



# INDUSTRY STUDY MISSION

**VIETNAM** | 5 AUG 14 - 19 AUG 14

# FOREWORD



Associate Professor

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Vietnam has experienced a challenging global business environment characterised by increasing inflation, devaluation of the Vietnamese currency (the Dong) and rising interest rates over the last few years.

However, these changes provided a unique opportunity for our students to learn first-hand the realities and challenges faced by the trading sector in Vietnam. The Industry Study Mission included visits to production facilities and various institutions involved in the facilitation of trade and production of hard and soft commodities.

I am pleased in reading this report that our students have interacted with industry experts and acquired in-depth knowledge of the trading value chain within one of ASEAN's emerging markets.

We would like to acknowledge the generous support provided by our industry partners who made this educational trip possible. In particular our heartfelt thanks to Olam International, The Vissai Group, Thai Nguyen Iron and Steel, Puma Energy, Vinacomin, Bunge Vietnam, Tropicorp and Saigon Newport Corporation for their warm hospitality and willingness to share information with our students. Their confidence and commitment to our mission will ensure that the next generation of trading talent will continue to be equipped with insight into the constantly evolving challenges of the sector.

# CHRISTOPHER CHOW

Director  
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Institute@SMU

What has sustained investor confidence in Vietnam in spite of the uncertain global environment? How prepared is the Vietnamese government to address the challenges of structural reform in the country's economy? What are the key challenges facing Vietnam's trading sector? These were but some of the many questions that the students had in mind when they embarked on their Industry Study Mission (ISM) to Vietnam.

Vietnam plays an important role in the global commodities arena. Not only does it hold pole position in the production of Robusta coffee, but it has also made significant progress towards its aim of usurping Thailand as the leader in rice exports.

And Vietnam is more than just about rice and coffee.

Its vibrant commodities sector provided for a plethora of learning opportunities for the students who participated in the ISM to Vietnam. Site visits provided for opportunities for the students to interact with leading companies and individuals to better understand the role they play in Vietnam's economy. The students were also able to touch and feel the equipment that was used and see for themselves how value was being added in each part of the process. These provided for many deep learning moments that would not have been possible if they had remained in the classroom.

All this would not have been possible without the support of our partners, friends, and well-wishers. On behalf of ITI@SMU and the students under our charge, we would like to extend our sincerest gratitude to all of you in helping to make this ISM to Vietnam a success.





# ABOUT VIETNAM

*A land of vast natural resources, Vietnam has a rich and diverse natural environment. The country is home to a wide variety of flora and fauna, including many rare and endangered species. Vietnam is also a major producer of agricultural products, such as rice, coffee, and rubber. The country's economy is growing rapidly, and it is becoming an increasingly important player in the global economy.*

*Xin chào! After the country became the 150th Member of the World Trade Organization in 2007, Vietnam has since then declined significantly, and Vietnam is working to create jobs to meet the challenge of a labor force that is growing by more than one million people every year.*

*Vietnam's population has a younger workforce as compared to other countries with rapid ageing populations such as India and China. The population has also grown throughout the years at a growth rate of 1.03%, which is expected to continue in the near future.*

*Due to its high productivity and vibrant workforce, Vietnam is currently a net exporter of agricultural products. Besides rice, key exports include coffee (Robusta), pepper, cashews, tea, rubber, wood products, and fisheries products. But the Agriculture's share of economic output has declined, falling as a share of GDP from 42% in 1989 to 21% in 2010, as production in other sectors of the economy, such as construction and services, has risen.*



# VỀ VIỆT NAM

*Là một đất nước có nguồn tài nguyên thiên nhiên dồi dào, tọa lạc ngay tại trung tâm của Đông Nam Á, phía bắc của bán đảo Đông Dương, tiếp giáp với Trung Quốc về phía Bắc, với Lào, Campuchia về phía Tây, và với biển Đông cùng Thái Bình Dương phía Đông và Nam, Việt Nam có tiềm năng trở thành một trong những quốc gia xuất khẩu nguyên liệu lớn nhất thế giới.*

*Những cánh cửa đã rộng mở với Việt Nam sau khi quốc gia này trở thành thành viên thứ 150 của Tổ chức Thương mại Thế giới WTO vào năm 2007. Tình trạng đói nghèo cũng từ đó giảm đáng kể, và Việt Nam vẫn đang nỗ lực tạo công ăn việc làm, đối mặt với một thách thức của lực lượng lao động đang gia tăng hơn 1 triệu người mỗi năm.*

*Dân số Việt Nam có một nguồn nhân lực trẻ hơn so với các quốc gia như Ấn Độ và Trung Quốc, nơi dân số đang già đi nhanh chóng. Với mức tăng trưởng dân số 1.08%, Việt Nam có tiềm năng lớn trong sự phát triển của lực lượng lao động trong tương lai gần.*

*Nhờ hiệu suất lao động cao cùng một nguồn nhân lực mạnh mẽ, Việt Nam hiện đang là một nước xuất khẩu chính các mặt hàng nông sản. Bên cạnh gạo, cà phê (Robusta) là một nguồn xuất khẩu chính yếu, cùng tiêu (gia vị), hạt điều, trà, cao su, các sản phẩm từ gỗ, và thủy hải sản. Tuy nhiên, tỉ trọng của nông nghiệp trong xuất khẩu đã giảm mạnh, từ 42% GDP vào năm 1989 còn 21% vào năm 2010, trong khi đó các ngành khác như xây dựng và dịch vụ, sản xuất vượt lên đáng kể.*



# SINGAPORE MANAGEMENT UNIVERSITY

Since its incorporation on 12 January 2000, SMU has established undergraduate and postgraduate programmes that aim to produce leaders and creative entrepreneurs capable of excelling in a rapidly changing and dynamic world. Set up as Singapore's first publicly-funded autonomous university offering a style of education modelled after the Wharton School, SMU occupies a state-of-the-art city campus located in the heart of Singapore's civic, cultural and business districts.

Today, SMU is home to more than 7,200 students and comprises six schools: the School of Accountancy; Lee Kong Chian School of Business; School of Economics; School of Information Systems; School of Law; and School of Social Sciences.

SMU offers six bachelor's degree programmes in Accountancy, Business Management, Economics, Information Systems Management, Laws, and Social Science; twelve Master's programmes in Applied Economics, Applied Finance, Applied Finance (China), Business Administration, Executive MBA, Communication Management, Economics, Finance, Professional Accounting, IT in Business (Financial Services), IT in Business (Service Sector Analytics), Information Systems, Management, Operations Management and Wealth Management; a Juris Doctor Programme; and 5 PhD programmes in Economics, Information Systems, Business (Finance), Business (Organisational Behaviour & Human Resources) and Psychology.

The University also has a dedicated Graduate Studies Office in the Office of Research, a number of institutes and centres of excellence, and provides public and customised programmes for working professionals through its Office of Executive Education. Collaborations with leading institutions, including the Wharton School, Carnegie Mellon University, the University of Pennsylvania, and the University of Chicago, allow SMU to draw on academic and research strengths across all major disciplines.

To deliver a world-class curriculum, SMU has some 300 faculty who are selectively recruited from around the world to advance knowledge in teaching and research. They form an experienced and committed pool of talent who reinforce SMU's unique pedagogy of seminar-style teaching in small class sizes, creative thinking and dynamic exchange of ideas between faculty and students. In addition to recruiting some of the best academics in their fields, SMU also calls upon successful leaders in business and their professions for their specific expertise to combine academic vigour with hands-on business savvy.

By pioneering business, economic, legal, social science and technology oriented programmes that meet these needs, SMU has redefined tertiary education in Singapore. Already the University has achieved a high degree of recognition and respect in Singapore, Asia and beyond.



# SMU INTERNATIONAL TRADING INSTITUTE

The International Trading Institute @ SMU (ITI@SMU) was formed as the result of a collaborative effort between leading industry players in the trading sector, the Singapore Management University (SMU) and International Enterprise (IE) Singapore in 2007. The first trading centre in the world to be set up within a university, ITI@SMU boasts a specialist focus on international trading and is supported by a unique public-private partnership. ITI@SMU is Singapore's premier industry platform for thought leadership and talent development in the arena of international trading.

ITI@SMU's key objectives are:

- To create value for partners by growing a pipeline of talent across the trading value chain.
- Strengthen Singapore's position as a trading and maritime hub.
- Ensure the long-term sustainability of the institute

The strategic development and direction of ITI@SMU are steered by our stakeholders through three sub-committees which draw on the talent, expertise and guidance of senior representatives from key companies operating in the commodities trading value chain, as well as from SMU and IE Singapore.

## INDUSTRY PARTNERS

- ABN AMRO Bank N.V.
- ADM Asia-Pacific Trading Pte. Ltd.
- BTG Pactual Commodities (S) Pte Ltd
- Concordia Agritrading Pte Ltd
- Emirates National Oil Company (Singapore) Pte Ltd
- InterChem Pte Ltd
- International Enterprise Singapore
- JustCommodity Software Solutions Pte Ltd
- KCTex International Ltd
- Koch Refining International Pte Ltd
- Louis Dreyfus Commodities Asia
- Lee Foundation
- Midstar Singapore Pte Ltd
- Noble Resources Pte Ltd
- Olam International Limited
- Phillips 66 International Trading Pte Ltd
- Pavilion Gas Pte Ltd
- Rabobank International (Singapore Branch)
- Shell International Eastern Trading Company
- Stemcor (S.E.A) Pte Ltd
- Swiss Singapore Overseas Enterprises Pte Ltd
- Total Trading Asia Pte Ltd
- Trafigura Pte Ltd
- Vitol Asia Pte Ltd

# ITINERARY



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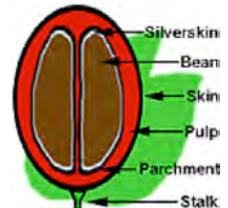
PHU MY PORT  
15 Aug 2014



# COFFEE

Coffee is the world's second most valuable traded soft commodity, second only to petroleum. Over 90% of coffee production takes place in developing countries with Brazil as the top producer followed by Vietnam. Coffee trading is laid out along a North-South axis, with main imports and consumption in industrialised and developed countries such as the USA, Europe and Japan with Germany the largest single market.

Due to the proliferation of trade and colonisation, two main types of coffee beans have emerged to dominate the world's consumption: Arabica and Robusta beans. Although both types of beans are commonly used in commercial coffee production, there are difference between them such as the taste, location of plantation and cultivation, caffeine level and colour and shape.



	Arabica	Robusta
Caffeine Level	0.8 - 1.4%	1.7 - 4.0%
Taste	Milder, more aromatic taste	Stronger, more acquired taste
Colour & Shape	Flat and elongated Dark shade of green	Rounded Light shade of green
Cultivation	Cultivated in subtropical climates, higher altitude is required.	Cultivated at lower altitudes, requires little rainfall.

Growing Conditions for Coffee Beans

	Arabica	Robusta
Altitude	600-2200 m	0-800 m
Rainfall	1200-2200 mm	2200-3000 mm
Temperature	15-24°C	18-36°C

## Coffee Production in Vietnam

A robusta coffee plant grows to an average height of approximately 10 - 12 feet high and is grown in rows several feet apart. Normally, coffee harvesting season is between October and December.

During each growing season, one coffee plant can yield up to 2000 green coffee beans weighing around 1 kg, equivalent to one pound of ground coffee. However, with modern agro technology, farmers are able to produce up to 4000 kg of coffee per hectare of plantation. Whether picked by hand or by machine, all coffee cherries are harvested in one of two ways – strip picked or selectively picked.

Green coffee beans suppliers take several major specifications into account, such as black beans, broken beans, screen number (8 – 18), moisture %, defects and the amount of foreign matter.

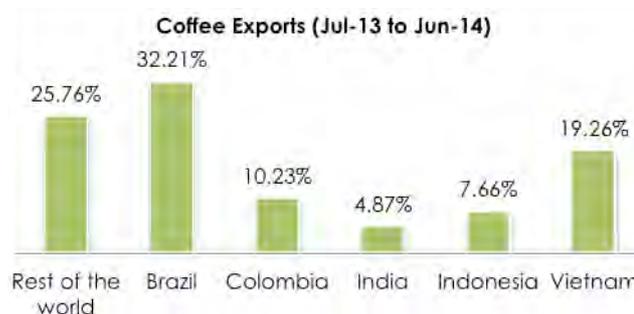


### Supply Factors

Coffee is a tropical plant mostly grown between the tropics of Cancer and Capricorn, also known as the "Bean Belt". The world's leader in green coffee production and exports is Brazil, contributing to more than a third's of the world's demand followed by Vietnam, Colombia, Indonesia and India respectively. Arabica beans are cultivated in Latin America, Eastern Africa, Arabia and selected parts of Asia where climates are cooler and more favorable. Robusta beans on the other hand are mostly grown in Southeast Asia. Beans from different countries or regions can usually be distinguished by differences in flavour, aroma, body, and acidity. These taste characteristics are dependent not only on the coffee's growing region, but also on genetic subspecies (varietals: known by the region they are grown) and processing.

A persistent stretch of dry weather in Brazil. This year, serious damage to Brazil's coffee plants caused by a disease called leaf rust resulted in the smallest Arabica crop harvest of the century. This contributed to a 30 percent decrease in coffee production in the region and drove Arabica prices up 55 percent in the last 12 months to a two-year high. Multiple flowering of the plant further hinders efficient harvesting, which may lead to an expected drop in production from 33 million to 24 - 27 million bags of Arabica beans in 2015. All of the above factors fuelled speculation that consumption may outstrip supply. This is highlighted by the 71% surge in Arabica prices on New York Board of Trade (NYBOT) trading since January 2014.

Experts believe that the world's second largest coffee exporter, Vietnam, could be poised to become the world's largest producer and exporter of coffee due to favourable climate conditions and lower production cost. Supply constraints by the largest coffee exporter (Brazil) means growing opportunities for its close competitors.



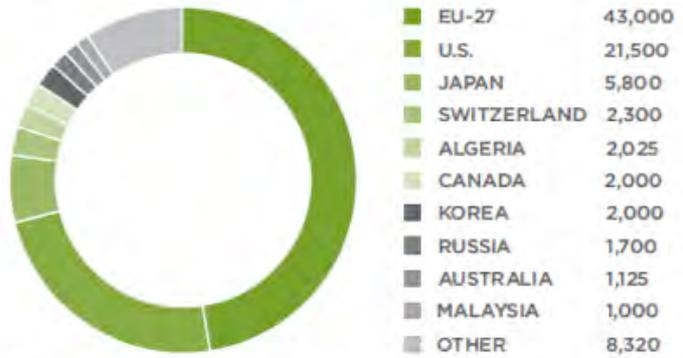
Source: International Coffee Organization  
<http://www.ico.org/prices/m1.htm>



## Demand Factors

The top importers in the world for coffee beans are Europe, United States of America, Canada and Japan. Although there is a larger preference of the Arabica beans in West, Germany still remains one of the largest importers of Robusta beans. Robusta beans are primarily used to produce instant coffee, which is then re-exported to the rest of the world. The top companies with large purchasing power are Nestle, Kona and Mars, with Germany and USA the largest importers of Vietnamese coffee.

2011-2012 USDA ARABICA COFFEE IMPORT ESTIMATES  
(1,000 60-Kilogram Bags)



Source: U.S. Department of Agriculture

Asia is experiencing increase in consumption of coffee with a 4% annual increase in demand over that past decade. This supersedes the growth rate of 1.1% in developed countries as reported by the International Coffee Organization in Jan 2014. Areas with fast domestic consumption growth include Thailand, Korea, India and Indonesia, with the key focus on cities such as Shanghai and Beijing where coffee consumption is already comparable to that of European cities.





# NOBLE GROUP

Ho Chi Minh City

*“Noble Coffee is one of the leading coffee merchants globally by volume, providing a full range of types and grades of coffee from around the world. Their first Robusta coffee business was established in Vietnam in 2002 and began trading Arabica coffee beans shortly after from the USA. Since then, it has opened sourcing operations in Indonesia, Brazil, India and Colombia”*

Noble Coffee handles every stage of the green coffee bean process, including sourcing, warehousing, quality control, shipment, storage, processing, financing and marketing. It has been one of the leading trading houses marketing green coffee beans to roasters.

Their supplies of green coffee beans are sourced from a variety of major local producers, exporters and dealers from a diversified list of countries in Asia, Africa, Central and South America. This diversification in terms of both quality and location provides them with the flexibility to take advantage of pricing arbitrage across the globe.



Typically, green coffee beans are purchased during the harvest season across a four-month period, and they are shipped directly to customers. Their customers tend to be multinational roasters in Western Europe, the US and Asian countries. These companies grind and roast the beans before distributing the finished product to supermarkets and retail operators





### Processing Green Coffee Beans



### Competitive Strength

Noble Coffee (Vietnam) is strategically head-quartered in Ho Chi Minh City and is heavily involved in the midstream and downstream operations of the coffee value chain. By keeping their warehouses (15,000 m<sup>2</sup>) and processing plant close to their commercial office, Noble is able to achieve operational efficiency with centralised governance. Capitalising on Vietnam's low cost of operation and its bonded warehouse operations, Noble is able to function at a competitive cost and develop an edge over competitors. For example, Noble Vietnam was able to price their beans at around USD300 discount compared to their counterparts in India in July 2014.

Noble's global presence and string of offices in major coffee producing nations such as Brazil, Laos and Indonesia makes them an influential player in sales and distribution of both Robusta and Arabica beans.



### Competitive Advantage 1 Sustainable relationships with producers

Noble Group works with organisation such as 4C Association to provide essential sustainable programs to local farmers. These programs aim to help improve farmers' income by encouraging the production of quality coffee beans while reducing damage to the environment. The main program currently in place is the use of a premium and discount pricing model, where Noble agrees to pay a premium of approximately USD 30/MT for beans that are packed in gurney sacks. Compared to polypropylene bags which can only last for 3-6 months, gurney sacks can last for one to two years. This allows Noble to maximise the capacity of its warehouse. Noble Coffee's warehouse is located 30 km away from the main port, taking about 30 minutes to arrive at the Saigon Newport. The short distance allows Noble to reduce transportation costs and receive goods in the shortest amount of time.



### Competitive Advantage 2 High level of quality control

The biggest buyers of Noble coffee are coffee roasters. Thus, Noble pays great details to ensure that their product is of high quality and implements a two-tier quality control check. Coffee beans bought from a supplier first undergo physical inspection such as for humidity and percentage of foreign matters. If any beans do not comply with the specifications or exceed permissible limits, the coffee will be rejected and returned.

### Challenges

Being a foreign owned company, one of the key challenges faced is the restriction on Noble's ability to buy directly from coffee producers. Free market is not practiced in Vietnam and the Government plays a major role in how businesses are run. It is therefore crucial for Noble to maintain a good relationship with the Vietnamese government and be flexible in formulating their business processes to suit changes in applicable policy. With coffee becoming one of Vietnam's key agriculture exports, bringing in around USD3 billion in annual revenue, it is likely that more supportive policies will be crafted to bolster Vietnam's position as the top exporter and producer of Robusta beans.





# OLAM INTERNATIONAL

Buon Me Thuot, Dak Lak Province

*“In the last 10 years Olam has emerged as one of the leading exporters of Robusta coffee, cashew nuts & pepper from Vietnam. Olam Vietnam has its factories located in Daklak, Lam Dong, Binh Phuoc, cpf Dong Nai provinces.”*

Olam began operations in Vietnam in 1997 and in the short span of two years, it was granted a licence to trade coffee even though it is 100% foreign owned. It started processing Robusta in Lam Dong, for which coffee purchasing is primarily provided by the Daklak office. Over the years the company has expanded into sourcing and processing of Arabica as well as building more Robusta processing factories in Daklak and Gialai.

**Land belongs to the Vietnamese.** Vietnam’s constitution makes it very expensive for large producers looking to consolidate farms and use the land for their own commercial use. As such, almost all farmers are Vietnamese and they tend to own small plots of land – around 1–1.5 hectares. Olam does not own any coffee plantations but procures beans from the farmers through local partners. Usually, middlemen consolidate the beans from farmers into larger orders.

## Usual specifications of processed coffee

Moisture Content	13%
Foreign Matter	1%
Burnt and Broken	3%
Screen content	45%

One of the largest players in the coffee industry is Nestle. As such, coffee producers and plants normally process coffee to Nestle’s own specifications. Bidding for Nestle’s tender take place in September every year. In recent years Nestle has been requesting 250,000 - 500,000 tonnes of processed coffee beans with 12% moisture. The rationale for the low moisture is that the coffee can be kept longer (3 years) and it also decreases the weight of the coffee, which allows Nestle to save on freight costs.





### Trading methodology 1:

Deciding between primary purchase model or DIS model

The Primary Purchasing Model allows Olam to buy its coffee beans from the farm gates, whereas the DIS Model ensures farmers deliver to the door step of Olam's processing place. The rationale for having two purchasing methodologies is to provide Olam with flexibility in bargaining for prices for the coffee source as well as to tweak the model based on the volume the farmers can provide to Olam.

### Trading Methodology 2:

Processing is where the profit margin lies

Olam understands that the margin of coffee in today's world is largely based on speculation and processing of coffee. Olam's Head of Procurement Mr. Tung stated that the margin for processing coffee (e.g. polishing) is about USD10 - 20 - almost insignificant in comparison to cost of transportation within Vietnam. The need to take positions has risen because farmers are now more knowledgeable: they know how to monitor coffee indexes and will hold on to the coffee if they expect prices to be in their favour in the next few months. As such Olam's focus and strategy is to increase green coffee bean processing volumes, all while taking prudent positions.

### Trading Methodology 3:

Choice of index linked pricing and outright fixed pricing

Different pricing mechanisms allow Olam to manage their risk exposure in terms of floating or fixed pricing. Index linked contracts are more commonly used for large suppliers (e.g. Nestle's tender in Sept) as it allows them to hedge away their risk off the market indexed prices.



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For coffee bean producers and suppliers, the main concern relating to supply is climate change. As the world is experiencing global climate change, This will affect coffee bean supply. For instance, Arabica will be highly affected, as it requires cooling climates to grow and down-stream parties are likely to shift to Robusta coffee beans. However, with globalisation and the fast pace of technological development, companies are able to apply suitable enhanced agricultural practices, enabling farmers to produce higher quality coffee beans.

With the growing export of different commodities in Vietnam, Noble has to face competition – one of them is pepper, a growing market in Vietnam. A noticeable trend among Vietnamese farmers is a gradual switch from coffee bean to pepper plantation due to their ability to be competitive and produce cheaper than India. Thus, Noble has to remain sustainable and continue to seek stable supplies of green coffee beans.





Cement is an essential building material in the construction industry.

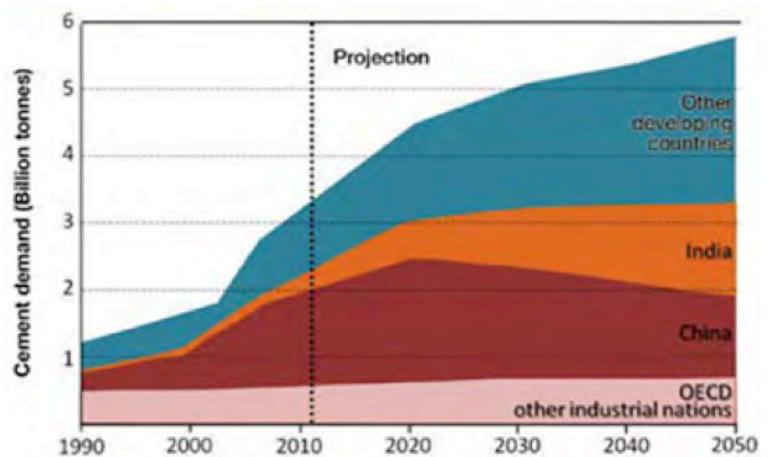
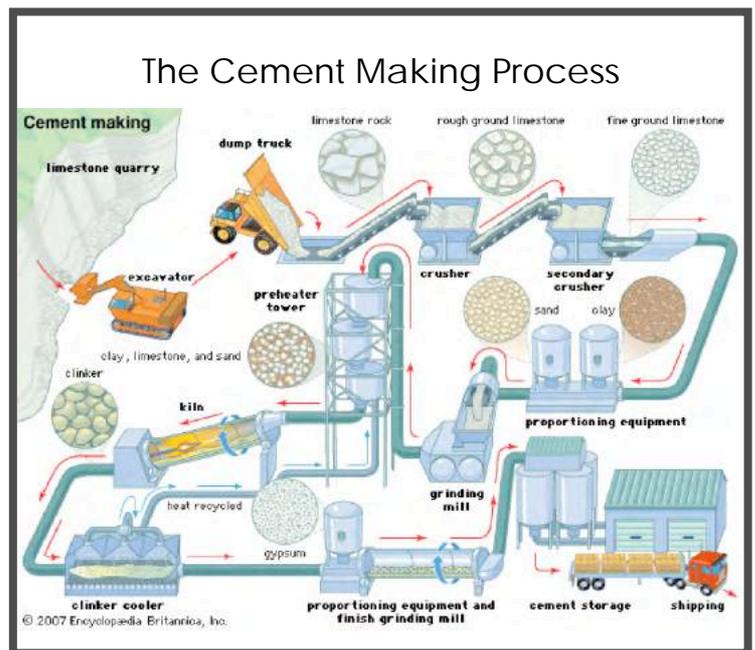
Since the 19th century, cement gradually replaced other binding materials such as clay and lime used in construction is time immemorial. Its strength as a binding material has made cement a highly popular material for use in construction. In an ordinary building construction, cement accounts for approx. 15-17% of the cost of construction.

China's burgeoning appetite.

Developing economies like China has seen a burgeoning appetite in cement imports and this is projected to increase exponentially in the next few decades. This trend has proven lucrative for countries exporting cement, including Vietnam (ranked 8<sup>th</sup> in the world), which exports a total of 20 million tons of cement in 2013.

Basic constituents for cement are limestone and clay.

The raw materials are crushed and homogenised into a mixture using a rotary kiln heated to 2000°C. Clinker is produced using the correct proportions of calcium, silicon, alumina and iron oxide. The company can then either sell the clinker or further process the clinker into cement by adding gypsum (calcium sulphate).



Source: <http://www.cementscience.com/2013/06/the-importance-of-cement-and-its-future.html>



# VISSAI GROUP

Gian Khau Industrial Zone, Gia Vien District, Ninh Binh Province

*“Manufactures and sells cement and clinker products domestically and in Hong Kong, Japan, Australia, France, Brazil, Peru, Bangladesh, Philippines, Indonesia, Myanmar through strategic partnerships with other cement producers like Holcim, Heidelberg and Cemex.”*

The Vissai Group operates 4 cement plants with a total capacity of 13.6 million tons cement/ year:

### Vissai Ninh Binh cement plant

Location: Gian Khau Industrial Zone, Gia Vien District, Ninh Binh Province  
 Total investment: 5,000 billion VND  
 Total capacity: 3.6 million tons Clinker – Cement/ year  
 Japanese technology  
 Main products: PCB30 – PCB40 cement & CPC50 Clinker  
 Sale market: Nationwide – Export

### Do Luong Cement Plant

Location: Do Luong – Nghe An Province  
 Total investment: 8,000 billion VND  
 Design capacity: 6 million tons Clinker – Cement/ year  
 Japanese technology  
 Main products: PCB 30 – PCB 40 cement  
 Sale market: Central provinces – Central Highlands

### Vissai Ha Nam Joint Stock Company

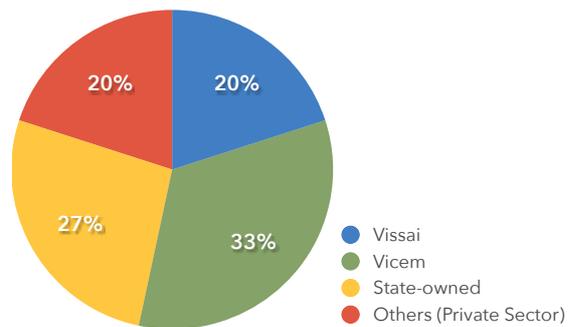
Location: Thanh Tan Commune – Thanh Liem District – Ha Nam Province  
 Cement production plant  
 Design capacity: 3 million tons cement/ year  
 Total investment: 5,500 billion VND

### Dong Banh Cement Joint Stock Company

Location: Dong Banh – Lang Son Province  
 Cement production plant  
 Design capacity: 1 million tons cement/ year  
 Total investment: 3,000 billion VND

Cement sold locally is used in large-scale projects including Son La Hydropower, National Conference Hall and Can Tho Airport Terminal. Vissai also engages in the production of iron and steel, textile, garment goods, hotels, sport activities, real estate, and financial investment businesses as well as logistics. The company is based in Ninh Binh, Vietnam with an additional office in Quang Ninh, Vietnam. It has assets amounting to 15 trillion VND, annual revenues of 6.8 trillion VND and an employee count of 3040.

Market Share of Cement in Vietnam

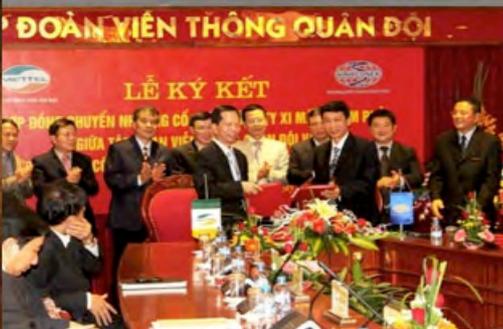


## Expanding Clinker Capacity



Mr. Ryan Nguyen Tien Dat  
 Deputy General Director  
 Vissai Ninh Binh Group

Mr. Nguyen explains that buyouts of good operating factories were part of the group’s business strategy. In 2011, Vissai acquired Hoa Phat Group’s Hoa Phat cement plant which has an annual production capacity of 1.2 million tonnes to raise its total output to 6.2 million tonnes per year. This acquisition is substantially cheaper as compared to building a new plant, at the same time Vissai can save the wait time for building a new plant. As a strategy to to keep up with its main competitor Vicem with 35% market share, Vissai engages banking services from VDB, BIDV, Techcombank, Agribank, Oceanbank and ANZ to manage its liquidity in the acquisition of new production plants.



### Success of Vissai

Ultimately, the competitive advantage of Vissai lies in its competitive pricing. At 80SGD/ton, it is a far cry from its European (130SGD/ton), Australian (160SGD/ton), African (170SGD/ton) and Asian (120SGD/ton) counterparts. Mr. Nguyen explains how an artificially low price is possible: Cheaper raw materials, government policies, cheap labour and long-term business contracts with buyers.

### Cheaper labour

Despite the increased automation of producing cement, extracting raw materials for cement remains relatively labour-intensive. Vietnam boasts lower cost of wages compared to its Western producing countries as well as some of its Asian counterparts.

### Contractual agreement with buyers

Finally, Vissai contracts with buyer to supply cement for 3 to 5 years. This ensures the continuous production of cement to avoid having to switch off and then restart high-voltage machines, incurring large sunk costs. From 2011 to 2014, Vissai is increasingly more selective with their clients (from 12 main clients in 2011 to only 6 main clients in 2014) and its largest clients come from Bangladesh. This allow Vissai to forge stronger ties with loyal clients to increase the order quantity. "Bad" clients usually delay payments and reject orders for apparent defect in cement quality, resulting in loss of profits for Vissai.



Source: <http://atlanticltd.com.au/projects/vietnam>



## CHALLENGES

### Demand volatility

Cement demand landscape can change significantly based on the implementation of infrastructure projects. Vietnam is a developing country with a massive need to develop roads and buildings, one of which is the highlands rail network shown below. There are 243 projects planned until 2030, with total investment value of US\$221 billion. However, the status of these infrastructure projects is still uncertain with long delays, some of which are subjected to the availability of funding.

### Tighter government controls

To cope with soaring energy costs, the government requires that by 2015 all plants must apply the Waste Heat Recovery Power Generation ("WHRPG") to meet at least 20% of its electricity consumption. Other cement-related regulations include the restructuring of the Master Plan and the Government loan guarantee scheme. By early 2014, the Government has decided to delay 9 out of 16 cement factories planned to be built by 2015 until after 2015. 24 other projects planned for the period of 2016-2020 is also under a very uncertain status. Also, the Government recently decided to stop providing guarantee for cement loans. Current subsidies buoying cement production may be lifted in the near future to alleviate excess supply in North Vietnam.

## INSIGHTS & SUGGESTIONS

### Finding Vietnam's competitive advantage

Proponents of free trade have voiced concerns over commercial protection, anti-dumping and unhealthy competition of Vietnamese cement producers. Vissai could improve on finding avenues to supply cement to the deficient south, to secure a foothold in the domestic market while expanding internationally, particularly to high-end markets like the US, Japan, South Korea and EU member countries by sharpening its natural price advantage and relying less on subsidies. Additionally, initiatives should be taken by the government to restructure the construction industry so that they will be financially and technically able to reduce prices of their products and improve their competitive capacity without current subsidies and tax incentives.

### Cementing Vietnam's future in the industry

Consolidation of smaller cement producers could be a viable idea given the high overhead costs of the cement business. As prices become more competitive with greater expansion of local and overseas cement businesses, Vietnam's cement industry must come together to form a leaner business model that is as economical in Vietnam as it is internationally. This is to fight off cement producers in emerging economies like how HeidelbergCement's vertical mill at the Citeureup location in Indonesia has recently commenced operations to the tune of 1.9 million tonnes/ year at production costs lower than those in Northern Vietnam.

Meanwhile, the Vissai Group has recently acquired Cam Pha Cement JSC from Vinaconex JSC and Ha Long Cement JSC from Song Da Corporation. Vissai now has a total capacity of 4.4 million tonne/ year from these two investees, giving it first-mover advantage and economies of scale poised to weather the storm of emerging economies.

# STEEL

**Steel as a permanent resource.** Once steel is produced, it is 100% recyclable and has an infinite life cycle – such recyclability without loss of properties makes steel unique and valuable. It touches every aspect of our lives, with a combination of strength, formability and versatility, and is as central to many aspects of our daily lives, such as transport, housing, energy, agriculture, water supply and infrastructure.

Type of Steel	Carbon Content	Properties	Uses
Low	~0.3%	Hard, Flexible, Not Brittle	Fences, chain links, gates, railings
Medium	~0.29 – 0.54%	Ductile, Strong, good wear properties	Structural steel for buildings and bridge
High	~0.55 - 0.95%	Strong, Hard, Brittle	Springs, high-strength wires, cutting tools
Very High	~0.96 - 2.1%	Strong, Highly Brittle, no Malleability	Cast iron pots, hot water radiators

## Grades of steel

Steel grades to classify various steels by their composition and physical properties, have been developed by a number of standards organizations such as:

- International Organization for Standardization ISO/TS 4949: 2003
- European Standards – EN 10027
- ASTM International
- American Iron and Steel Institute (AISI)

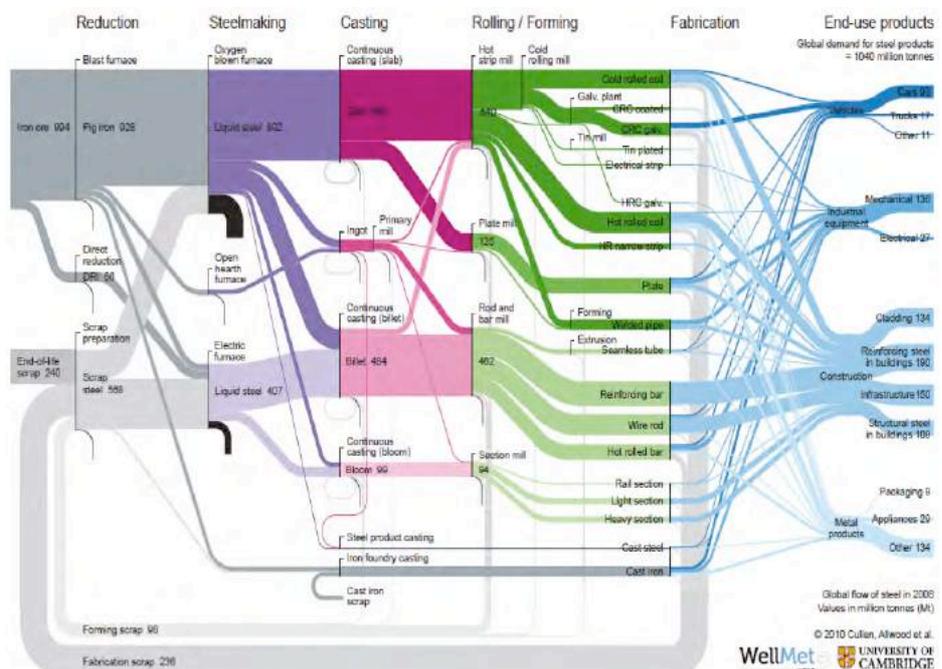
**Chemical and mechanical properties such as yield strength and impact resistance are regularly negotiated.** With such large amount of differentiated products, steel trade is complex as it is difficult to settle on a few commoditized standards for import and export grades, contractual terms, derivatives' liquidity and its resultant fair and transparent pricing mechanism.

## Commonly traded steel commodities

Nonetheless, the major groups of steel products fall under two categories: long or flat products. Examples include hot-rolled coils, cold-rolled coils, which are flat sheets of steel packaged into a coil for balancing the ease of transportation. Such flat products are usually used for cladding on construction and manufacturing of automobiles.

Steel rebars and steel billets which make up of the long products category. Steel billets are long rectangular blocks of steel; rebars are shaped in a rod form with spiralling grooves on its surface for greater grip on materials such as concrete. Long products are used for the construction industry such as buildings and railways and to a lesser extent in the automobile and industrial equipment industry.

The largest flow of steel is into billets and hot rolled coils as they are heavily used in the construction industry.





## Supply & Demand

Demand for steel is mainly derived from the demand for construction and housing for an ever-rising world population, driven by economic growth and urban development. Economic growth and development tends to lead to higher industrialization rates, which corresponds to higher levels of spending. However, due to the built-up of a few housing bubbles in the world and innovation of various real estate financial derivatives, government have implemented certain policies to regulate and reduce the chances of such speculative bubble from occurring again. Seasonality does play a part in the demand as the rainy wet monsoon and winter period will decrease activity for construction and transportation.

Most of the iron ore are supplied from Australia, Brazil and coking coal from Australia & Indonesia to China, Japan, EU and India.

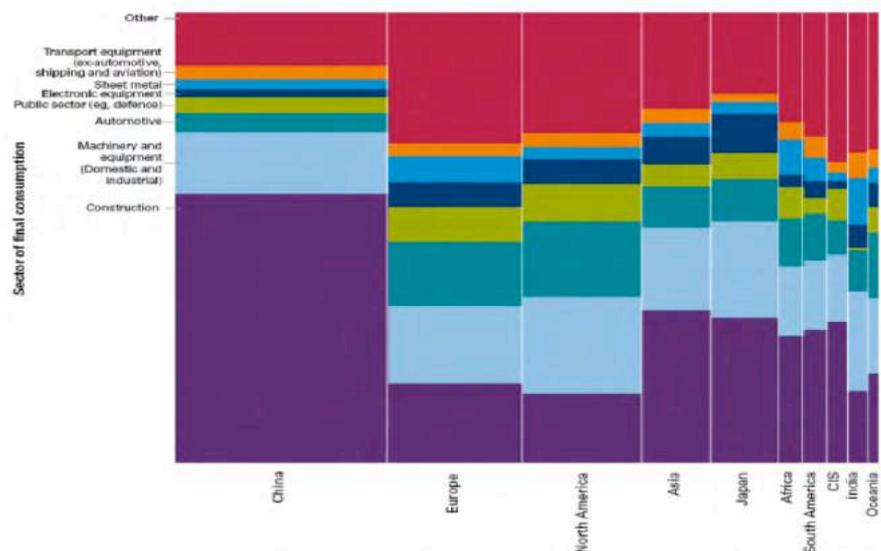
Steel scraps, on the other hand, is increasingly being used, and they mostly come from Russia, Japan, USA & EU to China & Turkey. Around 50% of BOF (Basic Oxygen Furnace) and 75% of EAF (Electric Arc Furnace) production costs are based on costs of raw materials such as iron ore, pig iron, coke and steel scrap. EAF is usually used to produce relatively small quantities of specialty carbon steel and steel alloys from steel scrap, whereas BOF is generally used to produce very large tonnages of standard carbon steel from iron produced in blast furnaces. Usually the input to the system is the main bottlenecks to the process.

MAIN FLOWS OF US STEEL SCRAP EXPORTS 2012 (MILLION TONNES)



Change % 2012/2011  
Source: Official Trade Statistics/WI Star

Country	Net Imports (Mt)
United States	17.9
Thailand	13.6
Indonesia	11.3
Saudi Arabia	7.8
Vietnam	6.5
UAE	6.0





# THAI NGUYEN IRON AND STEEL JOINTSTOCK CO. (TISCO)

Cam Gia District, Thai Nguyen Province

*“..the company is 65% state-owned but has added that it is not entirely obliged to satisfy the government’s needs, and being state-owned has been beneficial as the government is able to step in in times of financial difficulties”*



## TISCO and the Vietnamese Steel Industry

Even though most of the Vietnamese steel factories are exporting their steel overseas (50% of domestic steel is consumed), Vietnam has become a major net importer of steel. According to the Vietnam Steel Association (VSA) in 2012, Vietnam exported 2 million tonnes of steel with the total turnover of 2 billion dollars. However, it spent US\$7 billion to import 10 billions tons of steel of different kinds, which means the trade deficit of US\$5 billion dollars. Steel mills have been warned that they may face the anti-dumping lawsuits to be raised by the import countries. Admitting that exporting steel products is the only solution to help domestic enterprises reduce the inventories, VSA said that the reactions by the import markets have created big challenges to Vietnam’s steel industry.

It took TISCO four years before its operation produced their first finished steel product in 1963. Fifty years later, the factory continue to produce steel from coking coal from 45 chambers continuously except for a short turnaround of 2 hours/day for maintenance purpose. Each of the 45 chambers produces 6.5 tons of molten pig iron, which amounts to a total of 150kt/year. Without possession of their own coalmine concession, TISCO imports about 50% of its coking coal from Australia and China and the rest from domestic suppliers like Vinacomin. Sometimes it procures its coking coal from Yunan through the spot market. Yunan’s coal is transported by train while coking coal from Australia came through Hai Phong & Halong ports by vessels.

TISCO has been resourceful in conserving energy as the company uses rice husks to insulate the blast furnace as part of their effort in cutting energy costs.

The closure of TISCO's mill for one month when the market was in the dumps. Currently, this mill does not produce flat steel products, as these are typically produced in the south of Vietnam, nearer to the automobile manufacturers and the Saigon port area for exporting to Thailand. Additional capital investment can be upgraded or expanded on the current technology used, but TISCO believe that their process is still cost-efficient to run at the current market parameters. Due to the recent slump and oversupply in the Vietnamese market, TISCO has its production capacity at 60%. Currently, TISCO's steel billets and rebars are still competitive to the market and would be able to pay off its variable costs.

TISCO uses a markup pricing mechanism whereby they would analyze the economies of their production costs and the overall supply & demand of the region in Vietnam. Currently, TISCO does not regularly export its steel products to China, as there is an oversupply of steel in China and the cooling down of its housing bubble. Demand drivers will be up from September to December, as the construction activity will pick up in the dry season. As Vietnam is still developing its economy, China's steel is unable to compete competitively in Vietnam due to import taxes, causing a great markup of Chinese steel in Vietnam. Hence, when shipping cost is factored in, price of Vietnam steel will still be more attractive locally.

TISCO started as a state-owned entity under various Vietnamese governments of the past, due to the political landscape of Vietnam. As of now, the company is 65% state-owned but has added that it is not entirely obliged to satisfy the government's needs, and being state-owned has been beneficial as the government is able to step in in times of financial difficulties. TISCO owns a few subsidiaries and had invested equity stakes into other steel business entities, expanding their activity into corporate finance and investment. TISCO also has successfully penetrated into the international markets including Canada, Indonesia, Lao, Cambodia. This will ensure the TISCO has a stable revenue and income to stay afloat when the government starts to remove more protectionist policies.



# COAL

Coal, the catalyst of the industrial age, had been cited as a 'sunset' industry. However, the ascendance of oil in the global economy forces the world to reshape their energy needs. Other sources, such as nuclear, natural gas and renewables will play a greater role in serving the demands but it is important to observe the role coal will play in today's energy dependent society. Coal exchanges are expanding in an environment of high credit risk. Futures, swaps, and options – once the domain of oil markets – are taking hold in the coal markets. With coal derivatives entering the swap market where traders, users and suppliers of steam coal can utilize, coal is clearly moving towards the financial markets, similar to the emergence of oil in the past.

The most relevant substitute for coal-fueled power generation is gas-fueled power generation. Gas emits about 45% less CO<sub>2</sub> per MWh than coal during power generation and requires lower investment costs. Gas is also combusted more efficiently, wasting lesser energy, and gas power plants can be switched off and on more quickly, in 5 min or less. Comparatively, coal has a larger resource base and is more widely distributed across the globe. Coal is not as tightly monopolized as gas, which – for export – is mainly sourced from less politically stable regions in Russia and the Middle East. The production of coal is also simpler and demands less investment due to lesser complexity of equipment. In particular, the transportation of coal is much easier and more cost-efficient than building very expensive transmission pipelines or LNG terminal systems. Comparing bulk vessels and LNG vessels, the freight for coal is generally cheaper and can be transported in greater bulk. Coal also generates electricity at lower variable costs than gas and historically has been more profitable for utilities.



## SPECIFICATION

Coal refers to a range of combustible sedimentary rock material from hard coal - anthracite and bituminous coal, to brown coal – sub-bituminous coal and lignite. The International Coal Classification of the Economic Commission for Europe recognizes 2 these two categories by the definition below (information taken from Coal Information 2013 by International Energy Agency):

- Hard Coal - Coal of gross calorific value not less than 5 700 kcal/kg (23.9 GJ/t) on an ash-free but moist basis and with a mean random reflectance of vitrinite of at least 0.6.
  - o Anthracite is a high-rank, hard coal used mainly for industrial and residential heat raising.
  - o Bituminous coal is a medium-rank coal used for gasification, industrial coking and heat raising and residential heat raising. Bituminous coal that can be used in the production of a coke capable of supporting a blast furnace charge is known as coking coal.
  - o Other bituminous coal, not included under coking coal, is also commonly known as thermal coal. Also included are recovered slurries, middlings and other low-grade, higher-rank coal products not further classified by type.

Note that for the following countries, hard coal also includes sub-bituminous coal: Australia, Belgium, Chile, Finland, France, Iceland, Japan, Korea, Mexico, New Zealand, Portugal and the United States.

- Brown coal - Non-agglomerating coal with a gross calorific value less than 5 700 kcal/kg (23.9 GJ/t) containing more than 31% volatile matter on a dry mineral matter free basis.
  - o Sub-bituminous coal: non-agglomerating coals with a gross calorific value between 4 165 kcal/kg (17.4 GJ/t) and 5 700 kcal/kg (23.9 GJ/t) on an ash-free but moist basis.
  - o Lignite: non-agglomerating coal with a gross calorific value less than 4 165 kcal/kg (17.4 GJ/t) on an ash-free but moist basis.

Major Steam Coal Producers (million MT)	2010	2011	2012
China	2680.7	2909.3	3038.6
United States	856.5	850.7	782.0
India	491.3	495.6	504.3
Indonesia	322.8	357.5	440.0
South Africa	252.7	251.5	258.5
Russia	178.7	179.9	201.5
Australia	189.4	184.5	200.3
Sub Total	4972.1	5229.0	5425.2
Vietnam	44.8	44.5	42.1
World	5437.3	5726.6	5942.4

In the industry, coal is more commonly referred to as **steam coal or coking coal**. Depending on the requirements and needs for the coal, steam coal includes both bituminous and sub-bituminous coal which are not the coking coal variety used for steel manufacturing. They are commonly termed and quoted as Gross As Received (GAR), Net As Received (NAR), Gross Calorific Value (GCV) and Net Calorific Value (NCV). Higher specific energy values generally refer to the higher grade of coal via the latent heat produced when combusted as more energy can be extracted from heating the coal.

However, too high CV may result in overly high temperatures in the boiler and cause technical problems. It is also important to consider the ash content and the physical form – whether it is pulverized or in solid blocks.

Major Steam Coal Consumers (million MT)	2010	2011	2012
China	2698.6	2960.1	3086.5
United States	862.3	826.1	730.7
India	565.0	588.4	625.9
South Africa	186.3	182.8	185.0
Japan	127.7	120.3	131.6
Russia	97.8	93.6	116.9
Korea	92.8	98.3	95.7
Sub Total	4630.5	4869.6	4972.3
World	5411.3	5676.7	5813.6





China is the world largest producer and consumer of coal, but is currently a net importer in the last decade. Despite being a net exporter before their incredible rise after 2000s, China has seen their energy needs increasing to be the top importer worldwide. United States has steadily decreased their dependence on coal over the years, not only by increasing other alternative sources of energy, but also decreasing their consumption of coal. They are in the midst of switching from an importer to a net exporter, which is a major influence to the prices of coal worldwide, as excess capacity of coal is depressing market prices. With the major bulk of imports heading to Asia, coal trade will continue to be focused in Asia Pacific, with energy and environmental policies a strong determinant of future uses of coal in power generation.

Major Steam Coal Importers (million MT)	2010	2011	2012
China	116.0	137.3	218.1
Japan	127.7	120.3	131.6
India	81.3	98.2	123.0
Korea	90.4	96.9	94.3
Taiwan	57.6	60.6	56.1
United Kingdom	19.9	26.6	40.0
Germany	37.9	39.1	35.9
Russia	24.0	23.1	31.4
Malaysia	20.7	21.9	22.0
Turkey	16.2	16.9	21.1
Spain	10.0	13.7	20.2
Sub Total	601.7	654.6	793.7
World	806.1	867.3	989.3

Major Steam Coal Exporters (million MT)	2010	2011	2012
Indonesia	265.0	297.8	379.8
Australia	135.4	144.1	159.2
Russia	114.2	109.6	115.9
Columbia	66.9	77.9	81.7
South Africa	66.4	68.4	73.6
United States	23.0	34.1	50.6
Sub Total	670.9	731.9	860.8
Vietnam	19.7	17.7	19.1
World	789.2	857.5	962.7

Sources:  
 Economics of International Coal Trade, 2010, Dr Lars Schernikau  
 IEA Statistics – Coal information 2013, International Energy Agency



# MINERAL INDUSTRY HOLDING CORP LTD. VINACOMIN – NUIBE0

Ha Long City, Quang Ninh Province

*“...A state owned coal mining company that monopolized the Vietnam coal market. Vietnam produced about 42.1 million MT of steam coal in 2012 and offers little significance in the steam coal production as less than half of these volumes were exported.”*

Vietnam is known for its high-quality anthracite products. Because of geographical proximity, Vietnam’s coal is well suited to the southern Chinese market. However, Vietnamese anthracite tends to compete in a rather local market and is of little significance for the world market. Vietnam National Coal – Mineral Industries Holding Corp Ltd, also known as Vinacomin, is a state owned coal mining company that monopolized the Vietnam coal market.

Vietnam produced about 42.1 million MT of steam coal in 2012 and offers little significance in the steam coal production as less than half of these volumes were exported. Most power plants of major industry players in Vietnam were reliant on Vinacomin’s coal in the past, which means that their plants are not configured to use lower CV Indonesian coal. This is slowly changing as the competitive prices of Indonesia coal are slowly forcing industry players to diversify. According to Dr Lars Schernikau, the top five coal exporters in 2006 (BHP, Anglo, Xstrata/Glencore, Rio Tinto, and Drummond) control Australia, South Africa, and Colombia with about 67–86% of exports. Even in Russia and Indonesia, these five players directly or indirectly account for almost 40% of exports. It remains to be seen if Vietnamese government will allow these companies to break into their local coal markets. According to a master plan for national grid development by 2020 with a vision to 2030 by Vietnamese Trade Information, new thermal power plants will have to make the most of local coal resources. From 2020, to generate 156 billion kWh with the total capacity of the coal-fired power plants reaching 36,000 MW, the industry will need 67.3 million tons of coal and 171 million tons when the capacity of coal-fueled facilities is 75,000 MW by 2030. Therefore, coal supplies in the country will not be enough to meet the surging demand, and Vietnam will no doubt will a net coal importer in the near future.





In August 2014, Deputy Prime Minister Hoang Trung Hai requested the Ministry of Industry and Trade and other relevant agencies to forecast the use of energy resources and seek other potential coal resources to secure the national economic development after 2020. This can potentially be an indication that the government might seek new players in the market in future, if the import figures warrant the expertise of an international coal-trading house for securities in supplies and reliability in freight transport.

Nguyen Thanh Son, director of Song Hong Corporation under Vinacomin, also mentioned that Vinacomin would maintain coal output at 40-45 million tons to guarantee jobs for over 100,000 employees. Our team visited Nui Beo, a subsidiary of Vinacomin as well, and they shared that the company has 17 working sites in Vietnam, with capacity peaking in 2009 at 5.1 million MT. With Vietnam's steam coal production at 44.8 million MT in 2010, Nui Beo can be considered a fairly important producer under Vinacomin contributing close to 10% of the national production. It has currently dropped to 3.9 million MT in 2013 and the Company plans to phase out open-pit mining by 2017, as the strip ratio is not economical to operate. This trend is in line with the falling figures of Vietnam steam coal production shown in the tables above. The Company is also exploring deep-mining coal as our team witnessed their preliminary testing and ground survey with the building of new equipment and infrastructure to support deep mining.

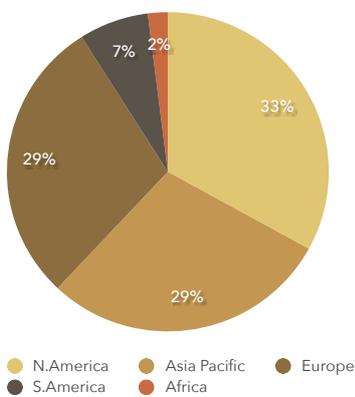
Nui Beo sell their coal to Vinacomin to be resold and re-distributed through the local markets or exported to oversea market. The Company staff also shared on the Company's history as they faced financial difficulties in the past during the fall of Soviet Union, as state sponsors and support stopped providing financial assistance. They managed to overcome the adversities to continue producing through times of war, with more than 25 years of incorporation.

# BITUMEN

Bitumen is an oil-based substance often in a semi-solid form at ambient temperature in-situ. It is produced by removing light fractions from heavy crude oil during the refining process. Hence, it is more accurately known as refined bitumen. It is also known as asphalt in North America. Elsewhere, asphalt is known as a mixture of stones, sand, filler, and approximately 5% of bitumen.

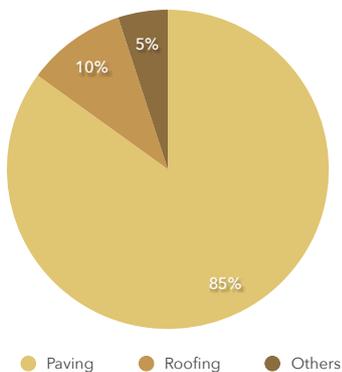


Global Use of Bitumen

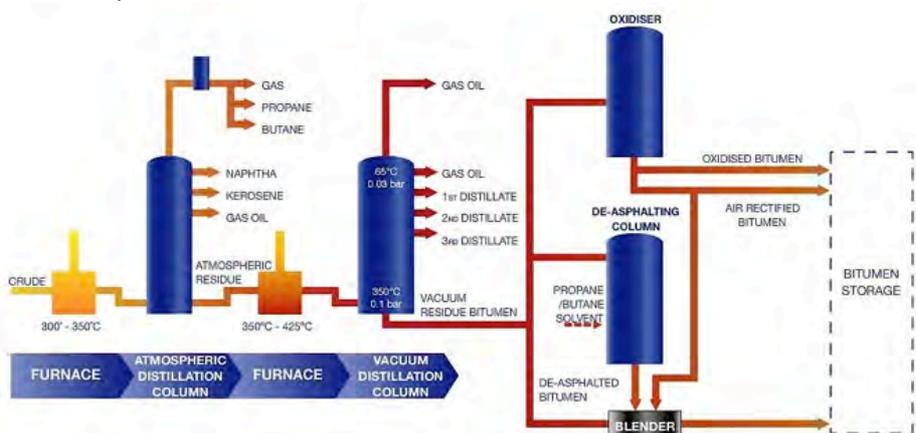


Bitumen function as the binding agent. Approximately 102 million tons of bitumen is used per year for its adhesive and water proofing properties. It is primarily used in for construction purposes, where 85% of all bitumen produced goes to road paving for airport runways, car parks and footways, as the a binding agent in asphalt. Bitumen has now replaced tar in paving application. They are of different chemical composition and property, and should not be confused with each other. The next 10% goes to roofing applications. The remaining 5% goes to secondary uses, for sealing and insulating purposes such as pipe coating, carpet tiling and paint.

Application of Bitumen



Bitumen is graded accordingly to standardized tests (e.g. penetration graded bitumen, viscosity graded bitumen, and oxidized bitumen graded), which defines the safety, solubility, physical properties and durability of the bitumen. Different specification is required for different purpose of its usage (i.e. at high-temperature condition or at low-temperature condition).



## General refining

Crude is run through a furnace at 300-350 degrees before being directed for atmospheric distillation where lighter fractions (gas oil and other fuel oils) is fed to another refinery units. Non-boiling components (atmospheric residue) that remains at the bottom is further heated beyond 350 degrees through a second furnace. Any remaining traces of lighter fractions are removed through vacuum distillation.

## De-asphalting

Specific solvents (propane/ butane) is added to separate the lubricant and bitumen component of crude without damaging their chemical properties. According to the type of solvent used, different category (varying penetration level and softening point) of bitumen can be obtained.



### Oxidation

Bitumen is further processed through varying length of air blowing at elevated temperature of 280 degrees on average. This alters the stiffness and softening point of bitumen, affecting its response to stress or imprint.

### Blending

Different proportions of bitumen at different viscosity is blended to obtain the final bitumen product to its technical specification. This process can also take place at terminals or at third party facility.

### The Bitumen Market

The largest consumer of bitumen is North America and they account for 30% of the global bitumen consumption. This is due to high levels of repairs and maintenance of roads. Demand is expected to remain high in the region due to economic growth. We can also expect an increase demand from China and India. Due to an estimated CAGR of 5% and 4.8% respectively from 2014 to 2020 in GDP growth due to government initiatives in these countries for the development of infrastructure.

The global bitumen market is highly fragmented with the top 8 companies accounting for less than 40% of the share in 2013. Shell Bitumen and NuStar Energy were the largest manufacturers of bitumen in 2013 with a combined share of over 12%. The other key companies in the market include British Petroleum, Exxon Mobil, Marathon Oil Corporation and Volero Energy Corporation. Companies are increasingly focusing on product development and innovation in order to obtain competitive advantage. Shell recently launched a fire resistant bitumen grade for roofing application. In addition, there is high level of merger and acquisition in the market in order to gain increased market share.

China launched the first futures market for bitumen in 2013. The futures contract trading in Shanghai was first of its kind in the global market, where it offers companies more hedging tools and help improve the structure of the economy, according to a statement from the Shanghai Futures Exchange. Hedging is primarily done via Brent swaps and futures.



# PUMA ENERGY

Hai Phong Province

*"...entry into Vietnam in 2012 had allowed itself to gain strategic foothold into the fast-growing market of the county, where huge investments are being channeled to building roads and railways in expanding towns"*

Formed in 1997, Puma Energy International, a mid- and down-stream oil company, is a subsidiary of Trafigura Beheer BV, a commodity trading multinational based in Geneva.

Puma Energy is a global marketer of bitumen with terminals in Spain, Angola, Central America, and Vietnam. As part of its plan for global expansion, Puma Energy acquired Chevron Kuo Ptd Ltd, a Singapore-based company which owns 70% of Chevron Bitumen Vietnam Ltd (CBVL). This played a pivotal role in catering to this economic growth and rising demand for bitumen.

Puma Energy Bitumen Vietnam's main business involves the import, storing, and distribution of asphalt. Their assets includes Hai Phong terminal, which has wharf facilities with a state-of-the-art bitumen storage terminal with a capacity of 5,000 metric tons, the management of a bitumen distribution business around Hanoi and Ho Chi Minh City, and 35 staff members.

**Operational Aspect of Puma Energy.** Puma Vietnam does not refine bitumen but import asphalt directly from neighboring Taiwan and Singapore (Singapore Refining Company [SRC] and Singapore Petroleum Company [SPC]) instead. Each month, 2 shipments of 4,000 metric tons will arrive at Puma's jetty facility in Hai Phong in bulk shipment, to be transported and pumped through pipelines to its inland storage drums that are accompanied by heaters. Each day, an average of 20 trucks will bring these asphalt inland, through an approximately 2-hour drive, to its customers.

With a pour point of 125°C, it is essential for tanks and pipelines to be heated. Pipelines are lined by glass wood and transmission oil (heating oil), which is heated by Fuel oil No. 2. Tanks filled with bitumen are kept at 120°C and are put into drums for sale. Temperature of bitumen in the drums decrease at 2°C/hour, thus drums are normally delivered to construction sites in the morning to ensure that the bitumen reaches the construction sites in liquid/semi-liquid form.





# SOYBEAN

Soymeal is used in the processing of soybean milk and tofu. It is also the main protein ingredient in animal feed formulations for poultry, livestock and fisheries. Vietnam imported three million tonnes of soymeal in 2010. As well as the US, the major exporters of soymeal to Vietnam include Canada, India, China, Thailand and Argentina. Supplies from a domestic soymeal production plant will substantially reduce the shipment time, cargo and quality losses.

The population is expected to grow by 3% pa on average from 2013 – 2015. Food consumption is in line with this population increase, and is expected to rise at a faster rate of 10% - 15%, especially in the South East Asian (SEA) region. In particular, Soybean meal consumption is forecasted to increase by 12% pa from 2013 – 2015. This presents a growing market in SEA and business opportunities for Bunge Vietnam.

The overall Vietnam economy has been relatively stable in recent years, yet slower growth due to tighter credit and restructuring in the banking sector. Growth in feed industry continued, where consolidation by bigger Feed Millers is observed. In terms of product demand, SEA market has higher demand for proteins from soybean meal rather than soybean oil demanded by Chinese market. Due to intense competition, Bunge Vietnam often has to sell soybean oil at a loss to the export market to compete against other sources of oil whereas most of the proteins from soybeans are sold in the domestic market that is the main source of profitability for the firm.

In order to deal with the prevailing difficult market, Bunge Vietnam employed a set of measures aiming at reducing unit costs while making full use of processing facilities and logistical advantages. Bunge Vietnam imports soybeans from Brazil/Argentina on a Cost and Freight basis (CFR), which is potentially US\$70/ton cheaper than hypothetical locally planted beans. The company then crushes and export via the crushing plant which runs 24/7 at 120% capacity to achieve lower cost per batch. Automation is enhanced to minimize human interference – at any point in time, the 11 ha facility is manned by 20 people.





# BUNGE VIETNAM

Phu My Industrial Zone, Ho Chi Minh City

*“Bunge Vietnam has been one of the leading imported feed ingredient suppliers to the local market since 2002. The country is the fourth largest US soybean meal importer, with an equivalent of 18.4 million bushels in 2010. The processing plant is estimated to account for 30% of the total soybean oil and soybean meal consumption in Vietnam.”*

Bunge Vietnam has an integrated processing plant in the Phu My 1 Industrial zone, Ba Ria-Vung Tau. Mr Chan Wai Cheng, the General Director and Mr Ly Chanh Vu, the trader in the company warmly welcomed and took the team on a tour around the crushing plant.

Bunge’s crushing plant is the largest and only surviving soybean processing plant in Vietnam. Situated on a 11 hectare site, It has a 3,000t soybean crushing capacity and a throughput capacity of up to 50,000t per year. The plant consists of 6 silos, each has a capacity of 15 kilotons and is equipped with 24 cables to control temperature. The weighing scale is installed at the bottom of the silo to monitor the weight of raw soybean materials that go into the crushing facility.

A series of filters and fans are set up to remove stones and unwanted materials from the original batch input. Bucket elevators are used to bring the filtered soybeans to the internal heater where soybeans are heated to 85°C. In this process, the bean’s inherent moisture is reduced from 12.5% to approximately 10%. Dry beans are then sent to the cracking system where beans are cut into two and the hull is removed.

Steam is direct through the finer beans to expand it, and hexane is added to dissolve the oil from soybeans. Soybeans are again filtered whereas the filtrate containing soybean oil dissolved in hexane and condensed water flows to another chamber. Here, hexane and steam is vaporized, leaving behind the highly concentrated soybean oil. Vacuum is used in this distillation process to ensure lower boiling points of hexane and water. The lower temperature of the system helps to preserve the quality of the oil. Hexane is recycled at a loss of 0.8 litre per ton of soybean oil, out of 1200 litre used per batch. Soybean oil is then refined further of impurities and stored in barrels in Bunge warehouse.



# VEGETABLE SEEDS

The global fruit & vegetable seed market is dominated by a handful of multinational firms such as Monsanto (U.S.), Syngenta (Switzerland), Bayer CropScience (Germany), Limagrain (France) and Sakata Seed Corp. (Japan).

The industry is typically grouped in six major crop types, namely Solanaceae (Pepper, eggplant, tomato etc.), Brassica (Cabbage, cauliflower, broccoli, etc.), Leafy (Lettuce, spinach, etc.), Root-Bulb (onion, carrot etc.), Cucurbit (melon, watermelon, cucumber, squash etc.), and others seeds. According to a recent market research report published by MarketsandMarkets, this market is expected to grow from \$6,276.5 million in 2012 to \$12,961.4 million by 2018, leading market growth within the overall seed market which includes oilseeds and grain crops.

Threats to the industry include global warming. Agricultural producers today are challenged with increasingly erratic weather conditions and limited farming resources such as arable land and farming water. In order to sustain the world's growing population, which is expected to hit 10 billion by 2050, agricultural producers are increasingly tapping into modern technologies to crossbreed seeds which promise high yield and crop hardiness.





# TROPICORP

Cu Chi District, Ho Chi Minh City

*“...the firm offers a range of high quality vegetable varieties heterosis (F1) which benefits all market participants in the value chain.”*

Founded in 2007, the Development Corporation and Tropical Investment ("Tropdicorp") is a Vietnam based agricultural firm active in the field of research, production, application and transfer of high technology in agriculture, especially for vegetables. Applying modern agritechology, seeds are products of vegetable varieties heterosis (F1). Benefits of Tropdicorp's products include stronger adaptability to environmental conditions, high yield, uniform quality and good storage time etc.

In addition, Tropdicorp actively promotes the cause for non-GMO pesticide-free vegetables via system optimization of plant nutrition and pest control by natural enemies of insects. Providing high quality vegetable varieties and transferring knowledge on sustainable farming practice, Tropdicorp prides itself as an effective enabler which improves the lives of local farmers by enhancing the likelihood of bumper harvests. The Tropdicorp team consists of nearly 300 employees working in the research farms, warehouse, labs and across the country providing products and solutions of Tropdicorp.

## Visit summary

We visited Tropdicorp's premise on 15 Aug 2014 at Tan Phong Ward, Ho Chi Minh City with the aim of learning about Tropdicorp's business set up and efforts towards promoting Vietnam's agricultural landscape. We were warmly welcomed by representatives of the firm and were given a brief introduction to the firm via a corporate video. While Vietnam's seed industry is largely fragmented with several players, Tropdicorp is considered a reputable and sizable player in the vegetables seeds market space. It excels because of its ability to tap into modern agricultural technology to aid farmer's concerns on decreased arable land, crop infection and pest issues.



The manufacturing process is strictly controlled from sowing to harvesting; along with laboratory systems quality control and professional production process to ensure quality seeds to achieve international standards (minimum purity 98% minimum germination rate of 90%) before packing and shipped. Tropdicorp focuses on vegetable seed research and outsource a large portion of it's production and distribution needs to third parties.



Tropicorp sends its quality seeds for mass production in the United States and relies on local distributors to sell its products to the local farmers. However, in order to inculcate sustainable farming practices and to remain in touch with farming issues within the local community, Tropicorp offers value added service by providing free value added service of technical support for local farmers. Technical site visits encourages the transfer of knowledge in cultivation techniques, pest control, rational use of fertilizers and Tropicorp also advises farmers on how to choose varieties suitable for each ecological region, season to achieve the highest return.

### Other products

Committing to non-GMO pesticide-free vegetables, Tropicorp offers natural pest control methods as an alternative to pesticides and probiotics derived from living organisms which offer micronutrients to aid improve plant immunity.

The natural pest control insects such as bigeye bugs, ladybugs, flower spikes bugs, bees, parasitic mites prey are breed in the entomological lab and tested in the adjacent greenhouses. These natural enemies of pest have been proven to be an effective mean of control against harmful insects and spiders in the grid, such as thrips, whitefly, mites, aphids, armyworms, two striped green worms, cutworms.

Through research and trial testings, the firm combines the advantages of cross breeding, farming systems, automatic & semi-automated, and the application use insect predators and plant nutrition. During the visit, we also toured the other facilities such as greenhouses, which featured the automatic irrigation system and semi hydroponics, the warehouse and processing area where seeds are sorted, packed and stowed away as well as laboratory of molecular biology. Through the visit, we appreciated the pains of cultivating agricultural commodities and witness the actual operation of a traditional business applying technology into their business model.





# SAIGON NEWPORT CORPORATION(SNP)

Cat Lai, Ho Chi Minh City

*“Saigon Newport Corporation (SNP) was established on March 15, 1989 governed by the Vietnam People’s Navy, the Ministry of Defense and has developed into a prestigious and powerful brand in the terminal operations in Vietnam. “*

SNP manages a system of the premises from the North to the South. They have many subsidiaries operating in different business segments, which includes 2 deep-water terminals, 6 feeder terminals and 6 barge terminals. Furthermore, SNP handles logistics services with warehousing, overland transport and waterway transport. Presently, SNP Corporation has handled approximately 3.9 – 4.2 million TEUs of containers, which is about 80% of container import/export volume in South Vietnam and 46% nationwide.

The visit in SNP included a site visit to Tan Cang – Cat Lat Terminal, their biggest and most modern international container terminal in Vietnam in District 2, Ho Chi Minh City. The terminal is located near the industrial parks and processing zones in the North of Ho Chi Minh City and those of Binh Duong & Dong Nai provinces. With over 60 ships visiting per day, it is able to support 8 berths including 1 barge quay and has a terminal capacity of 4.2 million TEU per year.

Competitive Strength 1: SNP has the largest and strongest presence in Ho Chi Minh, with their experience and advantage lying in advanced terminal technology and operations. With the purpose of expanding their presence in North Vietnam, SNP is constantly looking for investment for continual development of their terminals. In 2013, SNP completed a joint venture to operate Terminal Tan Cang 128 and 189 in Hai Phong with three biggest Asian shipping lines – Mitsui O.S.K Lines, Hanjin Shipping and Wan Hai Lines. The deep-water port is able to support a capacity of 240,000 TEUs and is expected to officially start its operations in 2017.

Competitive strength 2: SNP also bought a new terminal management and operation software system- TOP-X from RBS (Australia). With TOP-X, it enables SNP in efficient container management in real time, optimize the terminal capability, reduce cargo receipt and delivery time and create the best utilities for the customers. The average truck delivery/receipt time for containers has been reduced from 1.8 hours per container to less than 1 hour per container.

## Our Thoughts

According to French Development Agency, Vietnam faces infrastructure shortcomings, combined with a growing population and poorly operating State-operating enterprise (SOEs). Hence, it is vital for SNP to constantly improve their efficiency, seek investments and joint ventures in the development of major infrastructure for transportation and logistics. Likewise, it is important for SNP to focus on venture in modern, specialized equipment and vehicles and management technologies to boost service quality. With the further investment in their core business, it will be able to drive the maritime economy in Vietnam and provide a higher value-add for their corporation.



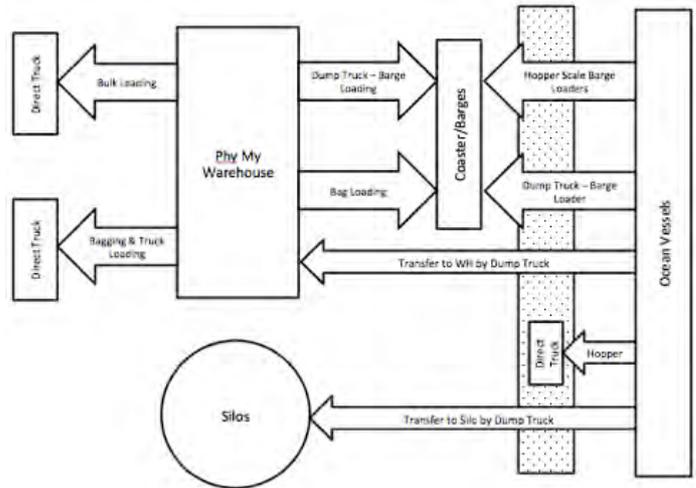


# PHU MY PORT

Phu My Industrial Zone, Ho Chi Minh City

*“Phu My Port is the second most important asset of Bunge Vietnam. It is located just outside of the crushing plant and is 50% owned by Bunge Vietnam.”*

The close proximity gives rise to minimal inland transportation cost and hence creates a powerful comparative advantage for the company over its competitors. In 2013, Phu My Port served 480 Vessels, 2300 Barges, 225,270 Trucks and achieved a total throughput capacity of 4.8 Million Metric Tons. In December 2004, Bunge Agribusiness Singapore, a business unit of Bunge, signed a ten-year agreement with Phu My Port operator Baria Serece Joint Venture Company to exclusively use the port facilities for the shipment of agricultural commodities to Vietnam. The agreement enabled the company to improve the soybean meal supply to meet the livestock and cattle feed demand in Vietnam.



# REFLECTION

Industry Study Mission (ISM) Vietnam 2014 was a great eye opener and an enriching learning opportunity on the Vietnamese commodities trade sector. The 11-day visit covered a well-diversified range of commodities, encompassed with local cultural exchanges and most importantly, invaluable local knowledge from industry experts. We were particularly thrilled by the various business facilities tours given, which gave us the opportunity to observe business operations up-close. One of the most exciting highlights was the visit to the steel mill in TISCO where we witnessed the entire process of making rebar, from blast furnace to the shaping of rebar.

The learning on the trip was also invaluable, as the partners furnished us in-depth product knowledge and insights into opportunities and challenges within their markets. One of the highlights of our trip also included a visit to both Noble and Olam, in their coffee trading business. We had the opportunity to compare, how both companies differ in their outlook and strategies, even though they operate within the same market.

The hospitality extended to us by our Vietnamese partners was beyond exceptional. We were hosted to several business lunches, where we got the opportunity to network and learn more from our Vietnamese hosts. These lunch interactions provided us with an informal avenue, where we can freely exchange ideas and questions about the companies. We also learned how goodwill gestures like these are important to in building a business relationship in Vietnam.

Lastly, the cultural learning experience we had in Vietnam was also very memorable. We visited Petrovietnam University, where we interacted with the students over performances, games and dinner, and learned about the courses they take and their career aspirations. Other cultural learning included visits to the war memorial museum and Cu Chi Tunnel, where we learned about Vietnam's turbulent history and the Vietnamese's spirit and ingenuity in overcoming difficult times when odds are against them.



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