0.45
2007	6.46	3.65	0.57	0.49
2008	6.85	3.92	0.59	0.51

Note: Figures have been rounded; Source General Statistics Office of Vietnam Analysis: Frost & Sullivan

The table above indicates the steady increase in total production for agro-based produce in Vietnam. With increase in demand from domestic and international sectors and higher integration of Vietnam highlands, the production is forecast to grow at an even faster rate. This would drive the growth of climate controlled logistics in Vietnam.

The year 2008 was also considered favorable for agriculture-forestry-fishery exports. The export reached \$16.24 billion in 2008. This represents a 22.7 percent increase over 2007. Agricultural products contributed \$8.42 billion, representing a 34 percent increase over 2007. Forest and wood products contributed \$3 billion to GDP. This highlighted an increase of 13.4 percent over 2007. Four export commodities which surpassed \$1.0 billion in 2008 were:

- Coffee- \$2.0 billion;
- Rubber-\$1.6 billion;
- Rice- \$2.87 billion;
- Wood products- \$2.8 billion.

Ironically, it is expected that the ongoing global economic crisis may have some positive effects on Vietnam's rice exports in 2009. Hardships caused by the economic slowdown have forced families consume more rice and less of meat and dairy products. This was also evident by the export of rice at 310,000 tonnes for January 2009, the highest in 20 years. Interestingly, exports of most other commodities fell.

Some of the introductions into the agricultural sector to promote FDIs and boost the export of agricultural products include:

- Two years Corporate Income Tax (CIT) exception;
- 50 percent reduction of payable tax incentives;
- Value added tax (VAT) reduction;
- Import and export tax reduction or even exemption in some cases;
- Land incentives;
- Investment credits.

However, recent years have seen a decreasing trend of investment in agriculture sector. Around 3.3 percent of total national FDI projects in 2008 (6 percent in 2006 and 5.24 percent in 2007) and 0.4 percent of total national FDI capital were directed for agriculture. In addition, during the period 1998-2008, only \$2 billion of the total registered FDI capital amount, in the agricultural sector, was disbursed. This has been mainly due to slow progress of site clearance, cumbersome administrative procedures, and scarcity of skilled workers in the sector.

Pharmaceuticals

The health sector is managed primarily by the Ministry of Health and Provincial Department of Health. This Ministry accounts for 94 percent of the 13,438 healthcare entities in Vietnam. These entities include -

- Hospitals (965 units);
- Regional polyclinics (829 units);
- Sanatorium and rehabilitation hospitals;
- Medical service units in communes and precincts;
- Medical service units in offices and enterprises.

There are 712 pharmaceutical entities (state-owned enterprises, joint stock companies and private pharmaceutical firms), 7,500 private drug stores, and more than 10,500 retailers. Most retailers do not comply with the minimum health requirements and have inadequate climate controlled storage facilities. In 2005, the Vietnamese Government launched a program that planned to have 60 percent of the pharmaceutical demands met by local manufacturers by 2015. However, by 2008, it was realized that this target will not be met. This is primarily because of the following two key obstacles:

- Lack of capacity of the local industry in supplying key raw materials;
- The lack of adequate human resources.

The domestic sector manufactures 7,569 drugs, whereas foreign firms present in Vietnam produce 4,500 drugs. However, the sophistication of drugs made by foreign ventures is much higher than that of local drug manufacturers. The improvement can be seen through the Good Manufacturing Practices (GMP) certification plan, which should help local manufacturers to survive and compete locally and globally. By law, all local manufacturers need to obtain GMP certification by the end of 2010. The World Health Organization (WHO) recently awarded international GMP certifications for products and materials as well as Good Laboratory Practice (GLP) and Good Safety Practice (GSP) certificates to some local companies. Most new production facilities are currently GMP certified. At present, only one-third of the 165 local manufacturers are certified as ASEAN GMP-compliant. ASEAN GMP-compliant producers constitute 40 percent of the drugs in market.

The export capacity of Vietnamese pharmaceuticals industry is still small, primarily due to the quantity and quality of drugs produces. Nevertheless, it is expected to grow rapidly. In 2008, Vietnam exported pharmaceutical products of \$28 million. This has shown a substantial 40 percent growth year-on-year and is expected to post strong double-digit export figures in the coming years. The current export destinations are largely poorer Southeast Asian countries, African countries and Eastern European countries. The United States and Europe already consider Vietnam as a strong potential overseas market to be tapped. This is supported by the aim of the Government to modernize the pharmaceuticals industry, state-owned manufacturing facilities, and medical research centers in future.

The remaining 60 percent is imported mainly from the European Union. The main nations for origin of import are France, Germany, the Netherlands, and the United Kingdom. Other countries for pharmaceutical imports include the United States, India, China, and South Korea. Imports of pharmaceutical and medical products have been growing rapidly since 2002, and it reached almost \$600 million in 2006. This year-on-year increase is expected to continue in the coming years. The breakup of European imports is:

- France 40 percent;
- Germany 13 percent;
- The Netherlands 7 percent.

French and German pharmaceutical companies already have production facilities in Vietnam. This certainly has had an impact on the import figures. To this tune, some key joint ventures in pharmaceutical space are -

- Sanofi Vietnam - a joint venture between Sanofi-Syntheá labo;
- Central Pharmaceutical Manufacturing Enterprise;
- Stada Vietnam - a joint venture between Stada and Khuong Duy Pharmaceutical Company.

However, despite the growth, European Union has been witnessing a shrinking market share year-on-year against those of Asian competitors.

Flowers

Flowers are an emerging export commodity in Vietnam. Quality flowers are produced in the Central Highland where climatic conditions are conducive. The major export markets for Vietnamese flowers are Japan, Australia, and Singapore. Maximizing the value of flower exports, a time sensitive commodity, depends on reliable and efficient logistics. As flowers must be kept fresh until they reach their final customers, quality management of the whole logistics chain from pre- and post-harvest, stock control, storage, processing, packaging, labeling, to delivery, becomes vital.

Upon receipt of orders, the flower farmers process and wrap flowers, pack them in corrugated cardboard boxes, labeled with barcode. Responding to different needs for each type of flower as well as the wholesalers, in different countries, is a demanding task. The delivery process depends on foreign service providers providing the required climate controlled logistics services. Flower boxes are chilled in the cold storage areas of factories, while waiting for the arrival of cooled trucks that come from Ho Chi Minh City every evening. The cooled trucks, with temperature recorders, load flower boxes and leave for Ho Chi Minh City between 6:00 a.m. and 8:00 p.m., to arrive at the wholesale center in Ho Chi Minh City by 3:00 a.m. next morning. Flower boxes are stored and kept chilled until they can be moved to Tan Son Nhat airport for export.

Owner-operated trucks of 5 ton to 8 ton gross weight operate on long-term comprehensive contracts with joint venture freight forwarders. The contracts contain severe penalty and generous bonus clauses based on performance-indicators. If a truck fails to reach the wholesale center in Ho Chi Minh City by 3:00 a.m., or if the temperature recorder does not provide the coolness required during transport, the freight forwarder is penalized by reduction in payment. The export trade contracts are on Cost and Freight (CFR) basis, which enable the forwarders to negotiate and arrange the airfreight directly with the airlines.

Vietnam's export turnover of flowers in the first five months of 2009 experienced a 117 percent increase year-on-year and was valued \$3.9 million, according to the information center of the Ministry of Industry and Trade Vietnam.

This is a positive sign for Vietnam's flower farmers and exporters despite global economic downturn. The export growth is attributed to innovation of new types of flowers for export, reduced labor costs and higher quality.

It is important to note that dried flowers have gained much interest of consumers in countries such as Japan, Republic of Korea, and the United States. This translated into export turnover of dried flowers in the first five months of 2009 of \$41,300, growing at a rate of 54.7 percent year-on-year.

In the first five months export turnover of both fresh and dried flowers to Japan alone made up over \$1 million, up by 54 percent year-on-year. Vietnam earned much export turnover of flowers from other foreign markets such as Russia, China, and Indonesia. Vietnam's fresh flowers exported to international markets include roses, phalaenopsis orchids, chrysanthemums, lilies, and gerberas.

3.3 Climate Controlled Logistics Outsourcing Trends

The supply chain of climate sensitive cargo in Vietnam is such that none of the service providers provides complete supply chain solutions. Some of the key members of the climate controlled logistics supply chain include -

- Airfreight- Vietnam Airlines;
- Shipping- APL Logistics, Maersk Lines, Mitsui O.S.K Lines;
- Warehousing- Mapletree;
- Processing- Vinafreight, Hoang Ha.

Thus, for a single shipment there are various participants within the climate controlled supply chain. The international legs are handled by major shipping lines of the world and the local sales processing and services are provided by one of the many small local companies.

An important point to note is that logistics distribution and infrastructure still is a part of the list of the restricted trade businesses in Vietnam. Foreign companies, therefore, cannot easily setup businesses to provide end-to-end supply chain solutions in Vietnam.

The various breakdowns of the supply chain and the service provided have been mentioned below.

- **Customs clearance services** are mostly done by the local companies as they have better know-how of the regulations and more importantly, they know the way to move cargo faster. In some cases, custom clearance includes relationship-based measures, which local representatives, with good contacts, can make use of to get the cargo cleared faster.
- **Door-to-door delivery** mostly is done by local companies as the final leg of transport can be to places where road connectivity is poor. In some case FMCG companies appoint third-party logistics companies, but even these companies use local participants for the last leg of logistics.
- **Express cargo delivery** is offered for non-bulk cargo delivery in Vietnam. This is done by major international express logistics companies present in Vietnam.
- **Freight forwarding** is done by major international and a few national freight forwarders. They are involved in booking space on flights or ships for exports.
- **Packaging** is done with ice being used as the main refrigerating agent. A few international participants provide advanced packaging solutions but for most of the products, local companies pack the climate controlled products.

- **Integrated climate controlled logistics solution** includes all logistics services offered as part of package. Although this concept is new to Vietnam, international companies identify this area as a key growth driver for the future of the climate controlled logistics industry.
- **Transportation service** is the most basic form of services, largely revolving around delivery of freight from a single point. Mostly, this task is undertaken by local companies.
- **Warehousing services** offered are largely basic. Refrigerated and climate controlled, air conditioned and sub unit warehousing are largely offered by international companies.

3.4 Drivers, Restraints, Challenges and their Implications

The following three tables specify and rank the factors driving, restraining, and challenging the growth of the climate controlled logistics industry in Vietnam, in the order of importance. Explanation of each of these factors detail the impact on the climate controlled logistics industry.

Market Drivers

Rank	DRIVERS
1	Logistics, infrastructure and distribution are the key sectors which would open up to FDI post full implementation of WTO agreement
	<u>Implication</u> : Logistics and distribution will witness an increase in FDI. Increasing demand for transport of perishable cargo will drive the growth of climate controlled logistics in Vietnam. Economies of scale would also integrate the central highlands of Vietnam. Such places presently are considered uneconomical for climate controlled logistics business.
2	Increase of domestic consumption and changes in domestic consumption pattern of perishables such as dairy, poultry, meat and fresh agro products
	<u>Implication</u> : Vietnam has been one of the most promising developing nations. The per capita GDP is increasing and so is per capita consumption. The increase in consumption of perishables is not only in volume terms, but also on value. Local population has shown a trend of increasing consumption of imported meat and milk products. Such products need excellent cold supply chain, thereby leading to a rise in demand for climate controlled logistics services.
3	Joint ventures with major climate controlled service providers
	<u>Implication</u> : International participants have adequate experience and expertise in climate controlled logistics. Investments from such companies would bring in much needed, technology-related skill-sets into Vietnamese logistics sector. Involvement of foreign providers would thus ensure rapid development and higher benefits for the climate controlled logistics industry.
4	Increased competition and higher foreign expertise would make local production more competitive at world stage

	<u>Implication</u> : Vietnam's products have been hampered by quality concerns. As more providers of temperature controlled services enter the market, operational cost and efficiency of the services provided is expected to increase. This is likely to make local products more competitive in foreign markets, aiding production and helping utilization of underutilized assets.
5	Ideal location of Vietnam sharing borders with China, Laos, and Cambodia facilitating growth in seafood and agro-based trade
	<u>Implication</u> : Increase in trade through the country would need new sets of infrastructure to maintain the trade flow. Moreover, being one of the land trade routes to China, Vietnam can ensure that direct trade relations with China increases. China is a large consumer of seafood and meat products. This would become a major driver for climate controlled logistics in the region, where raw materials from Laos and Cambodia can be imported, processed internally, and exported to China, thereby promoting the need to have enhanced climate controlled infrastructure in place to handle large volumes.

Market Restraints

Rank	RESTRAINTS
1	Regulations governing climate controlled logistics
	<u>Implication</u> : Vietnam's certification for climate controlled logistics is time consuming. Many clauses are. Such clauses can sometimes make various certification processes very cumbersome. This not only increases the cost but also delays projects, discouraging new investors.
2	Reefer technologies used are largely obsolete
	<u>Implication</u> : Dry ice is still used as the main medium of refrigeration in Vietnam. Large proportions of perishables are damaged due to inadequate technology for refrigeration. This could lead to banning export from Vietnam, if such issues are not addressed.
3	Higher per unit cost of temperature controlled shipment
	<u>Implication</u> : Although domestic and international demand is growing, volume continues to remain small to ensure benefits of economies of scale. There are over 40 participants for climate controlled logistics providers in Vietnam and most of them do not possess the scale of operations to provide integrated logistics solutions. In addition, increase in cost due to poor roads and unethical cargo clearance measures increases per unit cost of shipment of such cargo.
4	Lack of end-to-end solutions for climate controlled logistics

	<p><u>Implication</u>: for climate controlled products, a complete supply chain solution from production to consumer involves multiple links. Air shipment is done by the state carrier followed by storage, which is carried out by local logistics service providers for sales and delivery services. All the links perform at different levels of competency. The strength of the entire chain is as strong as the weakest link. Major maritime companies are involved in transport, but they too are limited in their ability to provide complete transport solution.</p>
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Market Challenges

Rank	CHALLENGES
1	Economic slowdown
	<p><u>Implication</u>: Major markets for Vietnam's perishable products have been the developed nations. Such nations are currently facing major economic challenges and have been forced to change their consumption patterns, thereby reducing demand for Vietnam's products. This has restricted the nation's growth considerably. Local consumption is slowly picking up, but forms a small portion of the trade.</p>
2	Certification process for entry to the climate controlled logistics
	<p><u>Implication</u>: To operate in the climate controlled logistics space in Vietnam, companies need to possess certificates such as Veterinary Certificate, Custom Clearance, Safety and Hygiene Certificates. These certification processes sometimes act as bottlenecks in the starting of climate controlled logistics business. It is a major challenge for companies operating in Vietnam, as the terms of certification are mostly misused and seldom clear.</p>
3	Quality issues
	<p><u>Implication</u>: Vietnam has been previously banned for inferior export quality. The certification does not serve the purpose and considerable volumes of perishables are spoilt while moving through the logistics process. To operate successfully in Vietnam's climate controlled logistics space, companies planning to enter this space should not only ensure due care of quality infrastructure and services, but also ensure that the products received are up to international standards.</p>

3.5 Competitive Analysis

Local Competition

Most of the local participants in the climate controlled logistics market in Vietnam are relatively smaller in their annual turnover. Local companies operate in the geographical location they are present and do not provide a country wide coverage. The primary reason for localized services by the local companies is lack of financial strength and support. The domestic participants in Vietnam, in climate controlled logistics space are:

- Quang Minh;
- Hoang Ha;

- Minh Phuong;
- Vinafco.

These companies provide sales and services in Vietnam. They are primarily producers, processors, and exporters of temperature sensitive cargo. Local distribution is taken up by these companies. The techniques used by these companies are largely obsolete. These companies however, have expertise in local trade and custom clearance procedures.

Local companies utilize the services of major foreign shipping liners and air freight for exports of products. There is literally no company which connects the producers with consumers through integrated climate controlled logistics services. This is primarily due to the small market size and the FDI restriction on logistics, transportation, real estate, and distribution businesses. This, for some time now, has been a major concern for the industry.

Several fishery companies opt to have their own cold storage services to counter the lack of infrastructure issues they are likely to encounter, if outsourced to service providers. Such facilities, being company owned and invested, have comparatively better infrastructure, although they may not entirely match international standards.

International Competition

Major foreign Participants operating in Vietnam in climate controlled logistics are:

- Panalpina;
- Kuehne Nagel;
- Swire Cold;
- Schenker;
- Agility;
- APL;
- K-line;
- Maersk Logistics;
- Konoike.

Foreign participants are largely involved in international logistics of the temperature sensitive consignments. Vietnam recognizes the fact that these participants bring expertise to the climate controlled transportation field. The period post the FDI relaxation is likely to witness higher activity from international companies such as these.

The industry has also witnessed entry of international developers of integrated warehousing space such as Mapletree. Ascendas is another such developer planning to enter the integrated warehousing in Vietnam. These companies are in the process of introducing the concept of logistics parks in Vietnam, which offer integrated and advanced warehousing technology to manufacturing companies. In addition, these parks also facilitate connectivity to seaports, airports, rail terminals, and highways, thereby promoting ease of accessibility. Advanced temperature sensitive warehousing in all probability, is also likely to be a part of their offering, considering the combined volumes of industries requiring climate controlled warehousing, which remains untapped in Vietnam, to date.

3.6 Expected Future Trends in Climate Controlled Logistics (until 2012)

Some of the expected future trends in climate controlled logistics segment are:

- Increase in FDI;
- Increase in volume;

- Emergence of consolidated service providers;
- Industry maturity and service offering diversification;
- Product offering diversification.

Vietnam has set time bound steps to liberalize different sectors which are still under restriction in Vietnam. The ones which would directly impact climate controlled logistics industry in Vietnam are liberalization of logistics, distribution, and real estate. World trade is set on the recovery path and, with recovery; a greater demand for Vietnam's products is expected globally. This increase in demand and liberalization would ensure increase in FDI in Vietnam.

With increase in foreign involvement in different links of the supply chain in climate controlled logistics, new technologies and expertise are expected to enter Vietnam. This would not only improve the efficiency and reduce spoilage, but also decrease per unit cost of Vietnam's products, making such products more competitive and qualitative in world market, directly leading to an increase in demand and volume of produce in Vietnam.

As a supply chain is as strong as its weakest link, currently several quality issues for the climate controlled logistics industry in Vietnam occur due to lack of an integrated supply chain service providers. With demand for quality and FDIs to boost in the segment, it is expected that service providers will provide integrated services in higher capacities in future. However, a few global logistics service providers are uniquely positioned to benefit from the consolidation of supply chain in Vietnam.

The climate controlled logistics segment still being in its nascent stage, the industry is expected to witness much more maturity in coming years. The service providers would graduate to provide various solutions for supply chain needs of the industry. Value-added services such as packaging, bar-coding and pricing would also be done in the supply chain processes. Integration and advanced business enabler tools would be used in the temperature controlled logistics industry.

Vietnam's new products such as flowers have been catching up and are expected to grow in future. Demand is primarily from hospitality industry, which is again set to grow post recession. Electronic components and such products which need moisture-control are also expected to grow. Thus, the temperature controlled logistics sector would diversify in terms of service offering. The highlands of Vietnam would be integrated to the mainland by better infrastructure in near future. These highlands have provided suitable environment for growth of various crops. Better connectivity would also help in diversification of product offerings by the climate controlled logistics industry in Vietnam.

3.7 Expectations from Climate Controlled Logistics Providers

Current adoption of 3PL services is significantly low in Vietnam. Transportation and warehousing, therefore, are the most basic functions, largely outsourced. Although demand for specialized services is also low, the need of certain growing industries has led to the rise in demand for climate controlled transportation and warehousing services. However, it has to be noted that, though the demand is on the rise, the supply of climate controlled logistics services is, at best, fragmented. Current infrastructure as well as technology for transport and storage of commodities requiring climate controlled services is still nascent. Logistics participants as well as manufacturing companies who require outsourcing their climate controlled logistics requirements thus have the following expectations.

- **Opening up of regulations** is necessary to encourage the influx of internationally recognized climate controlled service providers from Europe. The point refers to joint ventures required by foreign companies to enter Vietnam under current regulations, which logistics companies feel, needs to be abolished to encourage foreign companies. A major bottleneck for the climate controlled logistics is the regulations and certification process. The certification process is too

long. There have been many instances of such certifications becoming major bottlenecks for the perishable logistics business. Regulations should be aligned to make the food products more qualitative to ensure higher demand from developed countries in future.

- **Better infrastructure** for climate controlled warehousing purpose is vital to bridge the demand-supply gap for climate controlled logistics service providers. Currently, warehousing services are largely basic with services such as fully integrated refrigerated warehouses being a rare service. In addition, accessibility to a number of warehouses in smaller towns is also poor, especially during monsoons. Companies outsourcing their climate controlled logistics requirements not only expect infrastructure within the warehouse premises to be of higher standards, but also the connectivity to warehouses across major and emerging logistics hubs to be enhanced.
- **Suitable climate controlled technology** is essential to ensure better infrastructure for climate controlled logistics services. The normal practice of transporting cargo such as seafood and pharmaceuticals products with climate controlled requirements is largely in the form of ice cube stacked in cartons and thermocol boxes, which are then loaded into normal containers during transportation. Manufacturing companies as well as logistics service providers with climate controlled requirements thus expect the service providers to offer climate controlled trucks as well as warehouses to ensure an enhanced form of transportation of consignments with climate controlled requirements. In addition, expectations for advanced value-added services such as different temperature zones within trucks and warehouses, climate controlled warehouses with sub units and moisture-controlled storage need to be addressed to offer comprehensive services.
- **Logistics programs and courses** developed jointly by universities and companies are vital to ensure availability of skilled manpower to the industry. Currently, the industry recruits international experts and industry experienced personnel to provide the skilled expertise to business. This, however, comes at a higher cost to local companies, which more often than not, cannot afford to bear such costs in the long term. In most cases, the costs have to be passed on to the customers, which in turn, deem the company's services comparatively more expensive compared to other companies. To ensure better services at competitive prices, the industry needs a steady source of skilled manpower within the country to develop a strong local footprint in the logistics industry.
- **Reduction in spoilage** in Vietnam is presently higher than other countries with matured temperature controlled markets. Going forward, climate controlled logistics providers would expect that the spoilage issues are resolved at the earliest. Spoilage happens due to inefficiencies in the supply chain and obsolete techniques used in the transportation of perishables.
- **Reduction in cost per unit shipments:** Although as per international standards, the cost of climate controlled logistics is lower in Vietnam, it is primarily due to lower labor cost. With greater efficiency of supply chain and reduction in spoilages the cost of shipments would further reduce. In addition, with better roads, warehousing infrastructure, and higher economies of scale, the unit cost of shipment is expected to reduce.
- **One-stop supply chain solution:** Logistics providers expect to graduate to complete solution providers rather than the present state of being only a small part of the entire supply chain. This would not only improve supply chain efficiency, but also provide the industry with a one-stop solution for supply chain of perishables. Such companies are likely to be able to generate enough demand to justify the capital expense in becoming an end-to-end perishable solution provider.

3.8 Identifying Immediate and Future Needs

- **Better climate controlled logistics expertise**
 In Vietnam, the present day climate control technologies are mostly obsolete. The industry needs new technology not only for refrigeration, but also for supply chain efficiency. This could be achieved by joint venture and international cold supply chain partners setting up businesses in Vietnam. Currently, the quantity of shipment does not justify complete full container loads. Different goods in the same container need different temperature conditions inside the container. The service providers need containers which can have provision for different temperature zones within the container.
- **Free competition**
 Free competition would ensure more companies venturing into the market, ensuring better efficiency and lower spoilage. In the short term local companies could be hurt, but eventually, would adopt the best practices and improve processes to optimize its supply chain.
- **Increase in market size**
 Presently both supply side and demand side of the market for Vietnam climate controlled logistics providers is constrained. On the supply side, the country is not very well connected with road and rail. Production houses find it difficult to effectively transport their perishable products to other parts of the country. On the demand side, quality concerns of products are still suspect. Better infrastructure would further increase the size of the market for climate controlled logistics service providers.
- **Streamline statutory regulations**
 Regulations should ideally be aligned to maintain standards of quality. However, in Vietnam the regulations are used to generate unethical revenues by officials. This not only increases cost, but also increases the transit time with higher spoilages. The industry needs these regulations to be streamlined for ensuring quality and encouraging entry of foreign participants.
- **Better climate controlled technologies**
 Dry ice is largely used for temperature controlled transportation and storage in Vietnam. The industry needs new technology for the range of products and commodities requiring climate controlled logistics. Facilities such as air-conditioned warehouses, warehouses with freezer sub-units, warehouses with different temperature controlled sub-units, and moisture control systems are almost non-existent. The same goes for vehicles used for climate controlled transportation. With these advanced technologies for climate controlled logistics in place, the industry can cater to special needs for specialty products.

3.9 Demand Supply Indicators

Demand Indicators

The four key sectors in Vietnam requiring climate controlled logistics are agro foods, vegetables and beans, fruits and seafood or fishery. Annual production figures for these sectors indicate the demand for these products. These products need climate controlled logistics and thus these figures also indicate the demand for climate controlled logistics in Vietnam. The table below highlights the rising trend of the four key segments acting as demand indicators from 2000 to 2008.

Demand Indicators: Production of Food, Vegetable and Bean, Fruit and Seafood (2000 to 2008)

Demand Indicators	2000	2001	2002	2003	2004	2005	2006	2007	2008
Food	3.09	3.08	3.34	3.42	3.56	3.58	3.59	3.65	3.92

Vegetable & Bean	0.35	0.38	0.44	0.45	0.46	0.50	0.53	0.57	0.59
Fruit	0.34	0.36	0.39	0.39	0.41	0.44	0.45	0.49	0.51
Seafood/Fishery	0.83	1.00	1.14	1.35	1.54	1.85	2.15	2.58	3.27

Note: Figures have been rounded; Source General Statistics Office of Vietnam Analysis: Frost & Sullivan

The table indicates that the year-on-year production of the perishables has been steadily increasing. This acts as a strong demand indicator for climate controlled logistics segment. The product is either used for domestic consumption or for export, but in either case, climate controlled logistics services are required. Although there are other fresh products which need climate controlled logistics such as flowers and electronic goods, the main influencing factor for logistics services are the above four mentioned indicators.

Supply Indicators

Vietnam still has obsolete technology for climate controlled logistics. Different sets of resources are seldom used for climate controlled logistics. Ice is considered as the main refrigerating medium in Vietnam. Companies providing climate controlled logistics services in Vietnam are very few and direct computation of supply is difficult, although these companies are a part of international and domestic trade. Therefore, domestic and international cargo exchange figures would provide supply indication for climate controlled logistics.

Below is the table of revenues generated by the logistics infrastructure in Vietnam. Climate controlled logistics is a part of these revenues. This gives an indication of the growth of the sector as a whole. The climate controlled logistics industry will need more maturity for its growth to be analyzed in further details. The two supply indicators under which climate controlled logistics fall are transport, storage and communication and, real estate, renting and business activities.

Supply Indicators: Climate Controlled Logistics Market (2000 to 2008)

Supply Indicators	2000	2001	2002	2003	2004	2005	2006	2007	2008
Transport, storage and communications	0.97	1.09	1.18	1.38	1.70	2.05	2.45	2.86	3.76
Real estate, renting and business activities	1.07	1.21	1.37	1.53	1.75	1.88	2.06	2.44	3.01

Note: Figures have been rounded; Source General Statistics Office of Vietnam Analysis: Frost & Sullivan

The table shows the revenue growth in these two segments in US dollars for the period 2000 to 2008. Both segments have witnessed and will continue to witness steady growth, thereby resulting not only in rise in supply of climate controlled services, but also leading to better services through advanced infrastructure in the climate controlled logistics space in Vietnam.

3.10 Current Financial Investment Scenario

In Vietnam, there are four main legal sources that define restrictions to FDI entry, namely:

- The 2005 Law on Investment and its associated decrees;
- Sectoral laws and regulations;
- The schedule of specific commitments in services under the WTO accession agreement;
- Legal restrictions on mergers and acquisitions (M&As) of domestic companies.

The Law on Investment defines three types of sectors, namely:

- Prohibited sectors: investment is prohibited for both domestic and foreign investors;
- Conditional sectors: investment is conditional for both domestic and foreign investors;

- Conditional sectors for foreign investors: investment is conditional only for foreign investors.

Important point to note is that sectors those are not listed in the prohibited or conditional lists are on default considered as being “non-conditional”. It is crucial to note that the Law on Investment defines joint ventures as a business, in which Vietnamese nationals own more than 51 percent of the capital of an enterprise to “Vietnamese investors”. It states clearly that “the same investment conditions which are applicable to domestic investors shall be applied to foreign investors where Vietnamese investors hold more than 51 percent of the charter capital of an enterprise.

The classification of a sector as “conditional” as per the Law on Investment determines the extent to which projects are screened through an investment certification procedure upon establishment.

FDI Projects Approved till 2008

FDI	Number of Projects	FDI in \$ Million
Agriculture and forestry	535	3,600.70
Fishery	162	535.40
Transport; storage and communications	295	6,954.40
Real estate, renting business activities	1,788	37,894.60

Note: Figures have been rounded; Source General Statistics Office of Vietnam Analysis: Frost & Sullivan

The Law on Investment itself does not fully specify the nature and extent of the conditionality. This law identifies most of the conditional sectors as the sectors that are subject to stringent licensing conditions in most of the other countries. The sectoral laws and regulation provide for the nature and extent of FDI entry restrictions in conditional sectors. For example, ceiling includes ceilings on foreign ownership, joint venture requirements, and restraints on operations. In particular, FDI entry restrictions affect the following sectors:

- Telecommunications;
- Banking and finance;
- Import, export, and distribution;
- River and sea ports;
- Education;
- Media;
- Air terminals and airports;
- Goods and passenger transport;
- Real estate.

However, other sectors may also be subject to restrictions as per Vietnam’s commitments under international treaties. In contrast, sectors such as manufacturing for export do not have entry restrictions. Manufacturing has been identified by Vietnam as a key sector to develop competitive advantage over other countries.

The schedule of specific commitments requires Vietnam to ease or lift FDI entry restrictions in most services sectors under a pre-determined time-frame. Clearly, many restrictions remain, including in very important services sectors such as telecommunications, transport, and distribution.

However, it must also be noted that Vietnam is committed to liberalizing FDI entry in the majority of services sectors within a period of typically three to five years after accession. Vietnam, under the WTO, has made commitments to liberalization in each of the eleven broad categories of services sectors defined by WTO. Within the next few years, it will significantly liberalize FDI entry in the services sector. The sectors which would be highly liberalized would be:

- Business services;

- Financial services;
- Construction;
- Engineering.

In contrast, the most important areas where Vietnam is not committed to full liberalization are:

- Telecommunications;
- Distribution: The Vietnamese Government defines a need test to be done before FDI can be allowed into foreign-owned retail outlets in Vietnam. This test would assess the need in terms of pre-existing outlets in the area stability and size of the market. This is likely to be a major hurdle to FDI in the retail sector in Vietnam.
- Transport: Post WTO, liberalization will affect maritime and internal waterways transport, air transport, as well as road and rail transport. It is important to note that maritime operations under the Vietnamese flag will be open to foreign investors, but only as joint ventures with a maximum of 49 percent ownership of capital. However, foreign companies in maritime would be allowed to establish fully-owned shipping subsidiaries. In addition, services such as container handling will be allowed only under joint venture agreements with foreign ownership not exceeding 50 percent. Commitments for liberalization of air transport services are mainly focused on processes such as sales and marketing, computer reservation, and maintenance and repair of aircrafts. High restrictions will remain for road services, with freight transport open to foreign investors only through joint ventures. Such joint ventures could be with a maximum foreign ownership of 51 percent of capital.

The 2005 Law on Investment widens the permissible forms of investment, which currently include:

- The 100 percent foreign or domestic owned private companies;
- Joint ventures between domestic and foreign investors;
- Business cooperation contracts, build-operate-transfer (BOT), and other contractual forms of investment;
- Purchase of shares or capital contributions in view of participating in the management of the company;
- Mergers and Acquisitions, various forms of FDI entry are thus formally allowed.

This is a significant change from the regime that was applied under the former Law on Foreign Investment, which allowed only three forms of foreign investment: enterprises with 100 percent foreign owned capital, joint ventures, and business cooperation contracts, which led to foreign companies being discouraged to enter Vietnam across industry segments.

4 Overview of Business Regulations and Enablers

Presently, the climate controlled logistics business is regulated for FDI in Vietnam. The extent of restriction depends on the area of logistics operation including warehousing, distribution, packaging, and so on. However, the Vietnamese Government provides significant incentive to foreign companies with relaxation in corporate income tax, value-added tax, and export import tax.

Key business enablers for climate controlled logistics industry in Vietnam are the low cost of labor and increasing international and domestic consumption of perishables of Vietnamese origin. The increase in FDI post WTO agreement is also likely to boost the climate controlled logistics in Vietnam.

4.1 Regulatory and Policy Environment for Logistics

Regulatory and Policy Environment

The logistics industry in Vietnam has been one of the fastest growing industries in the country. The Government policies and regulations with respect to the logistics businesses have also gone through certain amendments in 2005, with the emergence of the industry as a key revenue generator and employer in the country. A snapshot of the regulations pertaining to the logistics industry is provided below.

- Foreign business entities must have adequate facilities, equipment, and working facilities which conforms to the technical standards and safety criteria, along with a team of staff to satisfy the requirements. Such entities shall only be permitted to engage in logistics service business, if they also satisfy the following conditions.
- In the case of business in warehousing services, the foreign business entity shall be permitted to establish a joint venture company in which the capital contribution share of the foreign investor does not exceed 50 percent.
- In the case of business in other subsidiary services, the foreign business entity shall be permitted to establish a joint venture company, in which the capital contribution share of the foreign investor does not exceed 49 percent; this restriction is expected to be 51 percent from 2010 and expected to terminate in 2014.

The above are general regulations that fall under the complete logistics spectrum, as part of the Decree No. 140. Government Decree No. 140/2007/ND-CP of September 5 details the Commercial Law on business conditions for provision of logistics services. The Decree outlines the liability limits of logistics service providers and Vietnamese traders providing logistics services in the country. The decree requires logistics enterprises to have lawful business registrations under Vietnamese law; be furnished with sufficient equipment, facilities and tools to meet safety and technical standards, and staffed with qualified personnel.

According to the decree, foreign logistics service providers and providers of logistics space are subject to additional prohibitions. Foreign providers may join in establishing joint venture companies, but their proportion of capital contribution is limited pursuant to regulations to maximum 49 percent. The decree classifies logistics services into three categories and all the provisions are consistent with Vietnam's WTO commitments.

The three categories of logistics services defined in the decree are: primary logistics services; logistics services related to transportation; and other related logistics services.

- Primary logistics services include loading and unloading of goods including loading goods into containers; warehousing and yard storage provisions for cargo; freight transport agency services including completion of customs clearance procedures and preparation for loading and unloading goods; and other auxiliary services such as receiving, archiving, and managing information about transportation and storage of goods throughout the full service logistical chain.
- Logistics services related to transportation include marine, interior waterway, air, rail, road and pipeline transport services.
- Other logistics services include technical checks and analysis; postal services; wholesale and retail services such as management of warehousing, collection, gathering, classification, redistribution and delivery of goods; and other services auxiliary to transport.

The Decree 140 states the regulations for engaging in logistics services and also specifies limitations on liability of logistic services providers. At face value, the Decree 140 can be interpreted as stating that foreign logistics service providers need to have joint ventures with local logistics companies to enter Vietnam for all services related to transportation, warehousing and cargo storage, customs procedures, and any subsidiary service related to logistics. However, a detailed analysis of the Decree highlights the Government's intentions of promoting and protecting the local logistics companies from the comparatively stronger international participants in the industry, thus ensuring growth of local companies in Vietnam.

4.2 Regulatory and Policy Environment for Climate Controlled Industry

Vietnam does not have any standard law for food quality and safety regulations, but the same is being developed and would be formally drafted in 2010. To date, the following laws and governing bodies are present in Vietnam to govern the safety and quality of perishables:

- Law on Commodity Standards and Technical Regulations;
- Food quality and safety regulated by a number of sub-law regulations;
- Ordinances by National Assembly;
- Decrees, circulars by Government.

The Ministry of Health is responsible for various law formulations of perishables which are specific to food category. For instance, these include all processed foods, food additives, food colorants and flavors, and food residues.

On the other hand, Ministry of Agriculture and Rural Development (MARD) deals with perishables of animals, plants, and fisheries. The following departments take care of their specific responsibilities:

- Animal origin – Department of Animal Health (DAH);
- Plant origin – Department of Plant Protection (DAP);
- Fishery products – National Fishery Quality Assurance Department (NAFIQAD).

In addition, every meat product needs to conform to the Veterinary Ordinance Act 1993, which was revised in 2004. The Act states that for any import or export, the product should meet the veterinary sanitary requirements for import and export of animal and animal products. The Act also provides a roadmap for applying for importing products of animal origin. The law defines the quarantine and inspection protocols for imported products of animal origin and quarantine and inspection stipulation for import and export of fishery products.

Any plant product imported in Vietnam needs to conform to the Plant Protection Ordinance 2001. The ordinance gives details of the inspection of imported plants and plant products in Vietnam. The

different clauses of the regulation detail the requirements for phyto-sanitary, protocol for risk analysis, and border entry inspection procedures. Similarly, the ordinance provides for exported plants and plant products for storage and in transit across Vietnam.

These regulations govern the climate controlled logistics industry in Vietnam. However, these certifications need a lot of time and many a times also involve unethical payments to the Vietnamese official. Regulations for climate controlled logistics are not streamlined and are a major bottleneck for the development of the sector in Vietnam. In addition, they are also major discouraging factors for international companies planning to set up facilities for climate controlled logistics in Vietnam.

4.3 Business Enablers for Climate Controlled Logistics

[A] Incentives from the Government

The Government of Vietnam is providing multiple incentives to foreign companies which act as enablers for climate controlled logistics business in the country. The incentives structure in Vietnam is discussed below.

Corporate Income Tax

- For newly established projects included in the List of Special Encouraged Investment Projects, the tax rate is 10 percent applicable for the first 15 years of the business. For the first four years the corporate income tax is exempted. For the next nine consecutive years, a 50 percent reduction on corporate income tax is applicable.
- Similarly, for newly established projects included in the List of Special Encouraged Areas, the tax rate is 10 percent applicable for the first 15 years of the business. For the first four years the corporate income tax is exempted. For the next nine consecutive years, a 50 percent reduction on corporate income tax is applicable.
- For newly established projects included in the List of Special Encouraged Investment Projects and List of Special Encouraged Areas, the tax rate is 15 percent applicable for the first 12 years of the business. For the first three years the corporate income tax is exempted. For the next seven consecutive years, a 50 percent reduction on corporate income tax is applicable.

Export Import Tax

- The Government offers exemption from import tax on equipment, machinery, and special-use vehicles as part of the fixed assets of the enterprise, materials and accessories for export production, and constructional material which are not yet being produced in Vietnam.
- On the other hand, the Government also offers exemption from export tax on all export products.

Value-added Tax

- The applicable VAT rates in Vietnam are 0 percent, 5 percent, and 10 percent. The 0 percent rate applies to export of goods and certain services, including sales from EPZs.

The tax exemptions, incentives, and benefits have led to the influx of foreign companies such as Swire Cold, Linfox, and Schenker in Vietnam in the recent past, which has led to the increase in demand for climate controlled logistics across the country and internationally. The trend is expected to continue up to 2020, when most of the transport as well as logistics infrastructure development activities are expected to be completed. Government incentives, infrastructure development projects, and availability of skilled manpower across the country together play an important role of attracting international business to Vietnam.

Lower tax rates and exemption have also attracted developers of logistics space to Vietnam.

Singapore-based logistics space developers Mapletree and Ascendas have planned development of

integrated logistics parks for warehousing services in Vietnam. Mapletree has two logistics parks, operational as of 2009, and a third scheduled to be established by 2010. Ascendas is expected to establish its logistics park with focus on integrated cold chain warehousing facilities for logistics service providers, exporter, distributors, and manufacturing companies.

[B] Manpower Availability, Competency, and Lower Wage Rates

Mapletree has already started cold supply chain operation in Vietnam. As the volume of operations at Mapletree parks increases, so would the need to have skilled workforce. Throughout Asia Pacific, one factor that generally carries significance is the high cost of labor. As compared to other Asian countries, Thailand, as is the common perception, does not have the lowest-priced labor in Asia. Cambodia's minimum wage is \$45 per month; Laos is similar, with Beijing at \$63, Shanghai at \$70 and Thailand at \$70. However, real salary costs as opposed to minimums in China in the coastal western regions are continuing to rise, as is the Chinese currency, the RMB or Yuan. At the start of 2007, Chinese labor in the Shanghai, Guangzhou, and coastal regions was already more expensive than in Thailand.

When benefits are factored in, Shanghai and Beijing generally have higher labor costs than Vietnam, which has the lowest labor rates in the region, followed by Cambodia and Thailand. In general, wages for assembly workers in Shanghai average around \$130 per month. When benefits are added, the effective rate of wages is often close to \$200 per month per worker in western China's coastal areas. Vietnamese labor rates are about two-thirds of this level and about 10 to 15 percent lower than Thai wages.

In addition, in line with the expectations of the logistics industry, a number of institutes and universities in Vietnam has started putting more emphasis on logistics related courses and programs. Universities in metro cities of Hanoi, Da Nang, and Ho Chi Minh City with affiliations to international universities have planned to provide these programs with on-the-job training and international training facilities, in line with international standards. This in turn is likely to attract higher number of students to the field of logistics, thereby resulting in higher level of professionalism and availability of skilled manpower in the field of logistics in the near future. For instance, Caterpillar Logistics, a long time investor in Vietnam, highlights that Vietnamese workers have a very good reputation with foreign managers for the quality of their work and their work ethic. Thus, with investment in training and educational facilities in this field, the local population could provide real cost advantage than many of the other Asian countries.

[C] Relaxation of FDI Regulations and Upcoming Industrial Park Facilities

A number of industrial parks are scheduled to come up in all three regions of Vietnam, north, central and south. The March 2008 figure of 103 industrial parks is expected to go up to 120 by mid 2009, and reach 170 by 2010. Although a majority of these parks are either in the planning or initial development phase, they are expected to become fully operational in near future. These parks claim to offer international standard connectivity and infrastructure so as to attract foreign investments.

Simultaneously, FDI would also start flowing into logistics warehousing and distribution post the full implementation of the WTO. This would enable new businesses in climate controlled logistics to set up facilities to gain maximum benefit from such industrial parks, especially considering the fact that, most international developers of integrated warehousing facilities look up to such industrial parks to establish integrated logistics parks or warehousing centers.

[D] Growth of End Users for Climate Controlled Logistics Services

Industries such as pharmaceuticals, electronics, and manufacturing and so on, are projected to grow at a rapid pace in Vietnam. Apart from their present climate controlled needs, these companies will also require additional climate controlled warehousing and logistics centers. In addition, these three industries are expected to witness influx of more international companies in the near future with relaxation of regulations and development of transport infrastructure. This would not only ensure

increase in volume of operations for climate controlled logistics participants, but also ensure diversification of product and services offerings in future.

[E] Climate Controlled Technology

Currently, climate controlled logistics companies present in Vietnam are using old and obsolete means. Mapletree from Singapore is one of the first companies to begin full operations of climate controlled warehousing in Vietnam. Majority of the typical climate controlled warehouses in Vietnam, at present, are only in the form of sheds without decent stacking facilities and many use ice as the only means of refrigeration. These warehouses do not have good level of security, making the consignments in these warehouses vulnerable to pilferage and theft. In addition, loading and unloading facilities are largely manual, thereby increasing the cargo loading and unloading time with greater chances of damages.

However, international developers plan to provide unique warehousing services such as sandwich panel for cold storage, refrigerated units, air-conditioned warehousing, built-to-suit customized warehouses, sub-units within warehouses, moisture controlled warehousing, and different temperature controlled zones within warehouses and trucks. With warehousing standards currently being the minimum and new entrants bringing advanced climate controlled technologies, demand for climate controlled logistics service providers providing such services are expected to grow.

5 Strategic Recommendations

Significant opportunity exists for international logistics companies in Vietnam. The absence of a strong one-stop shop solution provider for climate controlled logistics provider in Vietnam is an opportunity for various international companies. However, the transport infrastructure remains poor and a one-stop shop climate controlled logistics provider would need significant investment from the international company, though it would also generate higher revenues and provide competitive advantage for the company in the longer run.

Supply chain of flowers, seafood, and pharmaceuticals can be the for the Dutch logistics companies in Vietnam. The primary reason for this is that Dutch logistic companies have a proven record and capability in the stated product supply chain.

5.1 Market Approach and Penetration Strategies

The following market penetration strategies would help ensure a comprehensive approach for new providers of climate controlled logistics services in Vietnam. Providers of climate controlled logistics services need to base their market approach around the following three core service strategies. These market penetration strategies have been determined after thorough analysis of the current services, needs and expectations of the industry and identifying gaps in the present climate controlled logistics industry.

I. One-stop-shop Service

Companies planning to enter Vietnam in the climate controlled logistics space need to provide a one-stop-shop solution to their end users. Such companies need to merge services and value-added offerings for climate controlled logistics to provide full range of services from producers to end consumers. It is vital that such service providers take note of and offer climate controlled services across diverse transport modes and ensure coverage across diverse value chain members involved in the supply chain. In addition, a one-stop-shop solution should not only entail providing the complete range of climate controlled logistics services end-to-end, but also include comprehensive national coverage which none of the companies currently provides in Vietnam.

II. Comprehensive National Coverage

As most companies present in Vietnam currently offer region-specific services, that is, services in regions they are based in, they need to communicate and liaise with service providers from other regions to ensure inter-regional coverage. In such cases, issues such as lack of integration and communication often rise. In addition, most current providers of climate controlled logistics are present in larger cities of Ho Chi Minh City and Hanoi, which have international connections through air and sea to other international consumer markets.

Presence in a city such as Da Nang, in central Vietnam, which suffers from relatively poor infrastructure compared to the two large metros, is likely to offer greater flexibility to foreign climate controlled providers. This would help them to cater to the booming seafood and flower industries in the region. In addition, the proximity of the central city of Da Nang to the other two metros of Hanoi and Ho Chi Minh City is fairly good, with connections through highways and railways, thereby providing providers of climate controlled logistics services, access to both major metros. Besides, Da Nang also has the Da Nang Port, which is already handling bulk of seafood exports to China and Japan. Development of infrastructure in years to come will ensure and facilitate higher volumes of temperature controlled consignments through the region's major ports.

III. **Diverse Climate Controlled Infrastructure**

Need for diverse climate controlled infrastructure is vital in providing the one-stop-shop service for companies requiring climate controlled logistics service in Vietnam. Currently, Vietnam does possess a diverse range of commodities that require climate controlled logistics, with each commodity needing special attention. Considering the diverse range of industries from where demand is likely to be generated, infrastructure in terms of advanced technology is where new entrants, especially foreign companies can capitalize. In line with the expectation of companies requiring climate controlled logistics, the following advanced technologies are likely to prove beneficial to new entrants.

- Air-conditioned warehouses;
- Warehouses with different temperature controlled subunits;
- Moisture-controlled storage zones;
- Sandwich panel for cold storage;
- Transport trucks with different temperature controlled zones.

It is imperative that providers of climate controlled logistics provide, if not all, at least, a combination of any two types of advanced infrastructure to create a niche in the cold chain segment. In cases, where new entrants plan to be associated or affiliated to other local or international providers, utilization of expertise to provide maximum range of advanced infrastructure will ensure a large customer base for new companies planning to enter this segment.

5.2 **Promotional Strategies**

Currently, most providers of climate controlled logistics services do not indulge in mass advertising or promotional campaigns. Promotional activities are largely limited to owned or affiliated trucks and cold chain conferences and events.

Vietnam is currently not a marketing driven country. Thus, marketing of a service such as climate controlled logistics which is largely business-to-business has to be limited to a few sources. In addition, not many international standard conferences, trade fairs and events are held in Vietnam for providers to showcase their expertise to potential customers.

In such a scenario, promoting as an individual company, especially an international company, can backfire. The general perception of services of international companies being expensive is largely prevalent across Vietnam and thus, approaching a marketing campaign as a group rather than individual companies can prove beneficial to international companies.

Promotional Strategy Specific to Dutch Companies

An association of Dutch climate controlled companies in Vietnam needs to be established to counter the threat of incurring high advertising costs for low gains. Such an association can have Dutch climate controlled service providers jointly investing in combined promotional campaigns that would benefit all members of such an association.

This, in turn, would ensure sharing of losses across the companies, if campaigns fail to create awareness and generate demand for Dutch technology and expertise in the climate controlled logistics space.

Such a combined promotional campaign can have the following benefits for Dutch companies:

- Higher gains from organizing an exclusively **Dutch Climate-Controlled Logistics Conference** to directly target potential customer companies.

- Expenses and risks of promoting through such conferences and trade fairs will be shared across a number of companies, thereby reducing the risks to a lower quotient.
- Showcasing the complete range of expertise that Dutch companies together possess rather than individual company expertise, which can be limited.
- Pooling of resources and better leveraging of combined expertise to attract business, in cases where a particular Dutch company does not possess all services that are desired by and required to cater to customers.
- Higher reach and a comprehensive coverage of the country with companies being spaced out across different logistics hubs unlike other companies that currently provide region-specific focus for climate controlled services in Vietnam.

5.3 Identifying Opportunities in Special Niches for Dutch Companies in Vietnam

Vietnam’s climate controlled logistics is still in its nascent stage and the industry is projected to grow at a rapid rate. After the full implementation of WTO treaty most of the present day restrictions on business will either be removed or be relaxed. The table below identifies different niches for Dutch companies who want to venture into Vietnam and also highlights the strength of the Dutch companies corresponding to the respective opportunities.

Niches	Opportunity	Benefits for Dutch Companies
Flower cold chain	<p>Growing demand and projection of sustained growth.</p> <p>Central highlands with suitable climate for cultivation of flowers.</p> <p>Inadequate existing infrastructure for climate controlled service for flowers.</p>	<p>Have existing know-how of flower supply chain segment.</p> <p>Potential to cater to rising demands across Southeast Asian nations.</p> <p>Growing demand from Singapore, South Korea, and Japan remains untapped.</p>
Advanced climate controlled warehousing technology	<p>Present climate controlled warehouses are obsolete and use ice as a reefer medium.</p> <p>Spoilage is high for climate controlled logistics industry.</p> <p>Rising quality concerns for importing nations for Vietnam’s produce across the world.</p>	<p>Dutch companies already possess advanced climate controlled technology thus replication should not be difficult.</p> <p>Potential to gain cost advantage through reduction in spoilage.</p> <p>Potential to become dominant suppliers across the world, of quality services for products originating from Vietnam.</p>

Value-added services	<p>The climate controlled logistics industry is basic and does not provide many value added services.</p> <p>Famous retail houses source perishables from Vietnam.</p> <p>Vietnam's climate controlled logistics cost per unit shipped is relatively high.</p>	<p>Dutch companies have the technology to offer value-added services for cold chain services, for instance; packaging, tagging.</p> <p>Opportunity to secure demand for longer periods to cater to future demands.</p> <p>Per unit cost can be brought down by economies of scale through larger volume of sales and existing expertise.</p>
Climate controlled warehousing	<p>High tax incentives for new businesses in Vietnam.</p> <p>Increase in domestic and international demand for perishables.</p> <p>Availability of cost-effective man power.</p>	<p>Tax cuts will increase the profit margins of Dutch companies in near future.</p> <p>Long-term demand will help generate long time revenues and quicker returns.</p> <p>Reduced warehousing cost due to lower overheads from existing expertise.</p>
Seafood processing and logistics	<p>More than 300 percent growth in production since 2000.</p> <p>Growing demand from major retailers across the globe.</p> <p>Presently, seafood processing largely focuses on low value products.</p>	<p>Replication of current expertise can help capture rising demand in future.</p> <p>Long-term demand will generate long-term revenues, if service quality is maintained.</p> <p>Processing of high-value seafood like Tuna and Shrimps is more likely to give higher returns.</p>

Thus, the two industries identified for Dutch companies are the flower cold chain and seafood industries. Dutch companies currently are known for their competencies in these two industries. The other niches identified are warehousing technology and value-added warehousing services for climate controlled logistics in Vietnam.

The advantage that Dutch companies have over other current providers is leveraging their current expertise in Vietnam. The current set of expertise and know-how is sufficient for Dutch companies to create an impact in the market and gain market share. Replicating current set of expertise will come at virtually no additional cost of investing in skill-sets development for Dutch companies, thereby leading to a safe, yet effective market entry approach.

6 Appendix

6.1 Company Addresses

A.P. MOLLER
5B Ton Duc Thang St,
District 1,
Ho Chin Minh City.

MAERSK SEALAND
28 Phung Khac Khoan,
Dist.1,
Ho Chin Minh City.

VISSAN IMPORT EXPORT CORPORATION
420 No Trang Long St.,
Binh Thanh Dist.,
Ho Chin Minh City.

VINATRANS
406 Nguyen Tat Thanh,
Dist.4,
Ho Chin Minh City.

P&O Nedlloyd
37 Ton Duc Thang St.,
Dist.1,
Ho Chin Minh City.

MITSUI OSK
115 Nguyen Hue ST.,
Dist.1,
Ho Chin Minh City.

SWIRE PACIFIC COLD STORAGE
Road No. 6, Song Than1,
Industrial Zone,
Di An Townlet, Di An Dist.,
Binh Phuoc province,
Ho Chin Minh City.

Fed Ex, Ho Chi Minh City,
Mercury Transportation International,
(Vietnam) Co., Ltd.

DHL International Ltd
4 Huynh Huu Bac Street,
Ho Chi Minh City,

APL
22 Pham Ngoc Thach Street,
District 3,
Ho Chi Minh City.

Schenker
60A Truong Son St,
Tan Binh District,
Ho Chi Minh City.

VINALINK INTERNATIONAL FREIGHT FORWARDERS
145-147 Nguyen Tat Thanh, District 4,
Ho Chi Minh City,

Minh Phuong Co., Ltd
33A Truong Son St.,
Tan Binh District,
Ho Chi Minh City.

Sanco Freight Ltd
23B Ton Duc Thang Street,
Dist 01,
Ho Chi Minh City.

Panalpina
285 Nguyen Van Troi,
Ward 10, Phu Nhuan District,
Ho Chi Minh City.

OOCL
HAGL Plaza Hotel Buildings-Da Nang,
01 Nguyen Van Linh Street,
Hai Chau District, Da Nang City.

Nippon Express
Savico Building,
66 Vo Van Tan Street,
Thanh Khe District,
Da Nang City.

Linfox
2nd Floor, V-Coalimex Office Building
23-31 Dinh Bo Linh Street, Ward 24
Binh Thanh District, Ho Chi Minh City.

VINAFCO
33C Cat Linh Str,
Dong Da District,
Ha Noi.
Quang Minh
Lot 2.20A,
Tra Noc Industrial Zone II,
Cantho City.

6.2 Addresses of Consulted Sources

Agility

Ho Chin Minh Branch,
7FL., ITAXA Household,
Ho Chin Minh City.

Hoang Ha

21 Nui Truc,
Ba Dinh Dist.,
Hanoi City.

Schenker

Unit 601,
6th Floor, C.T Plaza 60A Truong Son St Tan Binh,
District Ho Chi Minh City.

Vinafreight

A8 Truong Son Str.,
Tan Binh dist.,
Ho Chi Minh City.

TNT

39B Truong Son Street,
Tan Binh District,
Ho Chi Minh City.

Kuehne Nagel

9th Floor, Sacombank Tower,
266-268 Nam Ky Khoi Nghia St.,
Dist 3, Ho Chi Minh City.

6.3 Website Links of Bodies Linked to Climate Controlled Logistics in Vietnam

American Chamber of Commerce in Vietnam

www.amchamvietnam.com

European Chamber of Commerce in Vietnam

www.eurochamvn.org

General Statistics Office of Vietnam

www.gso.gov.vn

Vietnam Association of Seafood Exporters and Producers

www.vasep.com.vn

Institute of Hygiene and Public Health
www.hsph.edu.vn

Vietnam Fruit Association
www.vinafruit.com