A WORK PROJECT PRESENTED AS PART OF THE REQUIREMENTS FOR THE AWARD OF A MASTERS DEGREE IN MANAGEMENT FROM THE NOVA - SCHOOL OF BUSINESS AND ECONOMICS

ASSISTING GALP IN DEFINING A SUCCESSFUL INTERNATIONALIZATION STRATEGY FOR LUBRICANTS

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A FIELD LAB CARRIED OUT UNDER THE SUPERVISION OF PROFESSOR CONSTANÇA MONTEIRO CASQUINHO

9TH JANUARY 2015
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The present document is the result of a Master Thesis Project under the initiative of MCFL and the collaboration with Galp Energia.

CONSULTING FIELD LAB - MASTER THESIS PROJECT

GALP ENERGIA & NOVA SCHOOL OF BUSINESS AND ECONOMICS

The present master thesis was carried under the initiative of the Management Consulting Field Labs. This project was the result of a continuous collaboration between Nova SBE and Galp Energia (Lubricant Exports Division) which gave the opportunity to a team of four students to work as consultants for the last 3 months at the client’s office. The students had the opportunity to get to know from a first-hand experience what management consulting is all about, putting into practice theoretical knowledge and engaging in a project for real clients with real life problems.¹

ACKNOWLEDGEMENTS

The team is conscious that the result of the project was only possible due to the support of many people. Bearing that in mind we would like, first of all, to thank both Professor Constança Casquinho and Professor Fábio Santos for all the guidance, advices, support and readiness to help on problem solving. Additionally we want to express our gratitude to Professor Qinglei Dai for her availability and for establishing the bridge between China and Portugal, as well as Dawn Chen for her crucial translations and research tools. Moreover, we would like to thank Dra. Isabel Calado, for allowing us the opportunity to do this project, and to Galp exports division team: Maria José Barros, Francisco Lima Aires, Carla Loureiro, Liliana Santos and Maria Joaquina for the warm welcoming and assistance during the whole project. In addition we want to acknowledge Professor Carlos Marques and Professor Pedro Neves for their advices and guidance. We are also grateful to our family and friends for all the support during this project.

¹Casquinho, Constança; MCL Recruiting, 2014
The project objectives will be attained through three instrumental goals

**Project objectives and scope**

**Main objectives**

Identify potential internationalization opportunities for Galp lubricants, with focus in Asia and highlights for Africa, and draw a roadmap to structure the best entry strategy in Asia.

**Instrumental goals**

1. Understand the lubricants market singularities in each selected country, its segments, key players and existing business models.

2. Rank the most attractive countries, from the preceding analysis, for Galp lubricants in terms of business opportunities.

3. Highlight potential entry strategies to explore in Asia and a roadmap for pursuing this new growth avenue.
The lubricant exports division strategy, aligned with Galp Energia’s strategy, is to expand its activities across continents.

**Company Overview and Business Units (1/2)**

**Company Overview**
Galp Energia is a Portuguese vertically integrated energy company, operating in the oil and natural gas industry. Its business is divided in three segments: Exploration & Production, Refining & Marketing and Gas & Power, being the upstream activities prioritized at the moment.¹

**Strategy**
The company’s strategy involves taking advantage of the expected increase in oil and natural gas demand worldwide, and shift the strategic focus away from markets with higher economic slowdown, as it is the case in Europe, particularly in the Iberian Peninsula.¹

**Lubricant Exports Division**
The Lubricant Exports division is responsible for seeking new business opportunities and its ultimate goal, aligned with the Company’s strategy, is to create sustainable value for shareholders through the expansion of its activities across continents. Currently, it is present in four continents, being the African market the one with the highest sales and commercial presence, specially Angola.¹
The lubricant exports division seeks for new business opportunities to increase the blending plant production, being currently focused on Africa.

**COMPANY OVERVIEW AND BUSINESS UNITS (2/2)**

**LUBRICANT EXPORTS DIVISION**

The Lubricant Export Division was an independent division in the Refining & Marketing business segment, however since November 2014 it is integrated in the International Marketing division. The new management team’s strategy for the upcoming years is more focused on African geographies, contrary to the preceding one, whose strategy was to look for opportunities in the non-African markets. One of the main goals of the previous management team was to expand its presence in Asia, with focus on China, (currently the lubricant division only exports to Taiwan) and this was the preeminent reason for the initial scope of this project.

**LUBRICANT PRODUCTION**

Galp operates two refineries in Portugal (in Matosinhos and Sines) with 20% of Iberian Peninsula's refining capacity. In Matosinhos' refinery group I base oils are produced and in the blending plant a broad portfolio of mineral and synthetic lubricants, for segments such as Automotive and Industrial. The blending plant has capacity to produce 80,000 tons of lubricant oil, with the current production being only 35,000 tons.¹

This project will allow to enhance the lubricants division’s presence in Asia and Africa, by boosting the lubricant exports, leading to a significant increase in the lubricant blending plant’s production.

**LUBRICANT COMPONENTS¹**

![Diagram of lubricant components]
**EXPORTING TO ASIA AND AFRICA, MAY BE A WAY TO INCREASE MATOSINHOS’ BLENDING PLANT CAPACITY USAGE**

**Problem Breakdown**

**Situation**

Matosinhos blending plant has huge spare capacity
(45 thousand tons = 56.3% total capacity)

**Complication**

There is a *declining trend in lubricant consumption* in Europe

**Question**

Are there growth opportunities to export Galp lubricants to Asia and Africa?

**Geographic Focus**

Asia: China, Thailand, Indonesia, Taiwan
Africa: Zambia, Congo, DR Congo, Namibia, Mozambique

**Answer**

There are opportunities to export Galp lubricants to Asia, being the *Chinese market* the most attractive one

Source: ¹Galp Energia, 2014; ²Daedal Research, 2013
Recommendations and Value Added (RV)

2.1 Asian Markets

2.2 African Markets
In Asia, China represents a big opportunity with a profit potential of €5.3M, however lack of brand awareness is a major entry barrier.

Where?
- China is the most attractive country for Galp to export lubricants, followed by Thailand and Indonesia.

How?
- Short-term: direct sales
- Medium-long term: local production
- Galp should develop a price table tailored to each different market

With whom?
- Distributor in Taiwan, which is aiming at an expansion into China and South Asian countries
- Mr. Ye Cong: explore possible partnership

Which lubricants?
- Most recent API: SN due to the very recent age of the car fleet; as well as the most advanced lubricants such as 0w-40
- Labelling: should include accreditations upfront, specially for the Chinese market due to cultural norms
- Synthetic lubricants
- Automotive segment

Value Added?
- In a realistic scenario Galp would have an expected first year profit of €5.3M in China
- Tools developed by the team:
  - Scoring Model tool
  - Entry Model framework
In Africa, Angola neighboring countries represent a weak opportunity for Galp to expand its presence due to the small lubricant market size.

**AFRICA**

**Where?**
- Zambia is the most attractive country for Galp to export lubricants, followed by Congo and DR Congo.
- Galp can take advantage of its presence in Mozambique and potentiate its lubricant sales by increasing its sales force.

**How?**
- Exporting from Portugal directly to Angola’s surrounding countries turns the product more competitive than exporting via Angola.

**Which lubricants?**
- Due to the small number of vehicles and high contribution of the industry sector to GDP, industrial lubricants seem to be the most promising products of Galp’s portfolio.
- Galp seems to be able to be competitive with mineral and synthetic lubricants.

**Value Added?**
- The cost analysis concluded that it is approximately 2.5 to 3 times cheaper to sell directly from Portugal rather than via Angola.

Tools developed by the team:
- Scoring Model tool
- Entry Model Framework

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**Recommendations & Value Added**
### Agenda

#### 3 Theoretical Context (TC)

- **3.1 Viability Analysis Model**
- **3.2 Scoring Model**
- **3.3 Entry Model**
- **3.4 Uppsala Model**
- **3.5 Hofstede Model**
In order to understand the competitiveness of Galp on the studied markets, a tailored made model was created for the client.

Viability Analysis Model

By understanding the cost structure the team was able to estimate the price that Galp would be able to sell to a distributor located in each country. Then the team compared with the prices on each country of products with the same viscosity, API certification and capacity.

Analysis of Available lubricants portfolio

Two approaches to find to find products and their prices:
- Online
- Locally

Focus on major players and most available viscosities

Matching with Galp’s portfolio

3 Criteria Used:
- Viscosity
- API
- Capacity

Analysis of Galp’s Competitiveness

Cost structure was divided and analyzed between:
- Production Costs
- Galp International’s Margin
- Transportation Costs
- Insurance
- Duty Rates

Price identification per product

1. The price per liter of 4L bottles was compared with the price per liter of 5L bottles
2. 3.5 Kg were considered equivalent to 4L
3. Allocated by Kg
THE SCORING MODEL AIMS AT CLASSIFYING AND RANKING COUNTRIES IN TERMS OF ITS ATTRACTIVENESS TO IMPORT GALP LUBRICANTS

SCORING MODEL

Due to lack of resources, Galp cannot approach all markets simultaneously and so a prioritization tool is needed. Due to the lack of a suitable model to be used in this particular situation a tailored one was created for the client. The team identified the three main drivers of success in a new lubricant market. Then the team broke down the metrics that influenced those drivers and allocated weights according to their importance.

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>METRIC</th>
<th>WEIGHT</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country Overview</td>
<td>GDP growth</td>
<td>12%</td>
<td>Rate of change of the Gross Domestic Product (2012-2013)</td>
</tr>
<tr>
<td></td>
<td>Inflation</td>
<td>5%</td>
<td>Rate at which the level of prices rose (2009-2014)</td>
</tr>
<tr>
<td></td>
<td>Currency volatility</td>
<td>5%</td>
<td>Uncertainty of the currency value of the country (2010-2014)</td>
</tr>
<tr>
<td></td>
<td>Imports contribution to GDP</td>
<td>9%</td>
<td>Weight of total imports on GDP (2013)</td>
</tr>
<tr>
<td></td>
<td>Ease of doing business</td>
<td>11%</td>
<td>Ranking that measures the easiness of doing business (out of 189 countries)</td>
</tr>
<tr>
<td>Market Potential</td>
<td>Lubricant consumption</td>
<td>14%</td>
<td>Amount of lubricants consumed (2013)</td>
</tr>
<tr>
<td></td>
<td>Lubricant imports</td>
<td>10%</td>
<td>Amount of lubricants imported (2013)</td>
</tr>
<tr>
<td></td>
<td>Vehicle per capita</td>
<td>7%</td>
<td>Number of vehicles per person (2013)</td>
</tr>
<tr>
<td></td>
<td>Vehicle fleet growth</td>
<td>7%</td>
<td>Rate of change of the country’s vehicle fleet (2010-2013)</td>
</tr>
<tr>
<td></td>
<td>Industry contribution to GDP</td>
<td>7%</td>
<td>Weight of the industry sector on country’s GDP (2013)</td>
</tr>
<tr>
<td>Dynamics of Rivalry</td>
<td>Market competitiveness</td>
<td>13%</td>
<td>Number of suppliers (level of fragmentation taken into account) and combined market share of the two largest suppliers in the market (C2)</td>
</tr>
</tbody>
</table>
Galp’s value chain was analysed in order to understand which entry mode would better suit the company.

**Entry Model**

<table>
<thead>
<tr>
<th>Value Chain¹</th>
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<tbody>
<tr>
<td>R&amp;D</td>
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<tr>
<td>Production</td>
</tr>
<tr>
<td>Distribution</td>
</tr>
<tr>
<td>Retailing</td>
</tr>
<tr>
<td>Final Client</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Entry Mode</strong></th>
<th><strong>Definition</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Equity</strong></td>
<td></td>
</tr>
<tr>
<td>Existing equity (joint venture)</td>
<td>Galp would enter in China by <strong>acquiring equity</strong> in an existing entity (shared ownership)</td>
</tr>
<tr>
<td>New entity</td>
<td>Galp would enter in China by <strong>investing capital</strong> in a <strong>new entity</strong> (with 100% of ownership)</td>
</tr>
<tr>
<td>Acquisition</td>
<td>Galp would enter in China by <strong>acquiring 100%</strong> of an existing entity</td>
</tr>
<tr>
<td><strong>Non-equity</strong></td>
<td></td>
</tr>
<tr>
<td>Direct Sales</td>
<td>Galp would establish a <strong>contract</strong> with an existing party with operations in China in order to <strong>sell directly to the final consumer</strong> in China (e.g. Industrial and auto lubes for OEM)</td>
</tr>
<tr>
<td>Licensing</td>
<td>Galp (licensor) would grant the <strong>rights to intangible property</strong>, such as know-how (e.g. lubricants’ formulation), to another entity (licensee) for a specified period and in return Galp would <strong>receive a royalty</strong> from the licensee</td>
</tr>
</tbody>
</table>

Source: ¹Galp Lubricants Factory, 2014; Aires, Francisco Lima, Training Session & Matosinhos’ refinery visit, 2014
The Uppsala model is based on a series of incremental decisions, which steps are based on knowledge acquisition about the foreign market.

**Uppsala Model**

Based on four case studies of Swedish firms, Johanson and Weidersheim-Paul (1975) distinguished four successive steps in the *international expansion process of the firm*. These *4 stages* are: no regular export activities; export via independent representatives; sales subsidiaries; overseas production/manufacturing.

There are *three exceptions* in the Uppsala model which might lead firms to jump steps:

1. Firms with *more experience* and *resources* can take larger steps
2. When *market conditions* are *stable* and *homogeneous*, relevant market knowledge can be gained from other sources rather than own experience
3. Firms with considerable experience of markets with similar conditions may be able to generalize this experience to any specific market

Since Galp is not present in any of the markets analyzed, the Uppsala model indicates it should enter those countries by *exporting via independent representatives*, unless Galp fulfills one of the three exceptions the model has.

<table>
<thead>
<tr>
<th>Exception 1</th>
<th>Although Galp is a big firm with many resources, the lubricant division does not currently have the budget to commit a lot of resources on jumping steps of the model</th>
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<tbody>
<tr>
<td>Exception 2</td>
<td>Concerning the second exception, all the markets that have been looked into are developing countries which are normally not very stable nor homogeneous</td>
</tr>
<tr>
<td>Exception 3</td>
<td>Although Galp is present in African countries they sell via semi-independent representatives and so their market knowledge is low and cannot be leveraged to jump steps in other markets, while in Asia they only sell to one independent distributor, and so Galp does not meet the third exception condition</td>
</tr>
</tbody>
</table>

Source: Gomes, Emanuel, 2014
**Hofstede’s Model Measures Cultural Proximity Between Countries Using 4 Dimensions That Describe the Relevant Differences Among Cultures**

## Hofstede Model

An “approach to conceptualize culture concentrates on understanding central values and norms and then building a model for how these norms and values influence negotiations with that culture”¹.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
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<tr>
<td>Individualism/Collectivism</td>
<td>This dimension describes the <strong>extent to which a society is organized around individuals or the group.</strong> Individualistic societies encourage their young to be independent and to look after themselves. Collectivistic societies integrate individuals into cohesive groups that take responsibility for the welfare of each individual.¹</td>
</tr>
<tr>
<td>Power Distance</td>
<td>This dimension describes the extent to which the <strong>less powerful members of organizations</strong> and institutions accept and <strong>expect that power is distributed unequally.</strong> Cultures with greater PD will be more likely to concentrate decision making at the top, and all the important decisions will have to be finalized by the leader. Cultures with low power distance are more likely to spread decision making throughout the organization, and while leaders are respected, it is also possible to question their decisions.¹</td>
</tr>
<tr>
<td>Career Success/Quality of life</td>
<td>Cultures differ in the extent to which they hold <strong>values that promote career success or quality of life.</strong> Cultures promoting career success are characterized by the acquisition of things, and not caring for others, the quality of life or people. Cultures promoting quality of life are characterized by concerning with relationships and nurturing.¹</td>
</tr>
<tr>
<td>Uncertainty Avoidance</td>
<td>This dimension indicates to what extent a culture programs its <strong>members to feel uncomfortable or comfortable in unstructured situations.</strong> These situations are characterized by rapid change and new situations, whereas structured situations are stable and secure. Persons from high UA cultures are less comfortable with ambiguous situations and are more likely to seek stable rules and procedures. Persons from low UA cultures are likely to adapt to quickly changing situations and will be less uncomfortable when the rules of the negotiation are ambiguous or shifting.¹</td>
</tr>
</tbody>
</table>

When talking with contacts from other countries, Galp’s collaborators should understand and take into consideration the potential differences in culture and values and adapt their approach accordingly. To help them do that the team compiled the Hofstede’s model results for China, the country with the highest potential according to the scoring model.

Source: ¹Lewicki, Saunders & Barry, 2011; Neves, Pedro, 2014
AGENDA

4 Project Methodology (PM)
The project was divided into 4 steps that together seek to answer which markets are more attractive to Galp and the best way to enter them.

**Project methodology (1/3)**

1. **Market Assessment**
   - Online websites
   - Training sessions
   - Consulting tools (pyramid principle and 80/20 rule)

2. **Scoring Model**
   - In order to prioritize which markets are more attractive to Galp's lubricants, the group developed a Scoring Model
   - Followed previous CL Thesis Model approach advised by Professor Luís Almeida e Costa and Luís Lopes
   - Top-down approach

3. **Entry Strategy**
   - Dunning Eclectic Paradigm – OLI
   - Value Chain analysis
   - Internationalization entry models framework
   - Uppsala Model
   - Hofstede Model

**Contacts**

- Institutions contacts like embassies and AICEP
- Online companies and fairs' websites
- Personal network

Source: Gomes, Emanuel et al, 2014
A market assessment of Asian and African countries was performed and complemented with a scoring model that improved the evaluation

**PROJECT METHODOLOGY (2/3)**

### 1. Market Assessment

- **Identification of the market potential in 2 areas:**
  - **Asia:** China (main focus of project), Taiwan, Indonesia and Thailand
  - **Africa:** Zambia, Republic of Congo, DR Congo, Namibia and Mozambique
- **Criteria:** China - asked by the client; Indonesia and Thailand - the countries with highest score in the previous CL thesis; Taiwan - Galp already has a distributor there; Angola neighbouring countries and Mozambique - requested later by the client

- **Macro analysis:**
  - **Country overview based on the following metrics:** GDP, inflation, currency volatility, population, imports as % of GDP, FDI stock as % of GDP, easiness of doing business ranking

- **Micro analysis:**
  - **Demand:** size, growth, segments (focus on automotive and industry segment which represent the majority of the market), proxies for demand (vehicle fleet, industry as % GDP), exports
  - **Supply:** size, growth, capacity, players, distribution channels and exports
  - **Viability:** cost structure, price comparison to analyse possible margins and competitiveness

### 2. Scoring Model

- In order to assess the potential of the countries they were evaluated according to 3 criteria, each of them with specific metrics:
  - **Country Overview:** GDP growth, inflation, currency volatility, imports contribution to GDP and ease of doing business ranking
  - **Market Potential:** lubricant consumption, lubricant imports and growth, vehicle per capita and growth, industry contribution to GDP
  - **Dynamics of Rivalry:** market competitiveness (number of players and market concentration index: C2)

- **Weight selection criteria:**
  - Order of importance

- **Metrics score:**
  - Each metric was given a score from 1 to 5 (1: lowest potential; 5: highest potential)
  - Each country’s score was reached by calculating the weight of each individual metrics’ score
### Project Methodology (3/3)

#### Entry Strategy

- **Analysis of Galp value chain:**
  - Identify in which part of the value chain would be ideal for Galp to have a partner
  - **Those include:** production, distribution and retailing
- **Identify which strategies are suitable for Galp:**
  - **Those include:** joint venture, new entity, acquisition, direct sales and licensing
  - **Identify advantages and disadvantages** of entry modes
  - Entry strategies that solve Galp’s spare capacity problem are favored as well as low initial investment ones (licensing)
- **Define the entry model parameters:**
  - Each entry strategy was evaluated according to 8 **comparable parameters:** spare capacity usage, margin capture, investment needed, easiness to find partnerships, independence from third party, market know-how of partner, control over activities, brand dependence
  - To each parameter a **score from 1 to 5** was given (1: lowest potential; 5: highest potential)
  - The strategies with the **highest score** are the most promising for Galp

#### Contacts

- **In order to find partners for the Asian market the group contacted several entities:**
  - **Prof. Qinglei Dai:** provided contacts with possible partners in the Chinese market
    - Conducted a conference call with **Mr. Ye Cong** on 17th October who showed interest in the base oil market
    - Due to this interest the group performed a **brief base oil market** analysis for: China, Taiwan, Thailand
  - **Dawn Chan:** Chinese Nova SBE student who joined the project to overcome language barriers
    - Provided several documents and information translations
    - Conducted a Conference Call with the Galp’s Taiwanese Distributor
  - **Chinese Embassy & Portuguese Embassy in Thailand:** Contacted for information on tariffs
  - **AICEP/Chamber of Commerce:** contacted for information on tariffs
  - **Lubricant Industry Companies:** contacted but without response so far
  - **Other contacts:** University of Shanghai students
Data Analysis (DA)

5.1 Scoring Model

5.2 Market Assessment - Country profile, Demand & Supply and Cost Breakdown

A China
B Thailand
C Indonesia
D Taiwan
E Zambia
F Congo
G DR Congo
H Namibia
I Mozambique

5.3 Profit & Loss Analysis - Export to China

5.4 Entry Mode
China is the most attractive country for Galp to export lubricants, followed by Thailand and Indonesia

**Scoring Model**

The results of the scoring model of the new markets in Asia are presented below, as well as the Asian countries data analysis in the following slides. This scores resulted from a weighted average of eleven metrics that represent the main drivers of success in a new lubricant market.

1º China 3.84

2º Thailand 3.81

3º Indonesia 3.42

4º Taiwan 3.26

Scale: 1: lowest potential; 5: highest potential

See Appendix 1.1 & 3.1
AGENDA

Data Analysis

5.1 Scoring Model

5.2 Market Assessment - Country profile, Demand & Supply and Cost Breakdown

- China
- Thailand
- Indonesia
- Taiwan
- Zambia
- Congo
- DR Congo
- Namibia
- Mozambique

5.3 Profit & Loss Analysis - Export to China

5.4 Entry Mode
THE LUBRICANT CHINESE MARKET MAY REPRESENT AN OPPORTUNITY, HOWEVER SOME CHALLENGES HAVE TO BE TAKEN INTO ACCOUNT

MAIN CONCLUSIONS

OPPORTUNITIES

• Just 0.43% of the Chinese demand in 2012 would allow Galp to produce at full capacity

• Just 1.96% of the Chinese imports in 2012 would allow Galp to produce at full capacity

• Coastal region has the highest lube consumption

• Industrial lubricants tend not to need brand to enter the market

• Galp’s portfolio is certified by some of the major OEMs

• Independent distributors are easier to target

• It might be financially viable to sell in China since there is enough margin for the distributor

CHALLENGES

• High market concentration (C3=56.3%) and high competition

• Car fleet is recent and requires lubricants with most recent API: SN

• Automotive lubricants tend to need brand to enter the market

• There is no obvious trend in the type of industrial lubricant consumed

• 75% of 4S services are lubricant related, however these stores have high bargain power

• Galp uses 5L packages which can be a problem since in China 4L packages are used

• In China, products focus on viscosity and API however not all Galp’s products are API certified (e.g. Galp Formula R; 5W30)

• In China, 0W-40 and 10W-40 SN lubricants are sold by major players, however Galp does not have them on its Portfolio
Chinese consumption is expected to grow 5.5% yearly until 2016. Industry and auto represent 93.0% of the lube consumption in 2011.

**Market Demand**

**Global vs. China Lubricant Consumption**

![Graph showing global and Chinese lubricant consumption from 2008 to 2016.](image)

- **Forecast**: 38.9 million tons (CAGR 2012-2016 +2.7%)
- **2012**: Global 36.0 million tons, Chinese 10.5 million tons
- **2016**: Global 38.9 million tons, Chinese 13.8 million tons

**China Lubricant Consumption by Segment**

![Pie chart showing lubricant consumption by segment in 2011.](image)

- **Industry**: 51.8%
- **Automotive**: 41.2%
- **Ships**: 5.9%
- **Others**: 1.1%

In 2012, just **0.43%** of the Chinese consumption would allow Galp to produce at full capacity.

**Main Industrial Applications**

- Metallurgy, Mining, Construction, Marine & manufacturing
Motorcycles are expected to lose importance in China’s auto fleet while cars are gaining relevance.

Automotive Segment Analysis - Overview

Automotive Market by Type of Vehicle\(^1\)

[2012; %] 100% = 348,726 Thousand Units

- Motorcycle 68.9%
- Cars 25.6%
- Trucks 5.4%

Main Segment Challenges\(^2\)

- The truck segment is dominated by Chinese brands
- Decrease of moto’s growth due to:
  - Government restrictions on motorcycle circulation
  - GDP per capita increase and purchasing power increase

Car sales in China are expected to continue to grow and the car fleet is mostly composed by recent vehicles.

Automotive Segment Analysis - Cars

Light Vehicle Sales\(^1\)
[2005-2020; Million Units]

Main Challenges

- The seven major car brands hold 56% of the market and are supplied by the main lube producers in China such as Shell, BP and Great Wall.
- Foreign lubricant brands hold 30% of the high-end car segment.
- Galp will face fierce competition from major brands.
- Players tend to need brand awareness to enter the Car segment.
- New cars need latest lube technology.
- Necessary a diverse portfolio with most recent API: SN.
- Galp has an opportunity since its portfolio is certified by some of the major OEM - VW (15.1%), GM (14.5%), and Renault (4.8%).

70% of passenger cars were aged less than 5 years in 2012\(^2\).

**AUTOMOTIVE SEGMENT ANALYSIS - CARS**

<table>
<thead>
<tr>
<th></th>
<th>OES NETWORK&lt;sup&gt;1&lt;/sup&gt;</th>
<th>IAM NETWORK&lt;sup&gt;1&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Major channel for new car sales</td>
<td>Limited service and repair options</td>
</tr>
<tr>
<td><strong>Current presence in private car repair market</strong></td>
<td>70%</td>
<td>20%</td>
</tr>
</tbody>
</table>

### OES NETWORK<sup>1</sup>

- **4S stores** (Sales, Spare Parts, Service, Survey)
- **OE authorized repair shop**

**Description**: Major channel for new car sales

**Current presence in private car repair market**: 70%

**Source**: L.E.K., 2012

---

### IAM NETWORK<sup>1</sup>

- **General and specialist independent repair shop**
- **Chained repair shop**

**Description**: Limited service and repair options

**Emerging channel that includes mainly international suppliers**

**Current presence in private car repair market**: 20% (of 4S services demanded were lubricant services)

**Independent distributors are easier to target, however 4S are the most preferred channel**
Although the motorcycle market is big and might represent an opportunity, challenges seem to be higher than opportunities.

## Automotive Segment Analysis - Motorcycles

<table>
<thead>
<tr>
<th><strong>Opportunities</strong></th>
<th><strong>Challenges</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Sub-urban and rural areas³</td>
<td>• Motorcycle sales are decreasing by 0.9% per year since 2008¹</td>
</tr>
<tr>
<td>- Potential markets for motorcycles</td>
<td>• Motorcycles were recently forbidden²:</td>
</tr>
<tr>
<td>• Higher demand for lubes concerning motorcycles with low cylinder capacity &lt;150cc¹</td>
<td>- Tier 1 cities (Beijing, Shanghai, Guangzhou)</td>
</tr>
<tr>
<td></td>
<td>- Most highways</td>
</tr>
</tbody>
</table>

### Opportunities

- Sub-urban and rural areas³
  - Potential markets for motorcycles
- Higher demand for lubes concerning motorcycles with low cylinder capacity <150cc¹

### Challenges

- Motorcycle sales are decreasing by 0.9% per year since 2008¹
- Motorcycles were recently forbidden²:
  - Tier 1 cities (Beijing, Shanghai, Guangzhou)
  - Most highways
- Chinese producers and brands dominate the market³
- Too many motorcycle falsifications³
- Trend³:
  - Electric motorcycle will surpass gas motorcycle
  - In 2009, electric motorcycle represented 49% of motos’ demand while gas motorcycle accounted for 51%

Source: ¹Statistics, China Annual Motorcycle Sales, 2014; ²Driver license, 2014; ³Business Week – Bloomberg Week, 2006
INDUSTRIAL LUBES REPRESENTED 51.2% OF THE CONSUMPTION AND IS DOMINATED BY THE MAJOR FOREIGN BRANDS AND THE TWO MAIN CHINESE PLAYERS

INDUSTRY SEGMENT ANALYSIS

MAIN INDUSTRIES IN CHINA BY REVENUE¹

[2010; %]

- Construction: 36%
- Others: 21%
- Cement: 8%
- Marine: 8%
- Mining: 10%
- Metallurgy: 17%

INDUSTRY SEGMENT PLAYERS MARKET SHARES²

[2010; %]

100% = 5.1 MILLION TONS

- Foreign Brands: 33%
  - Sinopec, PetroChina & Hundreds of non-integrated companies 67%

MARKET VALUE OF INDUSTRIAL LUBRICANTS

- In 2010: more than 50 billion USD

There is no obvious trend in the type of industrial lubricant consumed

MAJOR PLAYERS CHARACTERISTICS

- Large and vertically integrated
- Energy companies

Opportunity: industrial lubricants tend not to need brand to enter the market

Source: ¹Gibb, Barry, 2013; ²GCiS, 2014
Production is expected to grow 3.5% until 2016, however competition is intensive since the top 10 suppliers represent 70% of the supply.

**Market Supply**

**China lubricant production**

[2008-2015E; million tons]

<table>
<thead>
<tr>
<th>Year</th>
<th>2008</th>
<th>2010</th>
<th>2012</th>
<th>2014</th>
<th>2015</th>
<th>CAGR 2012-2015E +3.5%</th>
<th>FORECAST</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6.4</td>
<td>7.7</td>
<td>8.5</td>
<td>9.3</td>
<td>9.7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Lubricant players market shares**

[2011; %]

- CNPC: 25.5%
- Shell: 18.9%
- Mobil: 11.9%
- Castrol: 7%
- Total: 6%
- ELF: 0.7%
- Fuchs: 0.6%
- SK: 0.1%
- Others: 28.9%

- The two major players dominate the OEM market
- Joint ventures:
  - National companies: R&D and retail purposes
  - Foreign companies: easier to enter the market

It's difficult for a newcomer to get into the market

High market concentration: C3 = 56.3%
High competition: 4000 lube producers

Foreign brands have 75% share of the high-end segment which accounts for 80% of the total Chinese lubricant market profit

Market Supply

Lubricant segment distribution by profit\(^1\) [2011]

- **High-end**
  - Foreign brands hold 75% of segment share, due to competitive advantages such as:
    - Consumers’ belief that products are trustworthy and genuine

- **Mid-to-high-end**
  - Kunlun, Great Wall, Shell-Tongyi have 90% share in the segment

- **Low-end**
  - Extremely competitive, main decision factor is price

Source: \(^1\)Report Linker, 2014
Imports have remained steady, representing 21.7% of total consumption, however domestic production capacity and output have increased.

**Market Demand & Supply**

**China Lubricant Consumption Bridge**

[2012; million tons; %]

- **Imports**: 8.5 (80.2%)
- **Exports**: 0.2 (1.9%)
- **Consumption**: 10.5 (100.0%)

In 2012, 1.96% of the Chinese imports would allow Galp to produce at full capacity.

**China Lubricant Imports by Source**

[2011; %]

- **Others**: 31.8%
- **Singapore**: 28.0%
- **Hong Kong**: 14.1%
- **U.S.A.**: 9.6%
- **South Korea**: 9.2%
- **Japan**: 7.3%

Source: ICIS, 2013; CNKI, 2012
To export to China it is important to consider taxes and tariffs applied as well as licenses approvals needed.

### Viability Analysis - Applicable Licenses & Taxes

<table>
<thead>
<tr>
<th>Licenses&lt;sup&gt;1&lt;/sup&gt;</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Export License</strong></td>
<td></td>
</tr>
<tr>
<td>• Issued By: Quota &amp; license Administrative Bureau of Ministry of Commerce or its authorized institution</td>
<td></td>
</tr>
<tr>
<td><strong>Commodity Inspection &amp; Quarantine Certificate for Import</strong></td>
<td></td>
</tr>
<tr>
<td>• Issued By: General Administration of Quality Supervision, Inspection and Quarantine</td>
<td></td>
</tr>
<tr>
<td><strong>Commodity Inspection &amp; Quarantine Certificate for Export</strong></td>
<td></td>
</tr>
<tr>
<td>• Issued By: General Administration of Quality Supervision, Inspection and Quarantine</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Taxes&lt;sup&gt;1&lt;/sup&gt;</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Statutory Duty</strong></td>
<td></td>
</tr>
<tr>
<td>• Since Portugal is considered a MFN&lt;sup&gt;*&lt;/sup&gt; the Duty is 6%</td>
<td></td>
</tr>
<tr>
<td><strong>Import consuming tax</strong>: 1¥/L</td>
<td></td>
</tr>
<tr>
<td><strong>Value-added tax (VAT)</strong></td>
<td></td>
</tr>
<tr>
<td>• Lubricant VAT: 17%</td>
<td></td>
</tr>
</tbody>
</table>

<sup>*</sup>MFN - Most Favored Nation

Source: <sup>*</sup>China Trade Data, 2013

CONSULTING LABS | ASSISTING GALP IN DEFINING A SUCCESSFUL INTERNATIONALIZATION STRATEGY FOR LUBRICANTS | Fall 2014 | 35
The analysis shows that it might be viable to sell automotive lubricants in China as there is enough margin for the distributor.

**Viability Analysis - Automotive**

**Cost Breakdown and Comparison with Competitors**

[Values in € per liter]

- **Production Cost**: 1.71
- **Galp Export's Margin**: 0.51 (19.7%)
- **International Sales Price**: 2.22 (86.1%)
- **Transportation Costs**: 0.08 (3.3%)
- **Insurance**: 0.01 (0.2%)
- **Duty Rate**: 0.27 (10.4%)
- **After Duty Price**: 2.57 (100.0%)
- **Price China**: 8.22
- **Avg Price**: 6.44
- **Min Price**: 4.63

The team compared the estimated **price at which Galp would be able to sell** to a distributor located in each country with the **prices of products on each country** with the same viscosity, API certification and capacity.

**Competitors**

1. CNPC (Kunlun)
2. Sinopec (Great Wall)
3. Shell
4. Castrol
5. Mobil

**Viscosity**

1. 5W-40
2. 10W-40
3. 15W-40
4. 5W-30

Source: ¹Galp Exports Division Internal Documents, 2014; Jing Dong store, 2014
TO EXPORT TO CHINA IT IS IMPORTANT TO CONSIDER THE CHALLENGES IN TERMS OF BOTTLING, PORTFOLIO AND CERTIFICATIONS THAT MIGHT ARISE

VIABILITY ANALYSIS - AUTOMOTIVE

MAIN CHALLENGES

**Bottling**

The two small package sizes in China:
- 1L and 4L
Galp sells in two small packages:
- 1L and 5L

Problem?
- New packaging development
- Acceptance of customers

**Portfolio**

Major players in China have:
- 0W-40 lubricants
- 10W-40 SN Lubricants

Problem?
- Competition in high end
- Less market coverage

**Certification**

In China products have:
- API certification

Problem?
- Galp does not have an API recommendation in all products
- Can reduce potential portfolio
The analysis shows that although it might be viable to sell industrial lubricants in China, the margin for the distributor would be very low.

**Viability Analysis - Industry**

**Cost Breakdown and Comparison with Competitors**

[Values in € per liter]

<table>
<thead>
<tr>
<th>Component</th>
<th>Max Price</th>
<th>Min Price</th>
<th>Production Cost</th>
<th>Galp Export's Margin</th>
<th>International Sales Price</th>
<th>Transportation Cost</th>
<th>Insurance</th>
<th>Duty Rate</th>
<th>After Duty Price</th>
<th>Price China</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shell</td>
<td>2.25</td>
<td>2.11</td>
<td>1.01</td>
<td>0.30</td>
<td>1.31</td>
<td>0.09</td>
<td>0.00</td>
<td>0.21</td>
<td>1.62</td>
<td>+0.50</td>
</tr>
<tr>
<td>Zic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: 1 Galp Exports Division Internal Documents, 2014; Gibb, Barry, 2013
Thailand’s lubricant market might represent an opportunity to export also for other Asiatic markets, however there is fierce competition.

Main Conclusions

Opportunities

- 12.1% of Thailand’s demand allows Galp to produce at full capacity
- In 2015, Thailand will become a member of ASEAN Economic Community
- Thailand exports for neighbour countries
- Imports represent 46.5% of internal consumption
- The Automotive sector contributes 12% of Thailand’s GDP
- Viscosity certification API: SJ and SL certified lubricants and lubricants for diesel engine dominate the market
- Business Fairs: Oil & Gas Thailand (OGET) and Petrochemical Asia (September)

Challenges

- Political instability: currency volatility
- Seasonality: engine lubricant replacement season in April; seasonal preparation of machinery for agricultural sector
- Fierce competition in high segment: foreign brands are less likely to be competitive with locally manufactured products in other segments
- Galp’s OEM represent a small slice of the automotive market share
- Thailand wants to become an hub of global green automotive production
- Base oils provided only by 2 state-owned companies
THAILAND exports a significant part of the lubricant production. The consumption was 372.1 thousand tons in 2013 but it is expected to fall.

**Market Demand & Supply**

**Thailand Lubricant Consumption**

[2011-2013; Thousand Tons]

<table>
<thead>
<tr>
<th>Year</th>
<th>Consumption (Thousand Tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>335.9</td>
</tr>
<tr>
<td>2012</td>
<td>374.3</td>
</tr>
<tr>
<td>2013</td>
<td>372.1</td>
</tr>
</tbody>
</table>

*CAGR 2011-2013: 5.2%*

**Thailand Lubricant Production**

[2007-2014E; Thousand Tons]

<table>
<thead>
<tr>
<th>Year</th>
<th>Production (Thousand Tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>441.0</td>
</tr>
<tr>
<td>2012</td>
<td>501.0</td>
</tr>
<tr>
<td>2014E</td>
<td>534.0</td>
</tr>
</tbody>
</table>

*CAGR 2007-2014E: 2.8%*

**Lubricant Players Market Shares**

[2013; %] 100% = 372.1 Thousand Tons

- **PTT** (38.7%)
- **Shell** (9.0%)
- **Mobil** (10.4%)
- **Bangchak** (12.0%)
- **Others** (22.8%)

**Trends:**

- The lubricant market is estimated to have **fallen 15-20%** during the **first half of 2014**
- The **automotive segment** accounts for **60%** of the lubricant consumption
- There are **>170 brands** being mostly **imported** by small firms targeting the **premium automotive** segment

The analysis shows that not all the products are competitive.

Viability Analysis - Automotive

Cost Breakdown and Comparison with Competitors[^1]

[Values in € per liter]

<table>
<thead>
<tr>
<th>Component</th>
<th>TH Cost Breakdown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Price</td>
<td>10.98</td>
</tr>
<tr>
<td>Avg Price</td>
<td>4.69</td>
</tr>
<tr>
<td>Min Price</td>
<td>2.26</td>
</tr>
</tbody>
</table>

Competitors

1. PTT

Viscosity

1. 5W-30
2. 10W-40
3. 15W-40
4. 20W-50

Source: ^Galp Exports Division Internal Documents, 2014; PTT Website, 2014

[^1]: See Appendix 1.2 & 2 - TH
**MAIN CONCLUSIONS**

**OPPORTUNITIES**

- 7.0% of the Indonesian demand allows Galp to produce at full capacity
- *Imports* represent 20% of the national consumption (180,000 tons) and tend to *increase* due to diminishing local base oil resources
- Since the *market liberalization*, in 2001, the dominant state-owned lubricant company lost 25% *market share*
- Indonesia *exports* mainly to mainland China and Thailand
- *Increasing demand of automobile* lubricant due to the rapid growth in the number of vehicles

**CHALLENGES**

- 28.1% of the *Indonesian imports* in 2012 allows Galp to produce at full capacity
- *High market concentration* (C2=72.0%)
- *High competition*: 250+ brands with 1000+ API certified lubricants
- *Automotive segment* only represents 40% of the lube consumption
- *Industry demand* tends to *decrease* around 2%-3%
- It might *not* be financially viable to sell in Indonesia since there is not enough margin for the distributor

---

**CONSULTING LABS | ASSISTING GALP IN DEFINING A SUCCESSFUL INTERNATIONALIZATION STRATEGY FOR LUBRICANTS | FALL 2014 | 42**
Indonesian lubricant market is stagnated and Galp excess capacity represents 7.0% of consumption. The biggest player is state-owned.

**Market Demand & Supply**

**Indonesia Lubricant Consumption and Production**

[2009-2012; Thousand Tons]

- **2009**: Consumption 640.0, Production 608.2
- **2010**: Consumption 520.0, Production 405.4
- **2011**: Consumption 576.0, Production 613.0
- **2012**: Consumption 640.0, Production 597.6

CAGR 2009-2012: 0.0%

- **7.0%** of the Indonesian consumption in 2012 would allow Galp to **produce at full capacity**

**Lubricant Players Market Shares**

[2008; %] 100% = 567.2 Thousand Tons

- **Pertamina Lubricants**: 57.0%
- **Shell**: 15.0%
- **Top**: 11.0%
- **Castrol**: 10.0%
- **Motul**: 3.0%
- **Agi**: 2.0%
- **Others**: 1.0%

**High market concentration**: C2= 72%
**High competition**: 250+ brands with 1000+ lubricant products API certified

Source: ¹Otomotife, 2013; Berita Satu, 2012; Honda Community, 2011; Migas, 2013; ²Universitas Indonesia, 2010
The analysis shows that to be competitive in Indonesia, Galp would not be able to sell at lower prices.

Viability analysis - automotive

Cost breakdown and comparison with competitors

VALUES IN € PER LITER

Competitors
1. Pertamina
2. Shell
3. Motul
4. STP
5. HWI
6. Lucas Oil

Viscosity
1. 5W-40
2. 10W-40
3. 15W-40
4. 15W-50
5. 20W-50

Source: 1Galp Exports Division Internal Documents, 2014; Pertamina Website, 2014; Lazada Website, 2014; Bukalapak Website, 2014
The major opportunity in Taiwan is Galp’s already established partner, although challenges seem to be higher than opportunities.

**Main Conclusions**

### Opportunities

- **Established Taiwanese partner** who might be interested in exploring partnership
- The **automotive segment** is responsible for **64% of the consumption** of lubricants
- Galp’s lubricants are certified by the most sold vehicle brands in Taiwan such as Mercedes, Volvo, BMW and VW
- Taiwan **exports** mainly to **mainland China** and **neighbouring countries**
- **Growing** use of **synthetic** passenger car motor **oil**
- There is **some margin** for the distributor, however the financial viability included **only motorcycle lubricants**

### Challenges

- Lubricant consumption has been **decreasing 5.4% annually since 2008** and it is expected to **continue to decrease**
- **16.9% of the Taiwanese demand** allows Galp to produce at **full capacity**
- **29.4% of the Taiwanese imports** allows Galp to produce at **full capacity**
- Lubricant imports decreased **0.3% since 2008** and **exports have decreased 6.6%** in the same period
- Lubricant market is expected to have a **slight volume decrease**
- **High-tech** industries are growing and are **less oil consuming**
- There are more than **200 brands of lubricants**
- **High** entry barriers: market is **small** and existing players are **well established**
The Taiwanese lubricant market was valued at $1 Billion in 2011, however the competition is intense and growth perspectives are low.

**Market Demand & Supply**

**Taiwan Lubricant Consumption and Production**

<table>
<thead>
<tr>
<th>Year</th>
<th>Consumption (THOUSAND TONS)</th>
<th>Production (THOUSAND TONS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>351.1</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>279.8</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>301.9</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>270.1</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>279.6</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>266.4</td>
<td></td>
</tr>
</tbody>
</table>

CAGR 2008-2013 -5.4%

**Lubricant Players Market Shares by Volume**

<table>
<thead>
<tr>
<th>Player</th>
<th>Market Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNP &amp; Formosa</td>
<td>35.0%</td>
</tr>
<tr>
<td>Mobil</td>
<td>25.0%</td>
</tr>
<tr>
<td>Castrol</td>
<td>40.0%</td>
</tr>
<tr>
<td>NOP</td>
<td>100% = 270.1 THOUSAND TONS</td>
</tr>
</tbody>
</table>

**Local Blenders**

- Mainly present in the *industry segment* and *mainstream-to-lower* tier products

**High Entry Barriers**

- The market is *small* and *growth prospects are low*
- Existing players are *well established*
- Fierce competition: C2= 35%; >200 lubricant brands

Source: ¹Bureau of Energy (Taiwan) - Ministry of Economic Affairs; ²New Lube Report, 2011
THE ANALYSIS SHOWS THAT IT MIGHT BE VIABLE TO SELL IN TAIWAN SINCE THERE IS SOME MARGIN FOR THE DISTRIBUTOR

VIABILITY ANALYSIS - AUTOMOTIVE

COST BREAKDOWN AND COMPARISON WITH COMPETITORS

[VALUES IN € PER LITER]

COMPETITORS

1. Yamaha

VISCOITY

1. 10W-40
2. 20W-50

Source: Galp Exports Division Internal Documents, 2014; Pchome Online, 2014
ZAMBIA IS THE MOST ATTRACTION COUNTRY FOR GALP TO EXPORT LUBRICANTS, FOLLOWED BY CONGO AND DR CONGO

**SCORING MODEL**

The *results of the scoring model* of the new markets in Africa are presented below, as well as the African countries data analysis in the following slides. This scores resulted from a weighted average of eleven metrics that represent the main drivers of success in a new lubricant market.

![Map of Africa with countries highlighted]

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1º</td>
<td>Zambia</td>
<td>2.85</td>
</tr>
<tr>
<td>2º</td>
<td>Congo</td>
<td>2.57</td>
</tr>
<tr>
<td>3º</td>
<td>DR Congo</td>
<td>2.50</td>
</tr>
<tr>
<td>4º</td>
<td>Namibia</td>
<td>2.36</td>
</tr>
</tbody>
</table>

Scale: 1: lowest potential; 5: highest potential

See Appendix 1.1 & 3.2
90% of Zambia Petroleum Products are imported and it is a very dynamic market in terms of players, but some challenges should be addressed.

**Main Conclusions**

**Opportunities**
- **Lubricant Demand** has been increasing at 2.4% since 2009
- One refinery and one blending plant: 90% of petroleum products are imported
- Lubricant imports increased 32.6% annually from 2009 to 2013
- **Very dynamic market**; many big acquisitions in the last years
- Main industry is **mining** which is one of the most lubricant consuming industries in the world

**Challenges**
- In 2013, consumption represented 56.9% of Galp’s excess capacity
- **High market concentration** (C2=65.8%)
- The market is plagued with thousand of unlicensed operators selling imported lubricants
- **TOTAL** has supply agreements with most mines may be a barrier to entry in the industry lubricant segment
- **Government controls** the licensing of petroleum products’ imports
- Retail consumers are predominantly concerned with prices
**Market Demand & Supply**

**Zambia Lubricant Consumption**

[2009-2013; Thousand Tons]

<table>
<thead>
<tr>
<th>Year</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>23.3</td>
</tr>
<tr>
<td>2010</td>
<td>28.6</td>
</tr>
<tr>
<td>2011</td>
<td>29.5</td>
</tr>
<tr>
<td>2013</td>
<td>25.6</td>
</tr>
</tbody>
</table>

**CAGR 2009-2013**  
2.4%

**Industry Players Market Shares**

[2013; %] 100% = 25.6 Thousand Tons

- Puma Energy: 39.7%
- Spectra Oil Zambia: 26.1%
- Total: 12.9%
- Engen Petroleum: 7.2%
- Dana Oil: 6.3%
- Fuchs Zambia: 5.4%
- Kobil: 1.5%
- Others: 0.9%

**High market concentration**: C2= 65.8%

Only 1 Blending Plant in the market

**30% of retail and small commercial consumers’ demand is met by illegal traders**

Exporting to Zambia through Angola instead of Portugal increases the selling price 3.14 times, which makes Galp lose competitiveness.

**Selling to Zambia Directly from Portugal**

*Cost breakdown of the 5 most sold products in Angola*¹ [values in € per liter]

<table>
<thead>
<tr>
<th>Cost Breakdown</th>
<th>Values in € per Liter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production Cost</td>
<td>1.07</td>
</tr>
<tr>
<td>Galp International Margin’s</td>
<td>0.28 (4.0%)</td>
</tr>
<tr>
<td>International Sales Price</td>
<td>1.35 (19.4%)</td>
</tr>
<tr>
<td>Transportation Cost</td>
<td>0.41 (6.0%)</td>
</tr>
<tr>
<td>Insurance</td>
<td>0.00 (0.1%)</td>
</tr>
<tr>
<td>Duty Rate</td>
<td>0.44 (6.4%)</td>
</tr>
<tr>
<td>After Duty Price Selling Via Portugal</td>
<td>2.20 (31.8%)</td>
</tr>
<tr>
<td>After Duty Price Selling Via Angola</td>
<td>6.92 (100.0%)</td>
</tr>
</tbody>
</table>

ZM Cost Breakdown

1. Source: Galp Exports Division Internal Documents, 2014

See Appendix 1.2 & 2 - ZM
Congo lubricant demand and imports have increased at high rates, however the market is small and dominated by a small number of players.

**Main Conclusions**

**Opportunities**
- Lubricant demand increased 8.4% since 2010
- Industry represents 64.6% of the GDP in 2013
- Imports represent a large share of consumption
- Lubricant supply increased by 3.4% since 2009
- Congo is one of the 5 main oil producers in Sub Saharan Africa
- E&P of oil is done through production joint ventures between the national entities and players
- Imports of Lubricant have increased 42% since 2009

**Challenges**
- Congo consumption in 2013 represents 30.7% of Galp’s excess
- There is 1 vehicle per 498 people in Congo
- Total and Eni are the two main oil producers holding 75% of the oil production
- Commercialization of oil products is concentrated in 3 groups: 1) Total/Fina/Elf; 2) Chevron/Texaco; 3) Puma Energy/X-Oil (PEX)
- SCLOG is responsible for the storage and transport of oil products in Congo
  - Held by Total, Chevron-Texaco, Puma Energy/X-Oil (PEX) and SNPC
- France and Italy are the biggest source of Congo lubricant imports

See Appendix 2 - CG
LUBRICANTS’ CONSUMPTION WAS 13.8 THOUSAND TONS IN 2013 AND A SIGNIFICANT PART WAS IMPORTED. INDUSTRIAL LUBRICANTS APPEAR TO BE THE MAIN SEGMENT

MARKET DEMAND & SUPPLY

CONGO LUBRICANT DEMAND & SUPPLY¹
[2010-2013; THOUSAND TONS]

<table>
<thead>
<tr>
<th>Year</th>
<th>Consumption</th>
<th>Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>10.8</td>
<td>2.2</td>
</tr>
<tr>
<td>2011</td>
<td>13.9</td>
<td>2.3</td>
</tr>
<tr>
<td>2012</td>
<td>12.7</td>
<td>2.4</td>
</tr>
<tr>
<td>2013</td>
<td>13.8</td>
<td>2.5</td>
</tr>
</tbody>
</table>

CAGR 2009-2013
- Consumption: 8.4%
- Production: 3.4%

MAJOR PLAYERS²
- Congo has only 1 refinery and 1 blending plant in Pointe Noire which is held by the state-owned company CORAF
- Commercialization of oil products are held by:
  - Total/Fina/Elf
  - Chevron/Texaco
  - Puma Energy/X-Oil (PEX)

- Industry represented 64.6% of the GDP in 2013³
- Several projects in the mining sector and to develop national infrastructures are being conducted which might boost lubricant consumption⁴

EXPERIMENTING TO CONGO THROUGH ANGOLA INSTEAD OF PORTUGAL INCREASES THE SELLING PRICE 3.07 TIMES, WHICH MAKES GALP LOSE COMPETITIVENESS

SELLING TO CONGO DIRECTLY FROM PORTUGAL

COST BREAKDOWN OF THE 5 MOST SOLD PRODUCTS IN ANGOLA¹

VALUES IN € PER LITER

---

Production Cost: 1,07
Galp International Margin's: 0,28
International Sales Price: 1,35
Transportation Cost: 0,16
Insurance: 0,00
Duty Rate: 0,15
After Duty Price Selling Via Portugal: 1,66
After Duty Price Selling Via Angola: 5,09

---

Source: ¹Galp Exports Division Internal Documents, 2014;
See Appendix 1.2 & 2 - CG
DR Congo petroleum products are 100% imported, however its prices are controlled by the government.

Main Conclusions

Opportunities

- Lubricant demand has been increasing at 3.8% since 2009
- In 2013, consumption represented 11.9% of Galp excess capacity
- No refineries or blending plants: 100% of petroleum products are imported
- Lubricant imports increased 121.1% annually from 2009 to 2013
- DR Congo imports mainly from Tanzania, Belgium and South Africa
- The main industry is mining which is one of the most lubricant consuming industries in the world

Challenges

- DR Congo scores poorly in the ease of doing business: regulatory environment is not conducive to start an operation
- Automotive segment appears to have small share of the lubricant consumption (average of 1 vehicle per 137 persons)
- Government controls the petroleum products’ prices

See Appendix 2 - CD
Lubricant consumption is expected to reach 6.0 thousand tons in 2020. Government has a tight control over the Petroleum Industry.

**Market Demand & Supply**

**DR Congo Lubricant Consumption**

[2009-2020E; Thousand Tons]

<table>
<thead>
<tr>
<th>Year</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>4.0</td>
</tr>
<tr>
<td>2011</td>
<td>4.0</td>
</tr>
<tr>
<td>2013</td>
<td>5.0</td>
</tr>
<tr>
<td>2015E</td>
<td>5.0</td>
</tr>
<tr>
<td>2020E</td>
<td>6.0</td>
</tr>
</tbody>
</table>

**CAGR 2009-2020E**

3.8%

**Forecast**

**Distribution and Retailing of Lubricants**

- Solely carried out by the companies in the Groupement Professionnel des Distributeurs des Produits Pétroliers (GPDPP): TOTAL, ENGEG, Cobil, FINALog, SOFICO

**Government Role**

- **Controls** the petroleum products’ prices
- **Give approval** to the companies that want to operate in the petroleum sector

There are no blending plants in the country so all lubricants are imported.

Source: ¹ICF International – Sub Saharan Refinery Project, 2009; ²Encyclopedia, 2014
Exporting to DR Congo through Angola instead of Portugal increases the selling price 2.66 times, which makes Galp lose competitiveness.

Selling to DR Congo directly from Portugal

Cost breakdown of the 5 most sold products in Angola

(values in € per liter)

- Production Cost: 1.07
- Galp International Margin’s: 0.28
- International Sales Price: 1.35
- Transportation Cost: 0.51
- Insurance: 0.00
- Duty Rate: 0.19
- After Duty Price Selling Via Portugal: 2.05
- After Duty Price Selling via Angola: 5.43

166% increase

Source: Galp Exports Division Internal Documents, 2014;
LUBRICANT DEMAND IS EXPECTED TO GROW 4%, HOWEVER THE COMMERCIALIZATION OF LUBRICANTS IS CONCENTRATED AROUND THE TOP PLAYERS

MAIN CONCLUSIONS

OPPORTUNITIES

- **Lubricant demand** was forecasted to grow at 4.0% yearly until 2020
- **Consumption of lubricants** is mainly concentrated in the mining, marine and fishing sectors
- Galp’s products are certified by **Toyota & Volkswagen** which are the passenger vehicle market leaders
- There are **no refineries** in Namibia
- **Lubricant imports** increased by 154.0% since 2009

CHALLENGES

- **Namibian consumption** in 2011 represents 26.4% of Galp’s excess capacity
- Mining industry represents only 12.3% of the GDP in 2013
- **Distribution and commercialization** of lubricants is held by the top 5 players
- High market concentration $C_2 = 54.0\%$
- **NAMCOR introduced its own lubricant brand** together with the South African petrochemical company **Sasol Oil (2011)**
Namibia Lubricant Consumption in 2011 was 11,000 tons and it was forecasted to grow at 4.0% until 2020.

**Market Demand & Supply**

**Namibia Lubricant Consumption**

[2011-2020E; in Thousand Tons]

<table>
<thead>
<tr>
<th>Year</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2020 (Forecast)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>11.0</td>
<td>11.4</td>
<td>11.9</td>
<td>12.4</td>
<td>15.7</td>
</tr>
</tbody>
</table>

CAGR 2011-2020: 4.0%

**Players Market Share**

[2012; %]

- Total: 31.0%
- Vivo: 23.0%
- Engen: 17.0%
- bp: 14.0%
- Others: 9.0%
- South Africa: 66.0%

The consumption of lubricants is mainly concentrated in the mining, marine and fishing sectors.

Source: ¹The Namibian, 2011; ²McGregor, Guy, 2012
Exporting to Namibia through Angola instead of Portugal increases the selling price 2.95 times, which makes Galp lose competitiveness.

**Selling to Namibia Directly from Portugal**

**Cost Breakdown of the 5 Most Sold Products in Angola**

<table>
<thead>
<tr>
<th>Product</th>
<th>Values in € per liter</th>
<th>Cost Breakdown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production Cost</td>
<td>1.07</td>
<td>22.8%</td>
</tr>
<tr>
<td>Galp International Margin's</td>
<td>0.28</td>
<td>6.0%</td>
</tr>
<tr>
<td>International Sales Price</td>
<td>1.35</td>
<td>28.7%</td>
</tr>
<tr>
<td>Transportation Cost</td>
<td>0.16</td>
<td>3.4%</td>
</tr>
<tr>
<td>Insurance</td>
<td>0.00</td>
<td>0.1%</td>
</tr>
<tr>
<td>Duty Rate</td>
<td>0.08</td>
<td>1.7%</td>
</tr>
<tr>
<td>After Duty Price Selling Via Portugal</td>
<td>1.59</td>
<td>34.0%</td>
</tr>
<tr>
<td>After Duty Price Selling Via Angola</td>
<td>4.68</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Source: ¹Galp Exports Division Internal Documents, 2014

See Appendix 1.2 & 2 - NA
Mozambique is a market where Galp can take advantage of its established presence, however some challenges should be taken into account.

Main Conclusions

Opportunities

- Lubricant consumption is expected to increase 2.8% annually until 2019
- Galp is already present in Mozambique:
  - It has its own distribution channels (service stations)
  - 13%-15% of market share on lubricants
  - Galp sales force: 6 people
- Mozambique imports all lubricant oil
- Construction industry is using Galp’s premium products on machinery

Challenges

- Total consumption represented 26.1% of Galp excess capacity in 2013
- “Black Market” for the lubricant products
- There is 1 vehicle per 50 people
- All the major players are present in the market
- The market is highly concentrated (C2=79%)
- Lubricant portfolios are reduced (few product range)
- 80 days until Galp products reach Mozambique (stock management is critical)
- Galp has been losing sales for Total due to the lack of competitiveness

*Mozambique*  

*Galp lubricant export department is already present in Mozambique, however the client specially requested data analysis for this country*

Source: Conference call with Galp lubricant’s representative in Mozambique

\[1\text{Conference call with Galp lubricant’s representative in Mozambique}\]
In 2013, Mozambique’s lubricant consumption was of 11,800 tons, being all imported, and the main player was PetroMoc.

## Market Demand & Supply

### Mozambique Lubricant Consumption

**[2009-2019E; thousand tons]**

<table>
<thead>
<tr>
<th>Year</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>10.4</td>
</tr>
<tr>
<td>2011</td>
<td>11.1</td>
</tr>
<tr>
<td>2013</td>
<td>11.8</td>
</tr>
<tr>
<td>2014E</td>
<td>12.3</td>
</tr>
<tr>
<td>2015E</td>
<td>12.8</td>
</tr>
<tr>
<td>2019E</td>
<td>14.1</td>
</tr>
</tbody>
</table>

**CAGR 2009-2019E: 2.8%**

### Lubricant Players Market Shares

**[2013; %] 100% = 11.8 thousand tons**

- **PetroMoc**: 44.0%
- **BP**: 35.0%
- **Galp**: 14.0%
- **Others**: 7.0%

### Black Market

- **Problem**: It is not possible to measure all the consumption since there are sellers on “every corner”

### Refineries and Blending Plants

- **Refineries**: Zero
- **Blending plants**: one projected (PetroMoc + Hyrax Oil Sdn Bhd)

### Agenda

<table>
<thead>
<tr>
<th>5</th>
<th>Data Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>Scoring Model</td>
</tr>
<tr>
<td>5.2</td>
<td>Market Assessment - Country profile, Demand &amp; Supply and Cost Breakdown</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>China</td>
</tr>
<tr>
<td>B</td>
<td>Thailand</td>
</tr>
<tr>
<td>C</td>
<td>Indonesia</td>
</tr>
<tr>
<td>D</td>
<td>Taiwan</td>
</tr>
<tr>
<td>E</td>
<td>Zambia</td>
</tr>
<tr>
<td>F</td>
<td>Congo</td>
</tr>
<tr>
<td>G</td>
<td>DR Congo</td>
</tr>
<tr>
<td>H</td>
<td>Namibia</td>
</tr>
<tr>
<td>I</td>
<td>Mozambique</td>
</tr>
</tbody>
</table>

| 5.3 | Profit & Loss Analysis - Export to China |
| 5.4 | Entry Mode |

**Consulting Labs | Assisting GALP in defining a successful internationalization strategy for lubricants | Fall 2014 | 63**
In order to quantify the potential profit that Galp could have in China, the group performed a scenario analysis based on a set of assumptions.

**Profit & Loss Analysis - Export to China**

In these scenarios, Galp sells to big and small distributors.

- **Worst**
  - Profit: -0.031 € M
  - Quantities: 0 tons

- **Realistic**
  - Profit: 5.3 € M
  - Quantities: 9,000 tons
  - Market targeted: 0.086%

- **Best**
  - Profit: 26.6 € M
  - Quantities: 45,000 tons

Revenues: 22.93 € M

Costs:
- Concession costs: 17.0 € M
- Administrative costs: 0.46 € M
- Translator: 0.013 € M
- Commercial fluent Mandarin: 0.088 € M
- 3 Initial trips to China: 0.018 € M
- 3 Trips to China: 0.018 € M

Profit Margin: 0.59 € per kilo

See Appendix 1.2 & 4
AGENDA

5  Data Analysis

5.1  Scoring Model

5.2  Market Assessment - Country profile, Demand & Supply and Cost Breakdown

A  China
B  Thailand
C  Indonesia
D  Taiwan
E  Zambia
F  Congo
G  DR Congo
H  Namibia
I  Mozambique

5.3  Profit & Loss Analysis - Export to China

5.4  Entry Mode
In order to identify the most promising way to enter China, an entry strategy framework was built using 8 comparable parameters.

**Entry Mode**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Production</th>
<th>Distribution or Retail</th>
<th>Industry &amp; OEM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Joint Venture</td>
<td>New Equity</td>
<td>Acquisition</td>
</tr>
<tr>
<td>Spare capacity usage</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Margin capture</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Investment needed</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Easiness to find partnerships</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Independence from third party</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Market know-how of partner</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Control over activities (brand usage, services, …)</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Brand dependence</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

Better ○  Worse ○

The most promising strategies are the ones involving **direct sales**.
AGENDA

6  Contacts (CO)

6.1 Contacts Overview
6.2 Mr. Ye’s Company Profile
6.3 Galp Taiwanese Distributor’s Company Profile
During the project the group contacted several entities in order to explore possible partnerships or gather information about the markets.

## Contacts Overview

<table>
<thead>
<tr>
<th>Contact</th>
<th>Action Plan</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese Language University students</td>
<td>- Contacts and insights in the lubricant oil industry</td>
<td>Contacted</td>
</tr>
</tbody>
</table>
| AICEP/Câmara do Comércio | - Contacts in Shanghai Automobile fair  
- Contacts in oil industry | Contacted for information on tariffs |
| Prof. Qinglei Dai | - Contacts with possible partners  
- Possible visit to facilities  
- Insights on the oil industry | Conference call on 17th October |
| Dawn Chan (Chinese Nova SBE Student) | - Contacts of retired professor in the China Petroleum University of Shanghai  
- Translation of documents | Worked 4 hours per week supporting project research |
| Chinese Embassy & Portuguese Embassy in Thailand | Contacted for information on tariffs | Contacted for information on tariffs |
| Taiwanese Distributor | Explore opportunities for Galp in China with this distributor | Conference call on 11th November |
| Lubricant Industry Companies | Contacts with possible Chinese partners | Sent (Galp is waiting for answers) |

See Appendix 1.4 & 6
THE CONFERENCE CALL WITH MR. YE CONG WAS PROMISING SINCE HE WAS INTERESTED IN ACQUIRING GALP’S BASE OIL EXCESS CAPACITY

MR. YE CONG’S COMPANY PROFILE

- **Main Activities:**
  - Lubricant production from recycled lubricants
  - Industrial lubricant supplier
- **Target:** unbranded industry and low/cheap car lubricant segment
- **Product:** White label lubricant

**OPPORTUNITIES**

- Export base oils - large demand
- Galp’s lubricant excess capacity represents the consumption of only one city
- White label industrial lubricants

**CHALLENGES**

- Galp production capacity is small
- Lack of information about the company
- Communication in Chinese
- Lack of Galp lubricants brand recognition
- Partnership agreement

**Capacity:** 350,000 Tons per year (2 factories)
**Sales:** 260 € M
**Employees:** 500

See Appendix 1.4 & 6
Some opportunities arose from a conference call with the distributor from Taiwan, that is planning its expansion to China

**Galp’s Taiwanese Distributor Company Profile**

- **Main Activity:**
  - Automotive lubricant 1st line distributor
- **Products:**
  - Low segment: white label lubricant
  - High segment: includes Galp lubricants
- **Employees:** 10
- **Sales:** 30 containers per year (volume of 1.5 Million USD)
- **Goals:** Chinese market and South Pacific Asian market

**Opportunities**

- Local distributor
- Plan to expand into China + South Pacific
- Advertising in magazines and participation in 3 fairs per year
- Point of difference: Galp being 100% imported (no falsification)

**Challenges**

- Lack of Galp’s brand awareness
- Galp’s price is high
- Distributor does not sell industrial lubricants
- They have been advertising Galp by themselves
- Budget requirement
- Partnership agreement
REFERENCES (1/5)

Accenture. 2014. *China’s automotive market - How to merge into the fast lane with consumer and digital marketing insights.*

Adelino, Almeida A. Manuel. *Análise da Situação Actual da Gestão de Óleos Lubrificantes Usados.* Universidade Eduardo Mondlane


Barros, Maria José. 2014. *Galp Internacional – Análise de Mercados.* Galp Energia


Galp Exports Division. 2014. *Internal Documents.* Galp Energia


GCiS. 2014. *The China Industrial Lubricants Market - Product Briefing*

Gibb, Barry. 2013. *China ReRun Chemical Group Ltd.* Beaufort

Gomes, Emanuel. 2014. *International Business Course – Class Slides,* Lisbon: Nova School of Business and Economics.


OATS. 2014. *Chinese lubes majors feel the pinch*. Integrated Global Lubricant Data Solutions


References (3/5)

Websites:

Berita Satu [Online] http://m.hondacommmunity.net/
Bukalapak [Online] https://www.bukalapak.com/
Caltex Global [Online] https://www.caltex.com/
Castrol Global [Online] https://www.castrol.com
Websites:

Honda Community [Online] http://m.hondacommunity.net/
Websites:

## Agenda

<table>
<thead>
<tr>
<th>8</th>
<th>Appendix (AP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Individual Reports (IR)</td>
</tr>
<tr>
<td>2</td>
<td>Country Assessment (CA)</td>
</tr>
<tr>
<td>3</td>
<td>Scoring Model (SM)</td>
</tr>
<tr>
<td>4</td>
<td>Profit &amp; Loss Analysis - Export to China (PL)</td>
</tr>
<tr>
<td>5</td>
<td>Entry Mode (EM)</td>
</tr>
<tr>
<td>6</td>
<td>Contacts (CO)</td>
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