



Work Project presented as part of the requirements for the Award of a Master Degree from
NOVA – School of Business and Economics

Consulting project for Administração dos Portos de Sines e Algarve, SA and Aicep Global Parques:
The Economic, Social and Environmental Value of the Port of Sines, *Zona Industrial e Logística de Sines*
(ZILS) and *Zona Industrial Ligeira* (ZIL) - an holistic approach

Consulting Lab carried out under the supervision of:
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January 6 th , 2016

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“ To reach a port we must set sail

Sail, not tie at anchor

Sail, not drift ”

FRANKLIN D. ROOSEVELT

ACKNOWLEDGEMENT

TAKING PART OF THIS PROJECT TAUGHT US HOW TO COPE WITH A SET OF DIFFICULTIES THAT PROVED TO BE EXTREMELY ENRICHING, AND THAT WILL CERTAINLY PREPARE US FOR THE COMPETITIVENESS OF THE PROFESSIONAL CHALLENGES THAT WE ARE ABOUT TO EMBRACE.

THE VISIBILITY OF THE PROPOSED CHALLENGE, AS WELL AS THE NOTORIETY OF THE INVOLVED ORGANIZATIONS, HAVE JUST CONTRIBUTED FOR AN INCREASED MOTIVATION FROM THE VERY BEGINNING OF THE PROJECT. AFTER FOUR MONTHS OF HARD WORK, WE PRIDE OURSELVES ON THE FINAL OUTCOME OF OUR JOB. THIS PROJECT PROVIDED THE GROUP WITH THE OPPORTUNITY TO DIVE INTO A SECTOR OF GREAT POTENTIAL FOR THE COUNTRY, AS IT IS THE CASE OF THE MARITIME PORTS, AND INTERACT WITH SOME OF THE BIGGEST ECONOMIC AGENTS OF OUR ECONOMY.

NEVERTHELESS, AND AS AFOREMENTIONED, NOT EVERY WIND OR TIDE WERE FAVORABLE, AND IT WAS SPECIALLY IN THOSE MOMENTS (BUT ALSO IN EVERY OTHER) THAT WE COULD COUNT WITH THE PRICELESS GUIDANCE OF PROFESSOR CONSTANÇA CASQUINHO, WHOSE EXPERIENCE, FRIENDSHIP AND POSITIVE FEELING PLAYED AN ESSENTIAL ROLE IN THE SUCCESS OF THIS PROJECT.

LIKEWISE, THE GROUP WOULD LIKE TO EXPRESS ITS PROFOUND GRATITUDE TO “ADMINISTRAÇÃO DOS PORTOS DE SINES E DO ALGARVE, APS” AND TO “AICEP GLOBAL PARQUES”, WHOSE ABSENCE WOULD HAVE MADE OUR GOALS UNATTAINABLE.

IN WHAT CONCERNS “APS”, THE GROUP SINCERE GRATEFULNESS GOES TO ITS PRESIDENTS JOÃO FRANCO AND JOSÉ CACHO, BUT ALSO TO ENGINEER JOSÉ SIMÃO, DR. PAULO SILVA, ENGINEER ANTÓNIO SANTOS AND DR JOSÉ CONTRADANÇAS.

ADDITIONALLY, WE WOULD LIKE TO THANK DR FRANCISCO MENDES PALMA, DR MIGUEL BORRALHO AND DRA ISABEL CARDOSO, FROM AICEP GLOBAL PARQUES, FOR THEIR MEDIATION, AVAILABILITY AND COUNSELLING THROUGHOUT THE PROJECT.

LAST BUT NOT THE LEAST, WE WOULD LIKE TO THANK PROFESSOR ANA BALCÃO REIS, PROFESSOR PEDRO FREITAS AND PROFESSOR JOÃO AMADOR FOR THEIR DECISIVE HELP IN THE CHOICE OF THE MOST ADEQUATE ECONOMIC METHODOLOGY TO ADOPT.

EXECUTIVE SUMMARY (1/4)

This report respects a Masters' Thesis conducted under the format of a Consulting Lab at Nova School of Business and Economics (Nova SBE). A Consulting Lab comprises a group work emulating a consulting project to address a specific business problem. This work project was developed from September 2016 to January 2017 and was performed by four Nova SBE's students for *Administração dos Portos de Sines e do Algarve* (APS, S.A.) and for *AICEP Global Parques*.

ENTITIES

APS, S.A is the entity which is entitled to ensure the exercising of all the diligence that is required for the smooth functioning of the port of Sines and the commercial ports of Faro and Portimão, in its multiple fronts of economic, financial and property nature, staff management and port operation, as well as attendant, subsidiary and accessory activities.

AICEP Global Parques is a state-owned enterprise that specializes in the management of industrial parks and business location solutions. Its main

focus is to guarantee conditions for the capturing and monitoring of national and foreign investment projects.

CHALLENGE

The scope of this Consulting Project is to evaluate the economic, social and environmental impact of the following entities from the region of Sines: Port of Sines, ZILS (*Zona Industrial e Logística de Sines*) and ZIL (*Zona Industrial Ligeira*).

(1) ECONOMIC IMPACT

The economic impact may be split among three distinct branches: direct, indirect and induced impact. In addition to this, the contribution of the Port of Sines and ZILS for both exports and imports is also assessed in this setting.

EXECUTIVE SUMMARY (2/4)

Direct Impact

Corresponds to the effects that are related to the activities developed by the companies settled in the analyzed area. In other words, it reflects the first level of the activities' repercussion in the national economy.

APPROACH

In order to measure this impact, the following reasoning was followed:

- I. Selection of the GDP calculation's approach
- II. Collection of the data from the companies present in Port of Sines, ZILS and ZIL
- III. Calculation of the contribution to GDP
- IV. Adjustment and preparation for future updates

SOLUTION

The Production Approach (which evaluates the Gross Domestic Product through the sum of the GVAs of the different economic activities) was chosen to estimate the direct economic contribution of the region of Sines to the overall Portuguese GDP, due to the advantages that it entails in terms of data collection and future updates.

RESULTS

The direct economic impact of the analyzed area corresponds to 0.91% of the national GDP.

Indirect and Induced Impact

The indirect effect of a certain activity corresponds to the effects in others that result from the goods and services demanded by that same activity - intermediate consumption, and associated investment. The induced effect comprises effects that derive from the consumption preferences of the employees of the Port of Sines and the companies present in ZILS and ZIL.

APPROACH

In order to measure this impact, the following steps were conducted:

- I. Selection of the methodology
- II. Collection of the necessary resources
- III. Calculation of the multipliers
- IV. Calculation of the secondary effects and preparation for future updates

EXECUTIVE SUMMARY (3/4)

SOLUTION

The group resorted to the national input-output matrix (consisting of an application of the Leontief Classical Model) that was designed in 2013 by INE, which constitutes the representation of the economic relations among the different economic agents in a certain point in time.

RESULTS

The main companies of ZILS and the Port of Sines contribute, indirectly, to 0.37% of the Portuguese GDP. The same companies considered in the sample account, through their induced effect, for 0.14% of the Portuguese GDP.

Exports and Imports

The relative contribution of the Port of Sines and ZILS for both Portuguese exports and imports was computed.

RESULTS

As of 2015, the Port of Sines contributed to 19.60% of the overall exports and to

31.52% of total imports. The contribution of the companies present in ZILS sums up to 18.28% of Portuguese exports and to 18.68% for national imports.

(2) SOCIAL IMPACT

The social impact assessment blended four different sections: direct and indirect employment, social economic indicators, scientific and teaching supporting institutions and ongoing initiatives.

APPROACH

- I. Data Collection for direct employment
- II. National Input-Output matrix for indirect employment
- III. Quantitative research for social economic indicators and social institutions

EXECUTIVE SUMMARY (4/4)

RESULTS

In relation to the direct employment, 3.401 direct jobs can be allocated to the region of Sines. When it comes to indirect jobs, 13.745 jobs can be assigned to the economic dynamics of the same area. On top of that, Sines stands out (at a regional and national level), for its high purchasing power and low levels of unemployment and illiteracy. On the other hand, and as a consequence of the type of industry present in the region, the municipality also exhibits a considerably high average monthly income.

(3) ENVIRONMENTAL IMPACT

This impact was measured under three variables: CO2 emissions, energy consumptions and waste generated.

APPROACH

- I. Estimates obtained directly from the Port of Sines
- II. Quantitative research, estimation and Data Collection for ZILS and ZIL

RESULTS

In relation to the Port of Sines, the total CO2 emissions account for 8.753 ton. As far as electricity consumption is concerned, the total electricity consumed was, approximately, 25 million kWh. Ultimately, 1.507 tonnes of waste were produced, for 2015. Regarding ZILS, the amount of CO2 emissions produced was 11.158 ktons, the electricity consumed reached 1.139 Gwh and the total waste produced was 67.009 tons in 2015.

This impact can be deemed to be in line with ex-ante expectations. It is also worth noting the joint efforts undertaken in the region to mitigate environmental impact on the surrounding population.

KEY DELIVERABLES

The economic, social and environmental impact were measured for the three entities of the project, for the year of 2015.

Regarding the economic impact, a model was delivered that is ready to be updated for the next five years. Additionally, a list of recommendations in order to optimize the model's results is presented.

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- ② PORT OF SINES, ZILS AND ZIL

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- ③ SOCIAL IMPACT
- ④ ENVIRONMENTAL IMPACT

CONCLUSIONS

- ① FINAL REFLECTIONS
- ② CONCLUSION
- ③ LIMITATIONS
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INTRODUCTION

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A. CHALLENGE AND OBJECTIVES OF THE PROJECT

2. PORT OF SINES, ZILS AND ZIL

A. HISTORICAL OVERVIEW

SCOPE OF THE CONSULTING LAB

MANAGEMENT CONSULTING FIELD LAB

The Management Consulting Field Lab provides students with the opportunity to maintain a first contact with the consulting's world. During this experience, the students had the opportunity to work with a client and apply their acquired skills.

In this project, the client was twofold: *Administração dos Porto de Sines e Algarve* (Administration of the Port of Sines and Algarve) and *Aicep Global Parques*. It was proposed to determine the **economic, social and environmental value of the Port of Sines, Zona Industrial e Logística de sines (ZILS) and Zona Industrial Ligeira (ZIL)**.

ADVISORS

Nova SBE:	✓ Prof. Constança Casquinho
Port of Sines:	✓ Dr. José Contradaças
	✓ Dr. Paulo Silva
	✓ Eng. António Santos
Aicep Global Parques:	✓ Dr. Miguel Borralho
	✓ Dra. Isabel Cardoso

OBJECTIVES

- ✓ Calculate the **Economic Value** generated in 2015 (% of the GDP)
- ✓ Calculate the **Employment created directly and indirectly**
- ✓ Calculate the contribution to **Portuguese Exportations**
- ✓ Estimate the **Social and Environmental Value**
- ✓ Define and calculate ports' **Performance Indicators** at international level
- ✓ Define an **automatic model** that delivers these indicators as output for the future

TEAM



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SCOPE OF THE CONSULTING LAB - MAIN FINDINGS

PERFORMANCE INDICATORS

Port of Sines relative to national ports

- ✓ Sines is the port with the highest international exposure, retaining **50% of the international traffic** carried out by sea
- ✓ In 2015, it exhibited a **superior financial performance** when compared with other ports

Port of Sines relative to international ports

- ✓ From 2014 to 2015, the **amount of handled cargo grew by 17%**, showing the highest growth rate among the Mediterranean ports
- ✓ Sines is part of the **TOP 20 European ports**, in terms of container movement

SOCIAL IMPACT

- ✓ The Port of Sines, *ZILS* and *ZIL* have contributed to **3 401 direct jobs and 13 745 indirect jobs**
- ✓ The **purchasing power** from Sines is considerably high when assessed from a national standpoint, presenting a factor of **127 (100 represents the average purchasing power)**
- ✓ Its **unemployment rate** is below the national average, corresponding to **9,7%**

ECONOMIC IMPACT

Economic value – contribution to Portuguese GDP

- ✓ The analyzed area contributes, in total, to **1,43% of the Portuguese GDP**: the direct impact corresponds to **0,91% of GDP**, while the indirect and induced impacts account for **0,38% and 0,14%**, respectively

Exports and imports

- ✓ In 2015, **19,6% of national exports** were traded through the Port of Sines, whereas **31,52% of the Portuguese imports entered through the same port**
- ✓ The companies from *ZILS* contributed **more than 18%** when considering **both Portuguese exports and Portuguese imports, respectively**

ENVIRONMENTAL IMPACT

- ✓ The **CO2 emissions** from the three analyzed entities have been growing, registering a **10% growth between 2013 and 2014**.
- ✓ The **electricity consumption** within the area has been **growing** at a constant rate during the last years, being linked to the developed activities
- ✓ In the last years, the **waste generated** has been **decreasing**, having fallen by 50% between 2012 and 2013

PORT OF SINES

PORT OF SINES HAS MORE THAN 40 YEARS OF ACTIVITY UNDER THE MANAGEMENT OF THE ADMINISTRATION OF THE PORT OF SINES AND THE ALGARVE (APS, S.A.)

Foundation

The *Administração do Porto de Sines* (APS) was created on December 14th, 1977, being in charge of the management and exploration of the Port of Sines, whose construction had begun in 1973

APS

In 1998, APS turned into a public limited company, particularly structured to grant concessions to private operators.

Since 2014, APS has been assigned the direct port jurisdiction in maritime, sea-water and land areas necessary for the port exploration of the commercial ports of Faro and Portimão.

Mission

Its mission is to assure the fulfilment of the competencies and attributions concerning the planning, update, promotion and regulation of the Port of Sines, always aiming to avail its resources in a rationalised and optimised way, as well as the economic and operational efficiency by complying with the safety and environmental requirements – providing satisfaction to its clients and value added on the Iberian and European market



APS | Administração
dos Portos de Sines
e do Algarve S.A.

PORT OF SINES

A. INTERNAL ANALYSIS

PORT OF SINES IS A KEY PLAYER IN THE PORT SYSTEM DUE TO ITS CHARACTERISTICS

Prime Location

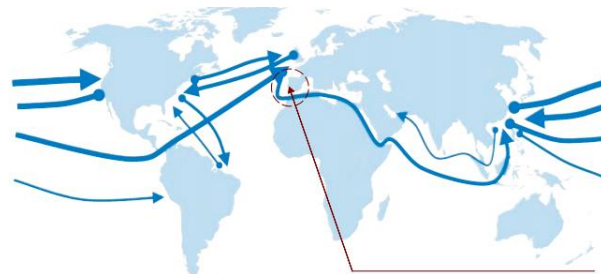
The Port of Sines is **close to the main Atlantic shipping routes**, through which most of the goods are traded, namely raw materials that are exchanged between Europe and America, Africa and Middle East. The manoeuvres are facilitated by being an **open port to the sea**, with no bar limitations.

Business Model

“**Landlord**” - APS provides the infrastructure and port space. Additionally, it is responsible for regulating the use of public domain. Private companies are responsible for the provision of concessionary port services. **Port operations take place 365 days a year**, 24 hours a day. The tariffs applied are flat.

Characteristics

Deep water port with capacity to receive the largest ships in operation in the world. Equipped with modern specialized terminals in order to move different types of goods. The best international port operators, namely PSA, MSC and Maersk , are present in the Port of Sines.



Source: APS

PORT OF SINES

B. EXTERNAL ANALYSIS

PORT OF SINES IS A KEY PART OF THE PORT SYSTEM DUE TO ITS CHARACTERISTICS

Industry Trends

The **size of the ships has been increasing over the years**. This trend is mainly a result of containerisation and automation, which permit a faster loading and discharging of vessels.

The growing importance of the Port of Sines in the world's container shipping market will continue to be the company's main focus in the medium term. In order to respond to the increasing demand, the continued expansion of the port capacity is on the agenda for the short-term, namely the construction of 120 meters of quays in the Container Terminal.

There has been a growing concern in the shipping industry in what concerns to the “**green image**” that it wants to be associated with. Developments in the Port mechanisms, namely better propeller performance and high-tech coatings, as well as friction-reducing air cushions, have helped reduce carbon and sulphur emissions.

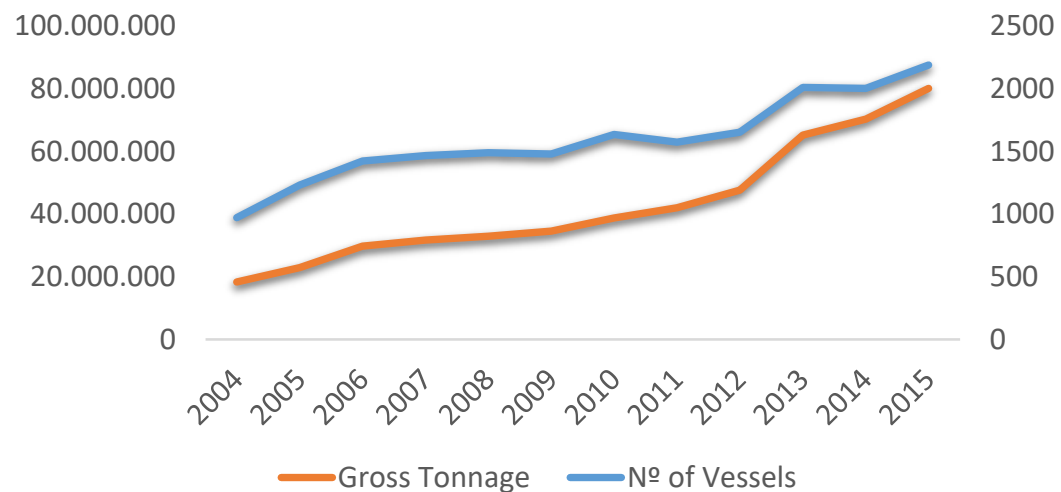
Competitors

In **Portugal**, Port of Sines is the **number one player**, with 33% of market share in total gross tonnage. From an international perspective, it faces a different scenario, having as main competitors the Port of Algeciras, Port of Tanger Med, Port of Barcelona and Port of Valência. However, Port of Sines benefits from cultural relationship with China (where the biggest ports in the world are located), due to the Portuguese history in Macau, which may facilitate the process of attracting new Chinese investors to the Port.

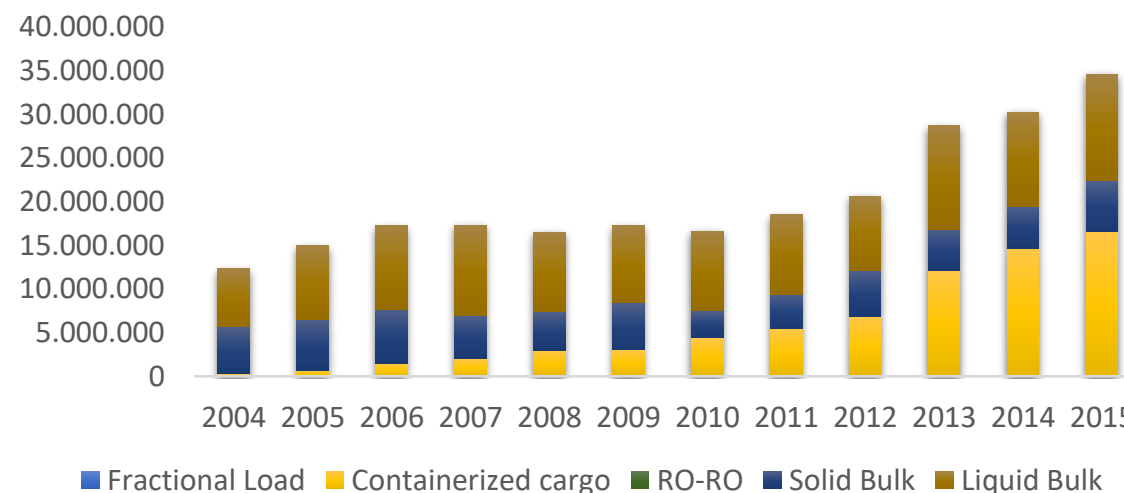
PORT OF SINES

THE PORT OF SINES SHOWS A SOLID GROWTH IN THE MOVEMENT OF GOODS.

Vessels Movement, 2004-2015



Structure of the Movement of Goods, 2004-2015 (Ton)



From 2004 until 2015, the Port of Sines showed a **compounded annual growth rate of 26%** in the merchandise handled.

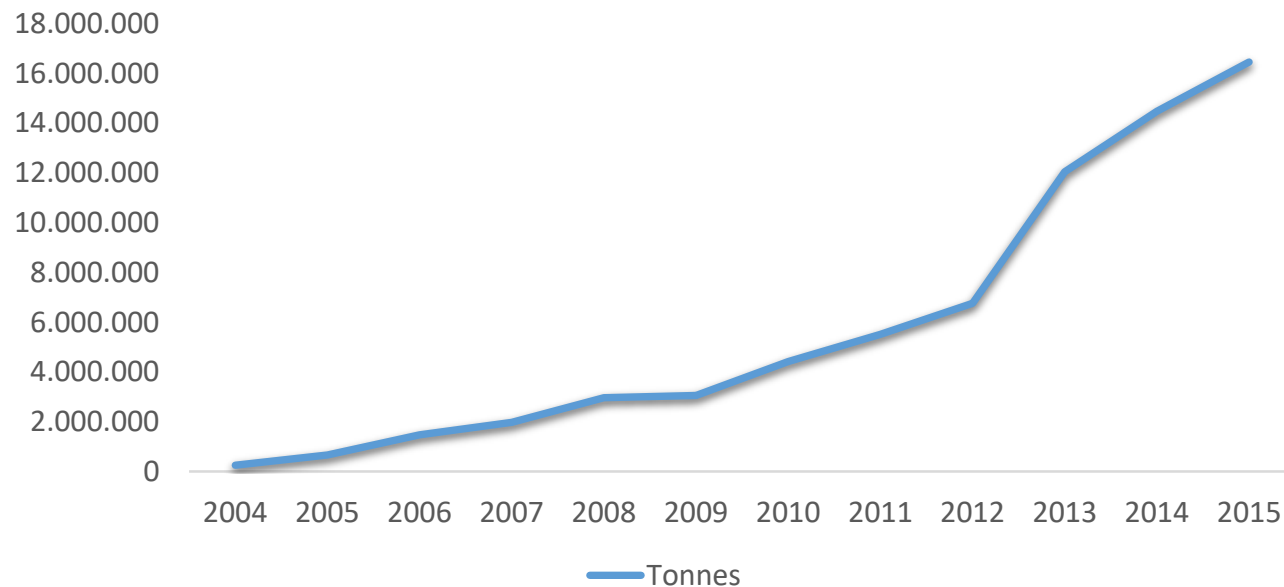
Over the years, the liquid bulk component has been **the main cargo type** in this port (CAGR equals 57%). Taking advantage of the development cycle of the sector, the Container Terminal initiated its activity in 2004, allowing for a consolidated growth.

Source: Estatísticas de Trafego APS 2015;

PORT OF SINES

THE ENTRY OF PSA – PORT SINGAPORE AUTHORITY – PAVED THE WAY FOR A SPECIALIZATION IN TRANSHIPMENT.

Container Traffic, 2004 - 2015



Singapore is the **busiest transhipment hub in the world**, connecting 600 ports. In addition, it has daily departures to the main ports of the world.



80%

Of the handling of containers in the Port of Sines correspond to transhipment

20%

Of the handling of containers is drained by railroad and highway.

The container terminal reveals a **compounded annual growth rate of 2%**, which reversed a trend of deterioration of the economic performance of this Port.

The port ranks 4th in the Iberian context and is expected to keep escalating in the European ranking.

The positive trend in the handling of containerized cargo highlights the **enormous potential of the Port of Sines at this stage**, whose growth could be even higher was there capacity in the terminal.

Source: *Estatísticas de Trafego APS 2015*; APS; Port Authority of Singapore website;

PORT OF SINES

THE STRATEGIC GEOGRAPHIC LOCATION MAKES IT THE GATEWAY OF GOODS IN EUROPE.



The Port of Sines is **located in Southwest Europe**, 58 nautical miles south of Lisbon. Its strategic location stems from its privileged connection to the East-West and North-South international sea routes, for which reason it is deemed the great hub port of the Ibero-Atlantic shore.

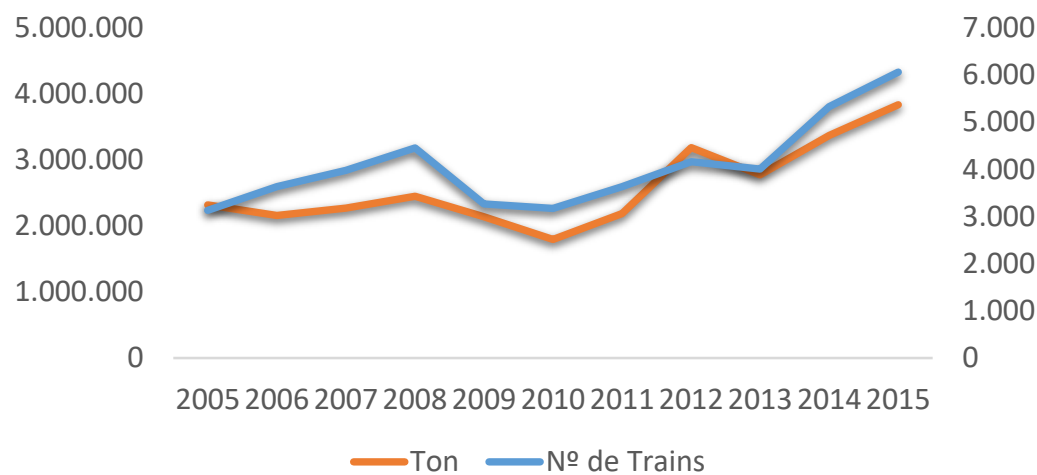
The direct hinterland of the Port of Sines corresponds to the **all the Southern and Center regions of Portugal**.

In broad terms, it can also compete in the Spanish Extremadura , especially in route to Madrid.

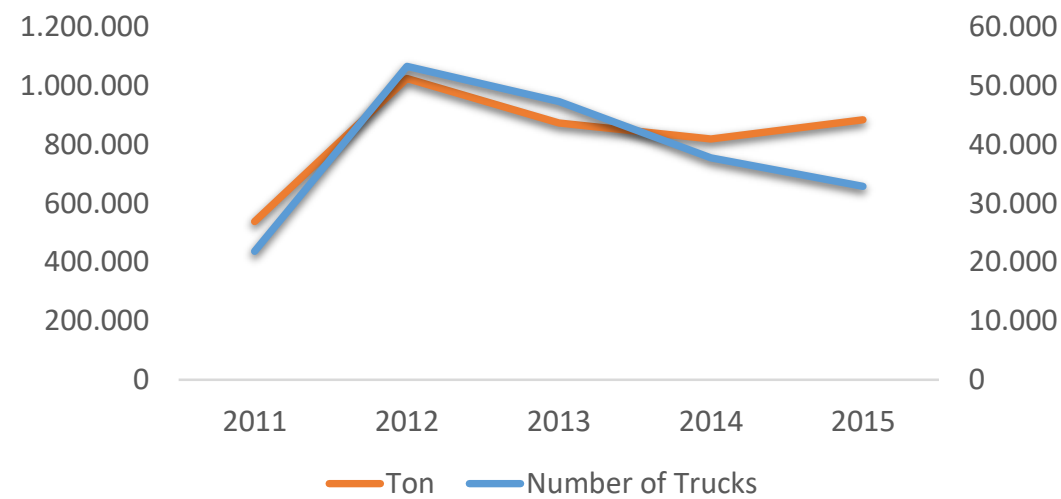
PORT OF SINES

THE RAIL FREIGHT MOVEMENT IN THE PORT OF SINES CONFIRMS ITS GROWING PREDOMINANCE WHILE ROAD TRANSPORT HAS BEEN DECLINING IN RECENT YEARS.

Rail Movement of Goods 2005-2015



Road Movement of Goods, 2011-2015



Having a **significant importance in the Hinterland transport**, the number of trains relative to 2015 summed up to 6,061, an increase of 13.8% when compared with the previous year.

83% of the trains were exclusively **moved in containers**

The last years were characterized by a **decrease in road transportation**. **Road traffic is responsible for 19% of Hinterland traffic**, which, in 2015, translated into 884,237 tonnes of goods, a growth of 0.8% over the previous year.

ZILS

ITS MISSION IS TO OFFER BUSINESS LOCATION AND PROCUREMENT SERVICES

Creation

ZILS Global Parques (currently under the management of Aicep Global Parques) corresponds to the previously denominated Gabinete da Área de Sines, which was created back in 1971. Its ultimate goal was to set up an industrial and energetic complex that could serve the whole country.

Aicep Global Parques

Aicep Global Parques, a state-owned enterprise, is a specialist in the management of business parks for all sectors (industry, energy, logistics and services) and in business location.

Mission

Its main mission is to offer business location and procurement services for the installation of economic activity.

Business Model

Its business model is based on the sale of surface rights; there are three type of available lots: standard, adjusted standard or tailored lots.



Zils Global Parques
Zona Industrial e Logística de Sines

ZILS

ZILS AND THE PORT OF SINES HAVE A SYMBIOTIC RELATIONSHIP AND A CONSIDERABLE PORTION OF THEIR ACTIVITIES IS INSEPARABLE

Synergies amongst clients

ZILS owns all the infrastructure and utilities that are required for the installation of the industrial, energetic, logistics and services activities, presenting notorious synergies between the clients which are settled in the industrial park.

Urbanization plan

ZILS provides a coherent and organized urbanization plan, which improves and simplifies the investment process (the lots are grouped into different areas, according to the characteristics and specificities of each industry).

ZILS and the Port of Sines

The industrial park operates in close *liaison* with the Port of Sines, a deep water port that operates 24 hours a day and shows no constraints in terms of vessels or cargo it may receive.



ZILS

SOME OF THE BIGGEST PORTUGUESE COMPANIES ARE PRESENT IN THIS INDUSTRIAL PARK

Accessibilities

ZILS enjoys from excellent road, rail and maritime accessibilities, apart from reliable telecommunications. It has good connections with the national road network, as well as with Spain, which permit the access to the Spanish hinterland and rapid and safe connections to the rest of Continental Europe. The Railway Network is connected with the Transeuropean Transport Network.



Workforce

ZILS presents an extremely qualified workforce, which is backed by the existence of technical schools and formation centers (ETLA, ATEC and IEFP) in the region, which invest heavily in the areas of greater need for the local industries.



Main clients

Galp, Repsol, EDP, REN and Sonae are some of the clients which are settled in this industrial park.



ZIL

THE METAL, TRANSPORTS AND FISH FREEZING AND PROCESSING ARE THE MAIN INDUSTRIES SETTLED IN THIS AREA

The creation of ZIL (Zona de Indústria Ligeira), which is currently under the jurisdiction of the Municipality of Sines, intended to accomplish two major objectives:



1

Create a setting that could host smaller industries which give support to the oil and petrochemical industries

2

Separate the industries which are incompatible with the adjacent residential areas



- Its business model is identical to that of ZILS, consisting of the sale of surface rights (though the prices are much lower when compared to those of the industrial park).
- The ZIL comprises around 500 lots of different dimensions, which range from 50 to 20 000 square meters.
- Throughout the years, there has been an expansion of the commercial area, which helped lure more companies and contributed to job creation.

DIAGNOSTIC

1. PORT ACTIVITY INDICATORS

- A. MAIN PERFORMANCE INDICATORS

2. ECONOMIC IMPACT

- A. LITERATURE REVIEW
- B. DIRECT IMPACT
- C. INDIRECT IMPACT
- D. EXPORTS AND IMPORTS

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- A. EMPLOYMENT IN THE AREA OF “SINES”
- B. SOCIAL ECONOMIC INDICATORS
- C. EDUCATIONAL AND SCIENTIFIC INSTITUTIONS
- D. ONGOING INITIATIVES

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- A. METHODOLOGY
- B. RESULTS
- C. FINAL CONSIDERATIONS AND RECOMMENDATIONS

PORT ACTIVITY INDICATORS

1. MAIN PERFORMANCE INDICATORS

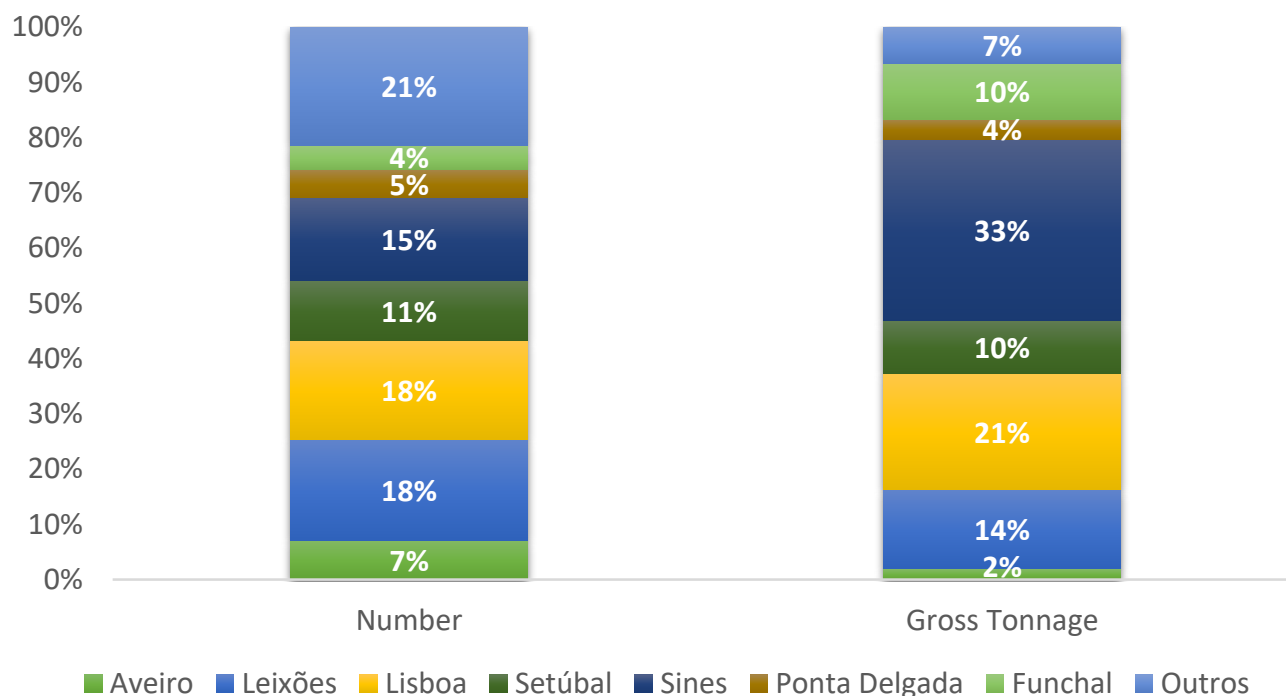
- A. NATIONAL PORTS
- B. INTERNATIONAL PORTS

MAIN PERFORMANCE INDICATORS

A. NATIONAL PORTS

THE PORT OF SINES WAS RESPONSIBLE FOR THE HIGHER ACCUMULATED VALUE OF GROSS TONNAGE IN 2015

Breakdown of incoming Vessels (2015)



The Portuguese port system is comprised of 7 main ports: Leixões, Aveiro, Lisbon, Setúbal, Ponta Delgada, Funchal and Sines.

15%
Of the number of vessels entered the country through the Port of Sines

33%
Of the movement in terms of gross tonnage is relative to the activity of Sines

In 2015, the number of vessels that entered the Port of Sines increased by 9.1% when compared to the previous year.

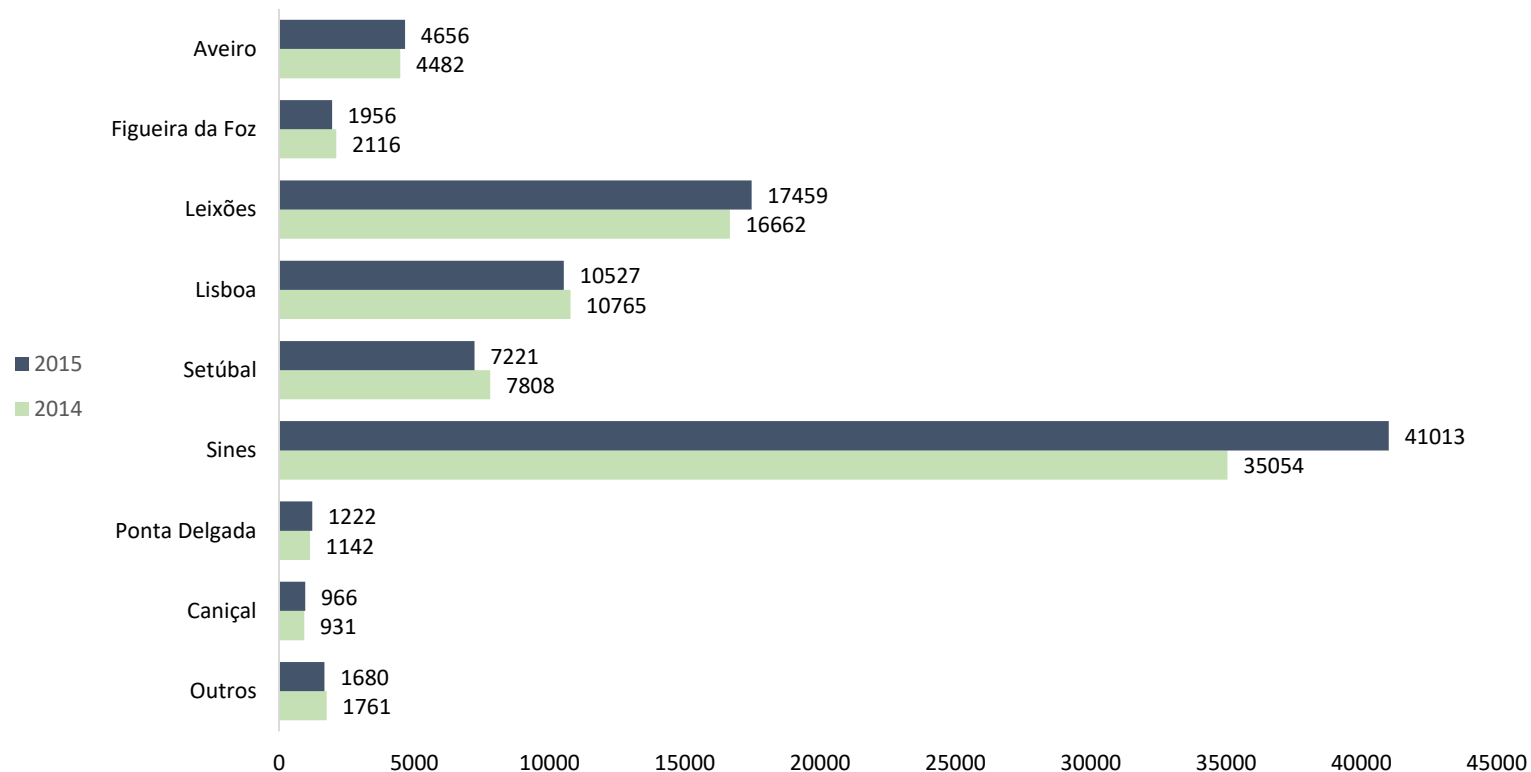
Source: INE

MAIN PERFORMANCE INDICATORS

A. NATIONAL PORTS

THE PORT OF SINES STANDS IN THE FIRST PLACE, AT A NATIONAL LEVEL, IN THE TOTAL MOVEMENTS OF GOODS IN TONNAGE.

Total Throughput by National Ports, 2014-2015 (Ton)



47.4%

Corresponds to the representativeness of goods transported from the Port of Sines compared to the other Portuguese ports, in 2015

Merchandise handled at national ports amounted to 86.9 million tonnes in 2015, an increase of 7.7% relative to 2014.

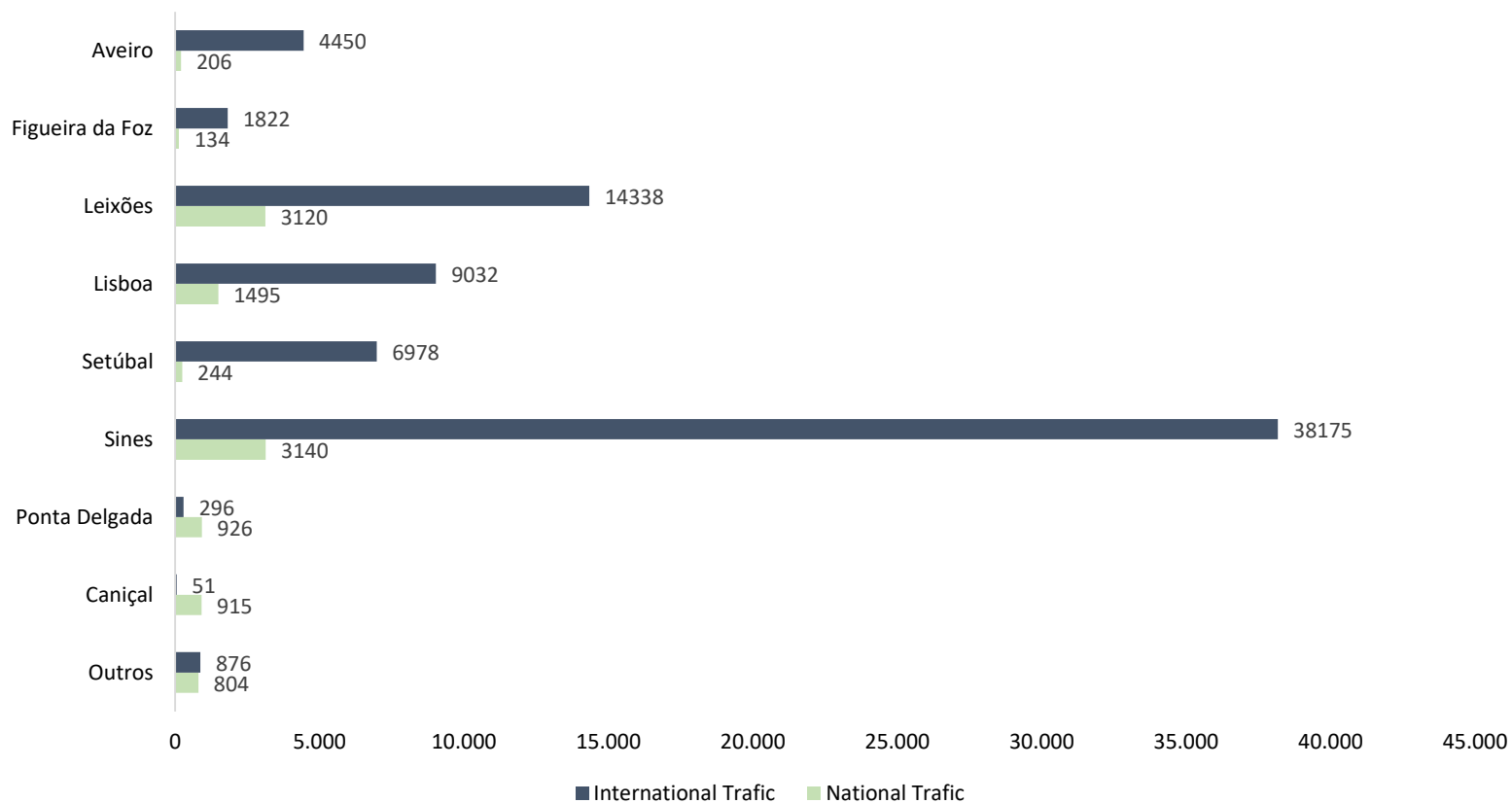
The Port of Sines was the one with the highest growth rate in 2015 (exhibited an improvement of 17.6% over the same period of the previous year), totalling a movement of 41.2 million tons of merchandise.

MAIN PERFORMANCE INDICATORS

A. NATIONAL PORTS

THE INTERNATIONAL FOCUS OF THE PORT OF SINES IS REFLECTED IN THE TYPE OF TRAFFIC.

Total Throughput by Type of Traffic, 2014-2015 (Ton)



50%

Corresponds to the representativeness of international traffic via the port of Sines

In 2015, international traffic amounted to 75.9 million tons, accounting for 87.4% of total freight traffic.

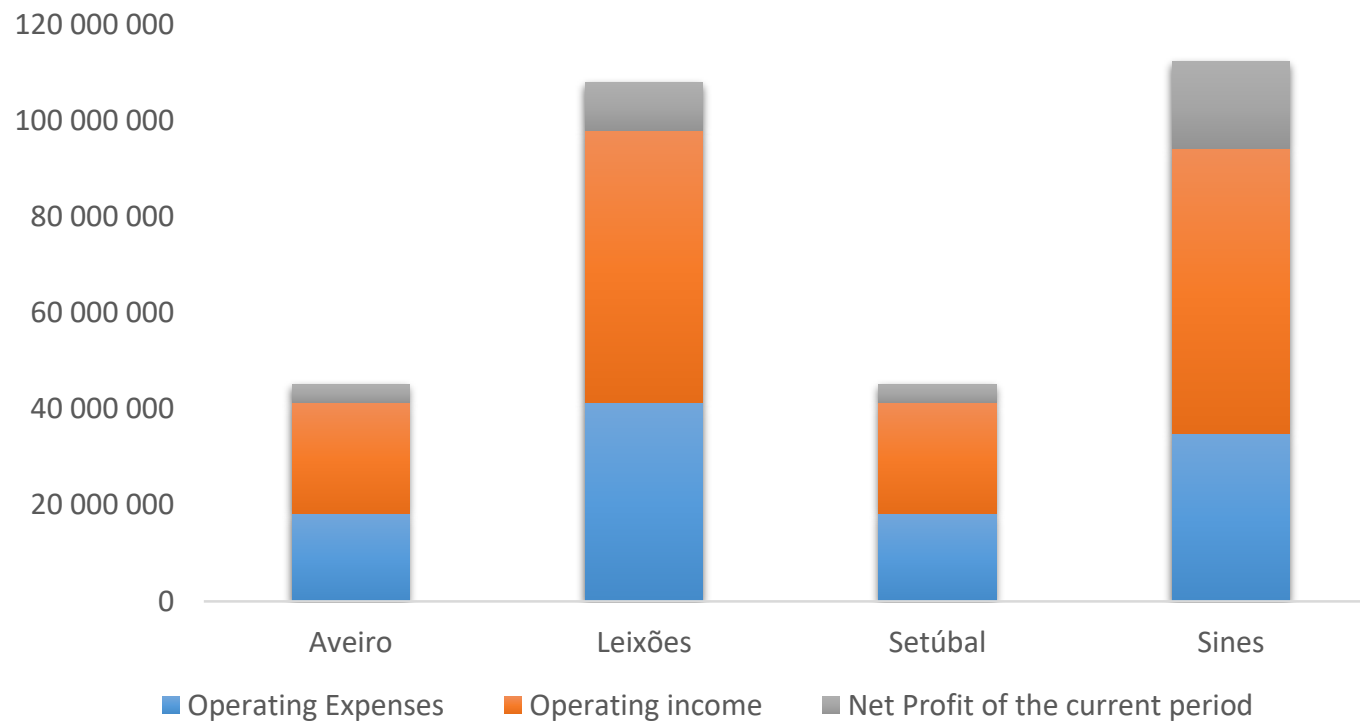
Port of Sines stood out with an international movement that covered 38.1 million tons, which accounted for 92.4% of the port movement.

MAIN PERFORMANCE INDICATORS

A. NATIONAL PORTS

THE PORT OF SINES REVEALS SUPERIOR RESULTS IN COMPARISON WITH THE OTHER MAIN PORTUGUESE PORTS.

Financial Indicators of National Ports (2015)



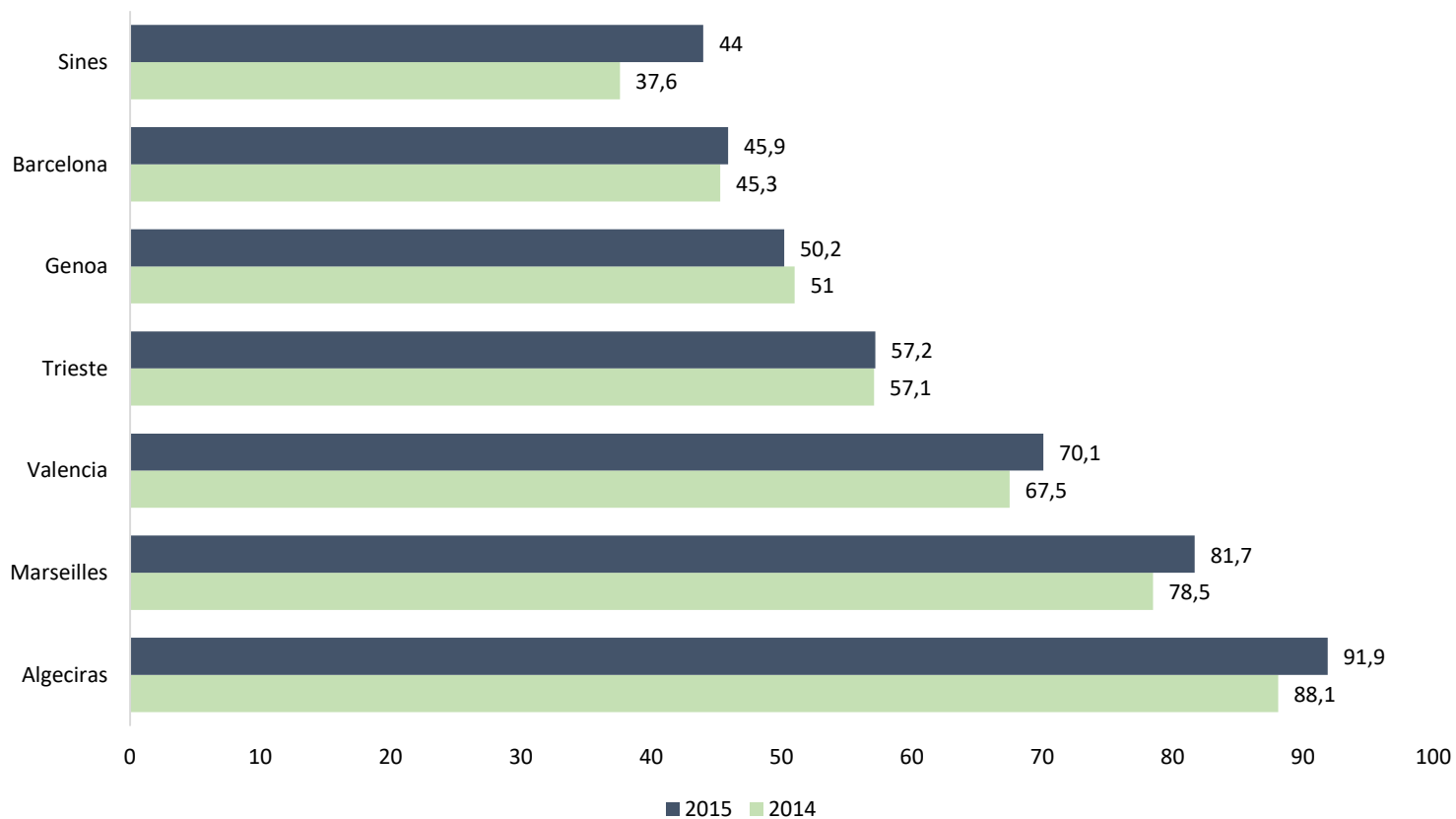
In 2015, Port of Sines obtained a financial performance superior to the other Portuguese ports. The operating revenues of the port of Sines represent, approximately, 40% of the total operating revenues of the ports.

MAIN PERFORMANCE INDICATORS

B. INTERNATIONAL PORTS

THE PORT OF SINES STANDS OUT AS THE ONE WITH THE HIGHEST ANNUAL GROWTH RATE WITHIN THE MEDITERRANEAN PORTS

Total Throughput by Mediterranean Ports (in Million Tons)



17%

Growth rate of the Port of Sines in 2014-2015

Port of Sines exhibits the highest growth rate of the Mediterranean ports. On top of that, its performance may be compared to that of remarkable European ports, namely Trieste, Marseille, Barcelona and Genoa.

Source: Port of Rotterdam Report 2015

MAIN PERFORMANCE INDICATORS

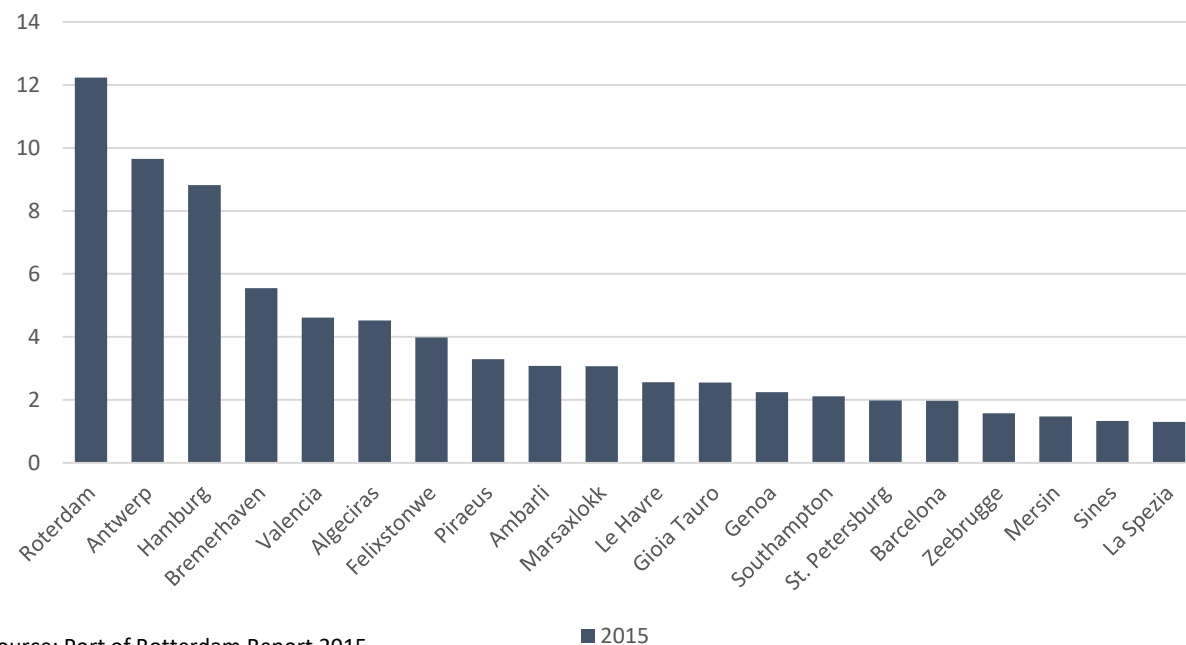
B. INTERNATIONAL PORTS

PORT OF SINES IS PART OF THE EUROPEAN TOP 20 AND WORLD'S TOP 100 SEAPORTS IN THE HANDLING OF CONTAINERS.

The port system in Europe consists of 20 main ports.



TOP 20 European Container ports, 2015 (K TEUS)



Source: Port of Rotterdam Report 2015

■ 2015

In 2015, the Port of Sines occupied the **19th place** in the ranking of the largest ports in Europe, in terms of container traffic.

In 2015, the Port of Sines was the **97th largest port** worldwide in terms of container traffic.

ECONOMIC IMPACT

1. LITERATURE REVIEW

2. DIRECT IMPACT

- A. METHODOLOGY
- B. SCOPE
- C. RESULTS

3. INDIRECT IMPACT

- A. METHODOLOGY
- B. SCOPE
- C. RESULTS

4. EXPORTS AND IMPORTS

- A. PORT OF SINES
- B. ZILS

A grayscale photograph of a harbor scene. In the foreground on the left, a large, dark statue of a man in a long coat and cap stands on a pedestal, viewed from behind. The harbor is filled with numerous small boats and a larger ship. In the background, there are buildings, including a prominent white building with a dome, and a long pier extending into the water. The sky is clear and light. The text "LITERATURE REVIEW" is overlaid in the center in a bold, blue, sans-serif font.

LITERATURE REVIEW

LITERATURE REVIEW

MOST OF THE STUDIES THAT WERE ANALYZED EVALUATE THE ECONOMIC IMPACT AT THREE DIFFERENT LEVELS: DIRECT, INDIRECT AND INDUCED

Direct impact	It includes the employment, output, wages, incomes and tax revenues, which were generated by port authorities and the companies that perform port activities ¹
Indirect impact	It is verified in other sectors integrated in the regional economic system as a direct activity's consequence; as the port activity's expenditures from the firms and organizations have implications on others companies' activity ¹
Induced impact	It constitutes a third effect; it is the consequence of the variation on employees' income that, by family consumption, contributes for variations in production of goods and services ¹

1- Gaspar, Jorge, *et alia*, 2004. "O impacte sócio-económico do porto de Lisboa". In *Portos, Transportes Marítimos e Território*, Lisboa, edited by in Sousa, J., 141-156. Lisbon: University Nova of Lisboa, Faculty of Social and Human Sciences,, Institute of Space Dynamics

LITERATURE REVIEW

SEVERAL INTERNATIONAL STUDIES WERE ANALYZED: THESE STUDIES SHARE A SIMILAR METHODOLOGY TO MEASURE SUBSEQUENT EFFECTS BUT RESPOND DIFFERENTLY WITH RESPECT TO THE DIRECT IMPACT

STUDY	METHODOLOGY	ANALYZED PORTS	MAIN FINDINGS
<ul style="list-style-type: none"> <i>The economic impact of the UK Maritime Services Sector: Ports</i> 	(Contribution to GDP) Direct impact: number of workers x average productivity Indirect and induced impact: national input-output matrix	All ports from United Kingdom	1,2 % of UK's GDP
<ul style="list-style-type: none"> <i>Economic Importance of the Belgian Ports: Flemish maritime ports, Liège port complex and the port of Brussels – Report 2014</i> 	(Contribution to GDP) Direct impact: staff costs + depreciations and value adjustments + provisions + operational costs + profit/loss – operational subsidies Indirect and induced matrix: national input-output matrix	Port of Antwerp, Port of Ghent, Port of Ostend, Port of Zeebrugge, Port of Liège and Port of Brussels	- Flemish ports: 5,46% of Belgian GDP - Belgian ports: 6,05% of Belgian GDP
<ul style="list-style-type: none"> <i>Guide to the Economic Value of Texas Ports</i> 	The tool IMPLAN was used, which has access to several databases and regional input-output matrixes	All ports from the state of Texas	-----
<ul style="list-style-type: none"> <i>The 2013 Economic Impact of the Port of Seattle and The 2014 National Economic Impact of the U.S. Coastal Port System</i> 	Different multipliers were obtained in order to estimate the different impacts resulting from the port's activity	Port of Seattle and its complex (first study) Coastal ports from USA (second study)	-Port of Seattle: Business revenues of \$ 3,2 billions - Coastal ports from USA: Economic value of \$4,6 trillions

LITERATURE REVIEW

SOME NATIONAL STUDIES WERE ALSO ANALYZED AND THE MAJORITY HAS USED THE INPUT-OUTPUT MATRIX TO ESTIMATE INDIRECT AND INDUCED IMPACT

STUDY	METHODOLOGY	ANALYZED PORTS	MAIN FINDINGS
<ul style="list-style-type: none"> <i>O Impacte Sócio-Económico do Porto de Lisboa</i> 	<p>The output, employment and taxes' values were collected through questionnaires and interviews. The GVA was estimated from the multiplier extracted from the input-output matrix (produced for the analyzed region)</p> <p>The indirect and induced impacts were also measured using the input-output matrix</p>	Port of Lisboa	1,9% of Portuguese's GDP
<ul style="list-style-type: none"> <i>Portos Marítimos de Portugal Continental – Actividade, ligações e expansão</i> 	<p>The value of the Port of Lisbon derives from the study <i>o Impacte Sócio-Económico do Porto de Lisboa</i>. The Port of Sines' estimative was obtained through the study realized by CISEP-ISEG. About the remaining ports, the values were estimated from the values gotten for the Port of Lisbon and Port of Sines</p>	Port of Leixões, Port of Aveiro, Port of Lisboa, Port of Setúbal and Port of Sines	5% of Portuguese's GDP
<ul style="list-style-type: none"> <i>Estudo sobre o Impacto Económico dos Portos de Setúbal e Sesimbra</i> 	<p>(Gross Added Value)</p> <p>Direct impact: GVA's calculation was done through National Accounting Standards</p> <p>Indirect and induced impact: input-output matrix</p>	Port of Setúbal and Sesimbra	1,16% of Portuguese GDP (base price)
<ul style="list-style-type: none"> <i>O Impacto Económico do Porto de Ponta Delgada</i> 	<p>(Gross Added Value)</p> <p>Direct impact: GVA's calculation was done through National Accounting Standards</p> <p>Indirect and induced impact: input-output matrix</p>	Port of Ponta Delgada	1,95% of Autonomous Region of the Açores's GVA

LITERATURE REVIEW

The economic impact of the UK Maritime Services Sector: Ports

OXFORD ECONOMICS CHOSE A SIMPLER METHOD TO ESTIMATE THE DIRECT IMPACT FROM UNITED KINGDOM'S PORTS



It was developed by Oxford Economics for the UK Maritime sector

The **economic impact** was determined by analyzing the following variables: **contribution to employment, contribution to GDP and contribution to Exchequer revenues.**

METHODOLOGY (contribution to UK's GDP)

Direct impact The number of employees operating within the ports sector was multiplied by the average productivity of employees working in that industry (taken from the Annual Business Survey (ABS))

Indirect impact The study resorted to the UK'S *input-output matrix*, published by ONS regarding to the year 2010

Induced impact

Contribution to United Kingdom's GDP (2013)		
Effect	GVA (£ billions)	% GDP
Direct	7,7	0,49%
Indirect	6,3	0,40%
Induced	5	0,32%
Total	19	1,20%

United Kingdom's GDP in 2013 :
£ 2678 billions
 (Source: The World Bank)

LITERATURE REVIEW

Economic Importance of the Belgian Ports: Flemish maritime ports, Liège port complex and the port of Brussels – Report 2014

NATIONAL BANK OF BELGIUM USED THE NATIONAL INPUT-OUTPUT MATRIX TO ESTIMATE THE SECONDARY EFFECTS



Performed by National Bank of Belgium and updated annually

The ports analyzed were the following: **Antwerp, Ghent, Ostend, Zeebrugge, Liege** and **Brussels**. The first four are included in the Flemish ports' analysis.

Economic importance was obtained analyzing the following variables: **added value** at current prices, **employment** and **investment** at current prices (relative to companies whose activities have an economic connection to ports).

2014	Flemish ports		Belgian ports	
Impact	GAV (€ millions)	% GDP	GAV (€ millions)	% GDP
Direct	14927,4	2,81%	16532,1	3,11%
Indirect	14056,5	2,65%	15584,7	2,93%
Total	28983,9	5,46%	32116,8	6,05%

Belgium's GDP in 2014:
€ 531 235 millions
 (Source: The World Bank)

METHODOLOGY (added value at current prices)

- 🔍 The **direct** impact was calculated as the sum of staff costs, depreciation and value adjustments, the operating profit or loss, provisions for liabilities and charges and certain operating expenses.
- 🔍 The **indirect impact** was obtained using the national input-output matrix

LITERATURE REVIEW

Guide to the Economic Value of Texas Ports

UNIVERSITY OF TEXAS USED THE TOOL “IMPLAN” TO ESTIMATE THE ECONOMIC IMPACT FOR THE PORTS OF THIS STATE



Developed by Center for Transportation Research from The University of Texas at Austin.

“**IMPLAN**” was used. This was so, for this tool is regularly updated, regionalized, detailed, well documented and supported. Besides IMPLAN, interviews were conducted so as to collect appropriate data.

IMPLAN (Impact Analysis for Planning)¹

It is an economic impact assessment software system, developed and controlled by the *Minnesota IMPLAN Group, Inc* (MIG, Inc)

This tool allows the user to build up local-level input-output models that can estimate the economic impact of new firms, sport teams any other activity in a certain region. This is only possible thanks to a privileged access to a myriad of databases - these include information on 528 industries and 21 different economic variables. These databases also include input-output matrixes at national, state and country level.

The main users of IMPLAN are academic institutions, state governments and consulting firms.

Siegismund, Peter, *et alia*, 2008. *Guide to the Economic Value of Texas Ports*. Austin: Center for Transportation Research, University of Texas at Austin

1- <http://cier.umd.edu/RGGI/documents/IMPLAN.pdf>

LITERATURE REVIEW

The 2013 Economic Impact of the Port of Seattle and The 2014 National Economic Impact of the U.S. Coastal Port System

MARTIN ASSOCIATES HAVE DEVELOPED A METHODOLOGY THAT ALLOWS THE ESTIMATION OF ALL THE FLOWS FROM THE PORT ACTIVITY



Both studies were written by Martin Associates, following a similar methodology (as any study realized by this entity)

The economic impact was determined in a way to aggregate all the flows from the maritime activity: impacts on **employment, workers' income, business revenue** (and that of related businesses) and **tax revenues**. One should pay special attention to the fact that these effects are not additive

METHODOLOGY (from *The 2013 Economic Impact of the Port of Seattle*)

Direct impact

It was determined through the analysis of different variables whose values were obtained from interviews conducted to the entities which are directly linked to the port activity.

Induced impact

It was estimated using the regional personal income multiplier: this multiplier was developed from the data provided by the *Bureau of Economic Analysis, Regional Input-Output Modeling System*

Martin Associates, 2014. *The 2013 Economic Impact of the Port of Seattle*. Report for Port of Seattle.

Martin Associates, 2015. *The 2014 National Economic Impact of the U.S. Coastal Port System*. Report for American Association of Port Authorities.

LITERATURE REVIEW

The 2013 Economic Impact of the Port of Seattle and The 2014 National Economic Impact of the U.S. Coastal Port System

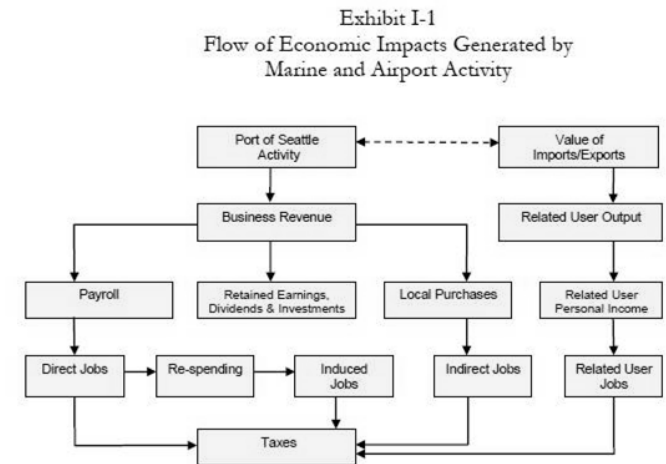
MARTIN ASSOCIATES HAVE DEVELOPED A METHODOLOGY THAT ALLOWS THE ESTIMATION OF ALL THE FLOWS FROM THE PORT ACTIVITY

METHODOLOGY (from *The 2013 Economic Impact of the Port of Seattle*)

Indirect employment The local purchases were collected from the interviewed companies; these purchases were combined with the employment to sales ratios in local supplying industries from *Bureau of Economic Analysis, Regional Input-Output Modeling System* for the state of Washington.

Related impacts These impacts were estimated by multiplying the cargo moving via the terminals by the job over sales ratio specific to exporters and importers.

Tax impacts The state and local income per capita tax burden was collected and subsequently applied to the direct, indirect and induced impacts.



Martin Associates, 2014. *The 2013 Economic Impact of the Port of Seattle*. Report for Port of Seattle.
 Martin Associates, 2015. *The 2014 National Economic Impact of the U.S. Coastal Port System*. Report for American Association of Port Authorities.

LITERATURE REVIEW

O Impacte Sócio-Económico do Porto de Lisboa

IN THE STUDY FOR APL, IT WAS POSSIBLE TO COME UP WITH THE MATRIX FOR THE REGION OF LISBON BASED ON THE NATIONAL INPUT-OUTPUT MATRIX



It was performed by the *Centro de Estudos Geográficos* – Jorge Gaspar, Diogo de Abreu and Nuno Costa and *Centro de Estudos de Desenvolvimento Regional e Urbano* – Sérgio Barroso, for the Port of Lisboa Administration (*APL - Administração do Porto de Lisboa*).

METHODOLOGY

The **direct impact** was obtained through reports and work papers (published or unedited) and related interviews. These practices allowed to estimate the **output, employment and tax burden** directly related to the Port of Lisboa community – port authority and companies whose activities support the Port. The **gross added value** was extracted from the computed multipliers.

In order to estimate **indirect and induced impacts**, an input-output matrix was designed (from the national one) for the Lisbon Metropolitan Area, region of Lisbon and Tejo Valley and remaining national space.

GVA multipliers	Type I	Type II
Direct	1,000000	1,000000
Lisbon area	0,421350	0,867400
Region of Lisbon and Tejo Valley	0,030230	0,106960
Remaining national space	0,051730	0,296410
Foreign	0,079123	0,606053
Total	1,582433	2,876823

1997/98	Total impact
Gross value output (millions of national currency)	341,2
Gross value added (millions of national currency)	107,4
Total wages (millions of national currency)	107,4
Employment (FTE)	38 271

Gaspar, Jorge, *et alia*, 2004. "O impacte sócio-económico do porto de Lisboa". In *Portos, Transportes Marítimos e Território*, Lisboa, edited by in Sousa, J., 141-156. Lisbon: University Nova of Lisboa, Faculty of Social and Human Sciences,, Institute of Space Dynamics

LITERATURE REVIEW

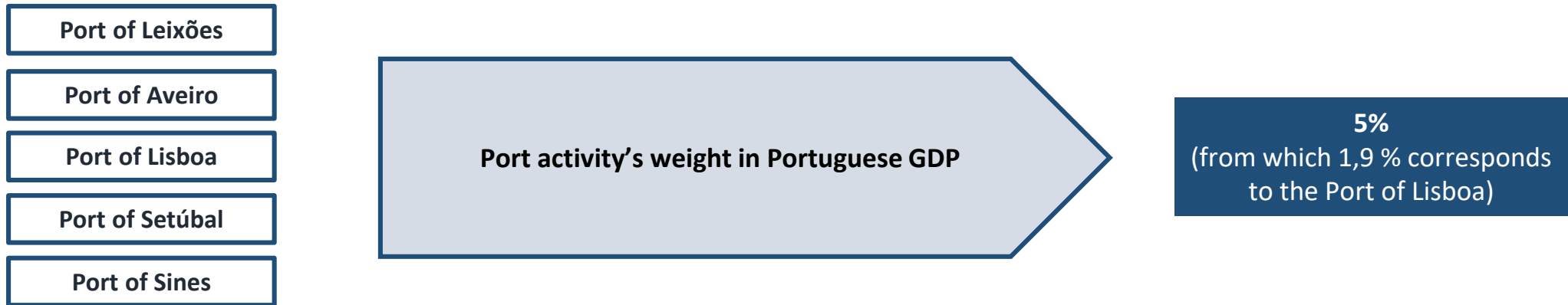
Portos Marítimos de Portugal Continental – Actividade, ligações e expansão

IN ORDER TO ESTIMATE THE CONTRIBUTION FROM THE PORT ACTIVITY FOR THE PORTUGUESE GDP, BES RESEARCH BROWSED THE RESULTS OBTAINED IN DIFFERENT STUDIES THAT HAVE BEEN PREVIOUSLY DEVELOPED



Developed by BES Research and published in September 2009.

It focused on the five main Portuguese ports: Leixões, Aveiro, Lisboa, Setúbal and Sines



METHODOLOGY

- ⚓ For the Port of Lisboa, the value estimated was 1,9% and it was taken from the study developed by the Port of Lisboa Administration (Gaspar, J. *et alia*, 1998).
- ⚓ For the Port of Aveiro and Setúbal, the Port of Lisboa result was weighted by the cargo volume for each port.
- ⚓ The value estimated for the Port of Sines was collected from the study developed by CISEP-ISEG.
- ⚓ Concerning the Port of Leixões, an average between the results from the Ports of Sines and Lisboa was conducted, due to the similar profile of these three ports

Banco Espírito Santo Research, 2009. *Portos Marítimos de Portugal Continental - Actividade, ligações e expansão*

LITERATURE REVIEW

Estudo sobre o Impacto Económico dos Portos de Setúbal e Sesimbra

CEGE USED THE NATIONAL MATRIX RELATIVE TO THE YEAR OF 2009, AFTER ADOPTING A SET OF ASSUMPTIONS



Developed by Management Studies Center (*Centro de Estudos de Gestão - CEGE*) which belongs to Lisboa School of Economics and Management (*Instituto Superior de Economia e Gestão*). This study was aimed at the Administration of the Ports of Setúbal and Sesimbra (*APSS – Administração dos Portos de Setúbal e Sesimbra*) and was published in March 2011.

The economic impact was based on the following variables: Output, contribution to **Gross Value Added, Disposable Income** and **Employment** created (FTE).

2009	Direct impact	Indirect and induced impact
Output (€ millions)	3 900	6 800
GVA (€ millions)	744	1 600
Employment (FTE)	8 300	25 000
Families' income (€ millions)	227	492

METHODOLOGY

- ✓ In order to estimate direct impact, a group of interviews was conducted and some economic data was collected from secondary sources.
- ✓ Indirect and induced impact was estimated through an input-output matrix.



It was impossible to produce the regional matrix, so this study resorted to the national input-output matrix. This adoption required the assumption that “the relations pattern between sectors in national economy applies to the port”. It was applied a P60x60 matrix which was developed by the DPP¹, which is part of the Ministry of Agriculture, Forestry and Rural Development. The transactions occurred in 2005 are included in this matrix, which called for a new assumption: “the economic transactions’ structure have not changed since 2009”.

Given the resource scarcity to build a regional matrix, economic effects were estimated based on the multipliers for the different sectors presented in the DPP’s input-output matrix.

1- Departamento de Prospectiva e Planeamento e Relações Internacionais (Department of Foresight and Planning and International Relations)

LITERATURE REVIEW

O Impacto Económico do Porto de Ponta Delgada

IN THE STUDY DEVELOPED BY NUNO FURTADO, THE MULTIPLIERS THAT WERE OBTAINED ON THE STUDY WRITTEN BY PEDRO FERREIRA IN 2006 WERE USED

2012	Direct	Indirect	Induced
Output (€ millions)	201,9	122,9	33,9
GVA (€ millions)	27	24,3	10,6
Wages/Income (€ millions)	18,7	22,6	9,8
Employment (FTE)	679	807	715



Performed by Nuno Manuel Ferreira Soares Furtado as a master dissertation of Master in Management/MBA (University of Açores); published in October 2015.

The economic impact from the Port of Ponta Delgada was obtained by analyzing the following variables: **output, gross added value, families' income and employment.**

METHODOLOGY

Direct impact

The GVA was obtained applying the formula by National Accounting Standards.

Indirect and induced impact

The matrix input-output was used



The study lacked the updated matrix for the region under analysis, for which reason the matrix and multipliers from Ferreira's study, relative to 2011, were used. In this way, it was possible to use regional multipliers that allowed for a more reliable outcome. One of the alternatives to this adoption would be to use the multipliers developed by CEGE's study for the Ports of Setúbal and Sesimbra.

Furtado, Nuno Manuel Ferreira Soares, 2015. *O Impacto Económico do Porto de Ponta Delgada*. Master dissertation. Ponta Delgada: University of Açores, Economics and Management Department.

An aerial photograph of a coastal industrial area. A large body of water occupies the right side of the frame, with a long pier extending into it. Several large ships are docked at the pier. The land on the left is densely packed with industrial buildings, roads, and infrastructure. The text "DIRECT IMPACT" is overlaid in the center of the image.

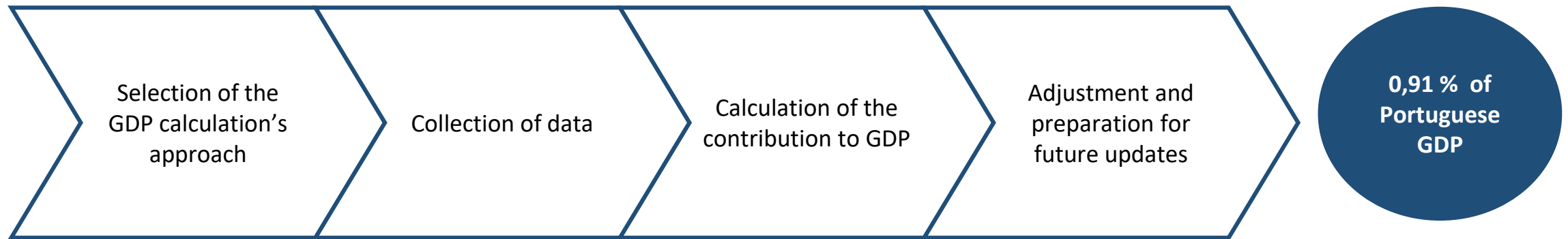
DIRECT IMPACT

DIRECT IMPACT

ANALYZING THE AFOREMENTIONED STUDIES, AND GIVEN THE AVAILABLE RESOURCES AND NEED FOR FUTURE UPDATES, THE ADOPTED METHODOLOGY IS THE ONE THAT APPEARS TO BEST SUIT THE PREVIOUS CONSTRAINTS

DIRECT IMPACT

It corresponds to the effects that are related to the activities developed by the companies settled in the analyzed area. In this way, it constitutes the first level of activities' influence in the national economy¹



1 - Felício, José Augusto (coord.), 2011. *Estudo sobre o impacto sócio-económico dos portos de Setúbal e Sesimbra*. Final study's report. Lisboa: Lisboa Management Studies Center, Lisbon School of Economics and Management (ISEG).

DIRECT IMPACT APPROACH

A. METHODOLOGY

THE PRODUCTION APPROACH WAS THE ONE CHOSEN TO ESTIMATE THE CONTRIBUTION OF THE REGION OF SINES TO THE GDP, GIVEN ITS ADVANTAGES IN DATA GATHERING AND FUTURE UPDATES

In order to obtain Port of Sines', ZILS' and ZIL's contribution for the Portuguese Gross Domestic Product one should choose among one of three approaches to calculate GDP.

EXPENDITURE APPROACH

$$\text{GDP} = \text{Personal Consumption Expenditures} + \text{Government Expenditures and Investment} + \text{Gross Private Fixed Investment} + \text{Net Exports} - \text{Net Imports}$$

High complexity degree related to data gathering, especially in what respects to Personal Consumption Expenditures. This would represent a major difficulty in the future updates of the model.

INCOME APPROACH

$$\text{GDP} = \text{Wages} + \text{Rents} + \text{Interests} + \text{Profits} + \text{Corporate Income Taxes} + \text{Dividends} + \text{Undistributed Corporate Profits}$$

Even though the data required for this approach is displayed on financial statements, it is treated as statements' notes, which would hinder its gathering.

PRODUCTION APPROACH

$$\text{GDP} = \sum \text{Gross Value Added}$$

The necessary data for this approach is readily obtained from the firms' financial statements straightaway, in most cases.

DIRECT IMPACT APPROACH

A. METHODOLOGY

THE PRODUCTION APPROACH WAS THE ONE CHOSEN TO ESTIMATE THE CONTRIBUTION OF THE REGION OF SINES TO THE GDP, GIVEN ITS ADVANTAGES IN DATA GATHERING AND FUTURE UPDATES

According to this approach, one should calculate each entity's gross value added. Therefore, this study applied the formula published by the Portuguese Institution *Quadro de Referência Estratégico Nacional (QREN)**, according to the National Accounting Standards (*Sistema de Normalização Contabilística*):

$$\begin{aligned} \text{Gross Value Added} = & \text{Sales (71)} + \text{Services (72)} + \text{Gains on production stocks (73)} + \text{Ongoing work for own benefit of the company (74)} + \\ & + \text{Operating grants (75)} + \text{Supplementary gains (78/781)} - \text{Purchase (61)} - \text{External services (62)} - \text{Indirect taxes (6812)} \end{aligned}$$

Information was obtained directly from companies operating in the geographical area of Sines seaport, ZILS and ZIL, through **surveys** and **interviews**, but also resorting to **Dun & Bradstreet's** information supply services.

* *Orientação Técnica N.º 16/2011*

DIRECT IMPACT APPROACH

B. SCOPE

FROM THE PORT OF SINES, THE DATA FROM THE FIVE TERMINALS, SHIPPING AGENTS THAT REPRESENT 80% OF THE TOTAL NUMBER OF SHIPS AND THE ZALSINES' MAIN COMPANIES WERE COLLECTED, WHAT AMOUNTED TO 292 832 885 € IN TERMS OF BUSINESS REVENUE.

COMPANIES



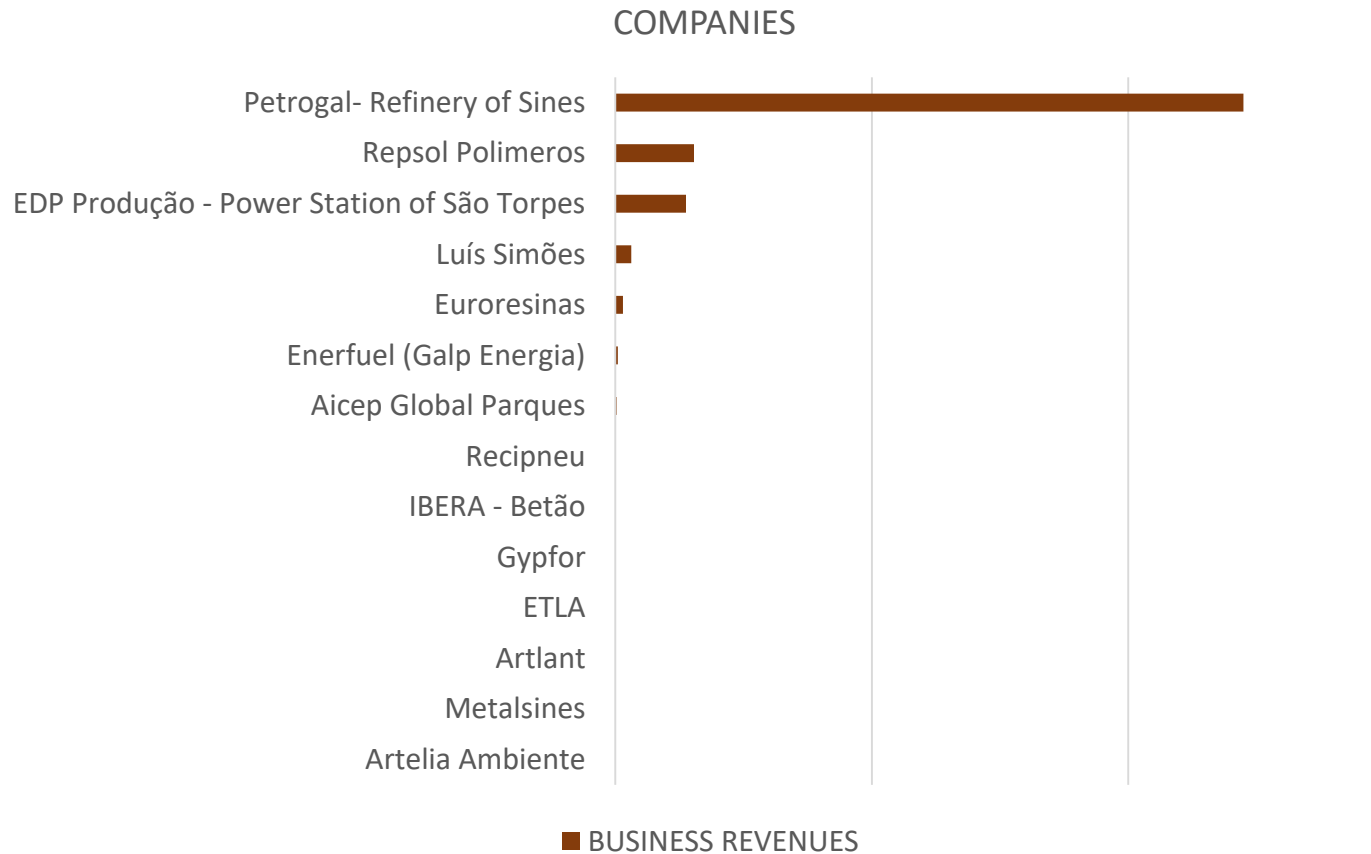
The 80/20 rule was applied to shipping agents considering the number of vessels handled – information was gathered for those who serve 80% of total vessels that operate in the seaport.



DIRECT IMPACT APPROACH

B. SCOPE

FROM ZILS, THE DATA FROM THE MAIN COMPANIES WHICH REPRESENT 80% OF TOTAL BUSINESS REVENUES WAS COLLECTED, CORRESPONDING TO 6 218 478 038€



Those companies represent 80% of total turnover at ZILS; at the end, results were adjusted in order to account for ZILS' entire contribution.



Note: Given the Artelia Ambiente's, Metalsines's and Artlant's financial situatuion, it was not possible to collect the data from these companies

DIRECT IMPACT APPROACH

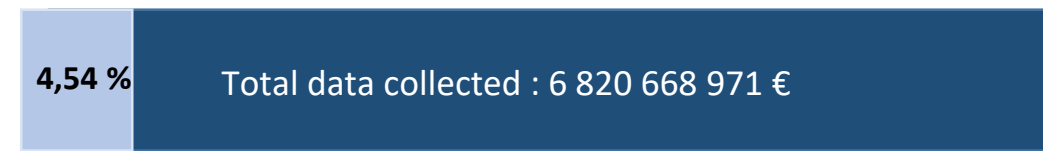
B. SCOPE

FROM ZIL, THE DATA FROM THE 44 BIGGEST COMPANIES WAS COLLECTED, WHICH CORRESPONDS TO 309 358 074 € IN BUSINESS REVENUES

<i>Zona Industrial Ligeira</i>		
A.C. Nunes	Grupo Vendap – Sines	Pidwell&Barbosa
Amplietapa	HRQ	Pneusines
Associação Empresarial de Sines	CIMA – Centro de Inspeção Mecânica Automóvel	Projectos & Construções João Araújo Vicêncio
Blocosines	Instituto Soldura & Qualidade Sines	Predialobo
CENFIM Sines	J. Faria	Ramos & Pereira
Centro ciclista Sineense	Jomarlimpa	Repform
Coibal	Linde Gás – Sines	Rogério Luz
Colmeia Nova	Litoral Fish	Rui &Candeias
Dona Fruta	Litoral Motors	Servitubos
ETH Construções	Luís Manuel da Silva	Sicamos
Figueiredo & Irmãos	MASA Portugal – Sines	SLM Sines
Fripex	Móveis Cassam	Soandaimes
Grupo MECWIDE	Movisines	Transgrua
Grupo Três Mosqueteiros	Oceanic	TVA –Tubos, Válvulas e Acessórios
Unibetão	Valorsines	

At ZIL, information was also gathered for those companies that represent 80% of ZIL’s annual turnover. Afterwards, ZIL’s contribution to GDP was updated to account for 100% of its activity.

BUSINESS REVENUES



ZIL: 309 358 047 €

DIRECT IMPACT APPROACH

C. RESULTS

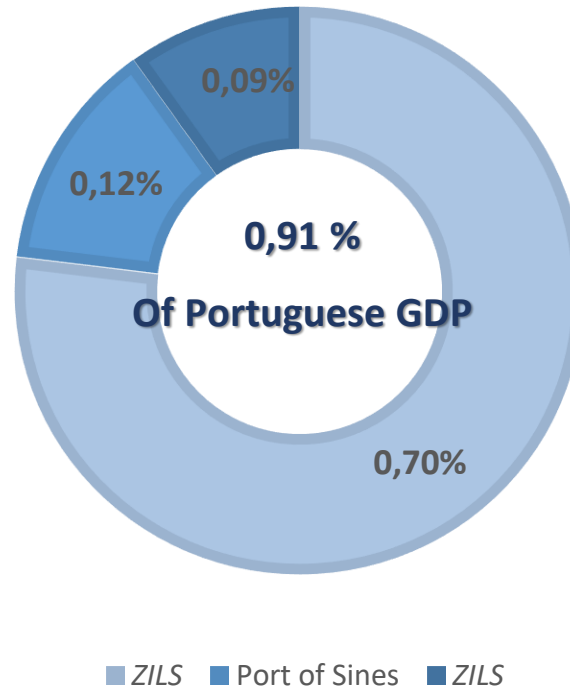
THE ANALYZED AREA CONTRIBUTES WITH 0,91% TO THE PORTUGUESE GDP, THUS BEING IN LINE WITH THE BENCHMARK VALUES DERIVED FROM THE INDICATED STUDIES

Port of Sines	
GVA ¹	GVA ²
€ 181 246 845	€ 226 558 557

Zona Industrial e Logística de Sines	
GVA ¹	GVA ²
€ 1 024 769 532	€ 1 280 961 914

Zona Industrial Ligeira	
GVA ¹	GVA ²
€129 005 977	€ 161 257 471

1- value extracted from the actual information gathered, not accounting for the whole set of companies at the respective area
 2- value adjusted to comply with the entire list of companies operating at the respective area



Port	Contribution to GDP
Antwerp (2014)	1,87%
Complex of Sines (Port, ZILS and ZIL)	0,91%
Ghent (2014)	0,67%
Reino Unido (2013)	0,49%
Setúbal e Sesimbra (2011)	0,42%
Liege (2014)	0,21%
Zeebrugge (2014)	0,18%
Sines	0,12%
Ostend (2014)	0,09%
Brussels (2014)	0,09%

Port of Sines, ZILS and ZIL contribute directly for almost 1% of the Portuguese GDP of 2015. This stresses the role of this region as value generator center for the country.

An aerial photograph of an industrial facility, possibly a refinery or chemical plant, situated along a large body of water. The facility features several large storage tanks, processing units, and a complex network of pipes and roads. In the background, a city with dense residential and commercial buildings is visible. The text "INDIRECT IMPACT" is overlaid in the center of the image.

INDIRECT IMPACT

INDIRECT IMPACT

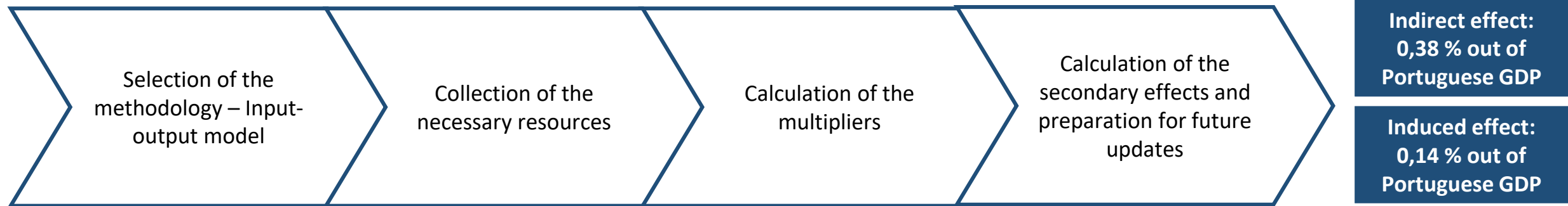
FOLLOWING WHAT WAS DONE BY OTHERS AUTHORS, THE ADOPTED METHODOLOGY IS THE ONE THAT ALLOWS THE ESTIMATION OF THE SECONDARY EFFECTS IN THE MOST EFFICIENT WAY

INDIRECT IMPACT

It corresponds to the effects resulting from the goods and services demanded - intermediate consumption, and associated investment. This means that it is the effect created in the companies suppliers of inputs ¹

INDUCED IMPACT

It corresponds to the effects resulting from the consumption of the employees from the Port of Sines, ZILS and ZIL



1 - Felício, José Augusto (coord.), 2011. *Estudo sobre o impacto sócio-económico dos portos de Setúbal e Sesimbra*. Final study's report. Lisboa: Lisboa Management Studies Center, Lisbon School of Economics and Management (ISEG).

INDIRECT IMPACT

A. METHODOLOGY

TAKING INTO ACCOUNT ITS ADVANTAGES AND DISADVANTAGES, THE INPUT-OUTPUT MODEL WAS SELECTED TO ESTIMATE THE INDIRECT AND INDUCED IMPACTS OF THE PORT OF SINES, ZILS AND ZIL

Following what was done in the analyzed studies, the **Classic Input-Output Model**, also known as the **Classic Leontief Model**, was used to estimate indirect and induced impacts.

Analyzing the limited alternatives, this model presents diverse **advantages**:

- ✓ It allows the measurement of indirect and induced effects at a national level
- ✓ Once the multipliers are obtained, secondary effects' calculation is quite straightforward
- ✓ It does not require the collection of data that goes beyond the input-output matrix
- ✓ It allows for an assessment of the activities' impact at different levels (e.g. Output, Gross Value Added, Employment)

However, this model also exhibits some **disadvantages**:

- ✗ The Input-Output Model requires some assumptions which somehow distort and bias a proper interpretation of results
- ✗ The last input-output matrix available is from 2013, whereas the year whose impact is being analyzed is 2015

Despite presenting some disadvantages, this model appears to be the best alternative to evaluate the economic effects of the activities developed in the Port of Sines, ZILS and ZIL.

INDIRECT IMPACT

A. METHODOLOGY

THE INPUT-OUTPUT MODEL IS BASED IN A SET OF ASSUMPTIONS WHICH LIMITS RESULTS' INTERPRETATION



This model was developed by professor Wassily W. Leontief in 1951. It is based on the simple yet important idea that all products and outputs are obtained from using production factors, named inputs, that can be the output from other industries ¹

This model is inspired in papers written by Léon Walras. Walras built a general equilibrium model (General Equilibrium Theory) which allows to determine prices and quantities for each economic sector. In this model, a group of production coefficients linking the quantity of inputs required with total output was used. Later in time, this concept would be further developed by Leontief in the Input-Output Model, who named them “technical coefficients”. ²

Assumptions ¹	Constant returns to scale	Economies of scale are not taken into account
	Fixed proportions technology	The production factors are consumed always at the same proportion (the production function is characterized by an isoquant)
	Constant coefficients over time	The technical coefficients are invariable over time
	Unlimited productive capacity	If the final sector's demand increases, this sector and the other economic sectors would be able to respond to this rise
	Homogeneity	Each sector produces only one product
	Impossibility of substitution among sectors	It is not possible to substitute a product with another from another economic sector

1 - Sargento, Ana Lúcia Marto, 2002. *Matriz Input-output e Estimação do Comércio Inter-regional: Um Estudo para a Região Centro*. Master dissertation, Coimbra: Faculty of Economics, University of Coimbra.

2 - Carneiro, Roberto (coord.), 2011. *Portugal 2020 – Antecipação de Necessidades de Qualificações e Competências*. Final report. Lisboa: Study Centre on Peoples and Cultures, Portuguese Catholic University.

INDIRECT IMPACT

A. METHODOLOGY

THE INPUT-OUTPUT MATRIX IS THE MODEL'S BASE ELEMENT AND REPRESENTS THE RELATIONS BETWEEN THE DIFFERENT ECONOMIC AGENTS

The **input-output matrix** is the base element in the Classic Leontief Model application. It constitutes the representation of the economic relations among the different economic agents in a certain moment. In this way, it allows to describe the flow of sectors' production (output) and used resources' origin (inputs). (CEGE 2011).

It is composed by:

1st quadrant: Intermediate consumption

2nd quadrant: Final consumption

3rd quadrant: the resources used in the production's remuneration (wages, profits, taxes and imports)

4th quadrant: the primary resources used by final demand – it may not be part of the matrix

General structure of input-output matrix:

		Intermediate demand				Final demand				Total
		Sector 1	Sector 2	Sector 3	Sector N	Families	State	Invest.	Export	
Productive sectors	Sector 1	1 st Quadrant: intermediate sales/consumption with destiny/origin in the region				2 nd Quadrant: final demand for region's production				Production's outpour
	Sector 2									
	Sector 3									
	Sector N									
Primary resources	Wages	3 rd Quadrant: primary resources used in the production				4 th Quadrant: primary resources used in the final demand				Primary resources
	Profits									
	Taxes									
	Imports									
	Total									
		Inputs used in production				Final demand				

Source: CEGE

Algebraically, the Input-Output Model for an economy constituted by n sectors settles in a system with n equations and n unknowns
 - For the analytical expression, only the first and the second quadrants of the input-output matrix are considered (as it is possible to confirm with Appendix 11)

Sargento, Ana Lúcia Marto, 2002. *Matriz Input-output e Estimação do Comércio Inter-regional: Um Estudo para a Região Centro*. Master dissertation, Coimbra: Faculty of Economics, University of Coimbra.

INDIRECT IMPACT

A. METHODOLOGY

FROM THE INPUT-OUTPUT MATRIX IT IS POSSIBLE TO OBTAIN TWO TYPES OF MULTIPLIERS: TYPE I, THAT ESTIMATE THE DIRECT AND INDIRECT EFFECTS, AND TYPE II, WHICH ASSESS THE INDUCED IMPACT

From the production structure table (1st quadrant) it is determined the Technical

Coefficients Matrix - $a_{ij} = \frac{z_{ij}}{X_j}$

In order to get the multipliers of type II, one should add a new line and a new column to the first quadrant: the families' income is added as an extra line of first quadrant and families' consumption is considered as a productive sector.

General structure of input-output matrix:

		Intermediate demand				Final demand			Total
		Sector 1	Sector 2	Sector 3	Sector N	Families	State	Invest.	
Productive sectors	Sector 1	1 st Quadrant: intermediate sales/consumption with destiny/origin in the region				2 nd Quadrant: final demand for region's production			Production's outpour
	Sector 2								
	Sector 3								
	Sector N								
Primary resources	Wages	3 rd Quadrant: primary resources used in the production			4 th Quadrant: primary resources used in the final demand			Primary resources	
	Profits								
	Taxes								
	Imports								
	Imports								
Total		Inputs used in production				Final demand			

Source: CEGE

Once the Leontief Inverse Matrix is obtained , it is possible to determine the different multipliers and their effects

Multipliers

Type I : Measure the direct and indirect effects

Type II : Measure the direct, indirect and induced effects



It is necessary to devote careful attention to multipliers of type II, since they tend to overestimate economic impacts. These multipliers assume that all income is consumed, ignoring savings.

INDIRECT IMPACT

B. SCOPE

THE NATIONAL INPUT-OUTPUT MATRIX RELATIVE TO 2013 WAS USED, WHICH CALLED FOR THE ADOPTION OF SOME ASSUMPTIONS

For the analysis that is intended, the **regional input-output matrix** should have been the one used. The transactions between the region and the remaining country are represented in this matrix.

It was not possible to produce the regional input-output matrix due to different factors:

- + It was unfeasible to access microeconomic data from companies (IES)
- + Little disaggregated and sectorial data for a regional level was publicly available
- + It was incoherent to build this matrix in the proposed period

Given these constraints, and following what was done in the study *Estudo sobre o Impacto Económico dos Portos de Setúbal e Sesimbra* : **The national input-output matrix relative to 2013 was used, provided by INE (developed by DPP)**

It was necessary to adopt the following assumptions

The relations' pattern between sectors in national economy applies to the analyzed area (Sines)

The transactions' pattern has not changed since 2013

From the three available matrixes (total flows, national production and importations) the **national production matrix** was chosen as this study intends to estimate the contribution to the Portuguese GDP (which excludes the role of importations).

INDIRECT IMPACT

B. SCOPE

IN TERMS OF GROSS ADDED VALUE, THE TOTAL EFFECT PER MONETARY UNIT OF PRODUCT IS HIGHER IN THE SECTORS IN WHICH THE PORT OF SINES AND REPSOL POLIMEROS ARE INCLUDED

Knowing that the multipliers determine the indirect and induced effects verified at a national level, they were only applied to the main entities settled in the analyzed area - **Petrogal** (Refinery of Sines), **EDP Produção** (Power Station of São Torpes), **Repsol Polímeros** and **Port of Sines** (in this case, the port was analyzed as a single unit). Analyzing the activities developed by the remaining entities, it was concluded that their effect was practically null at the national level.

Gross Added Value				
Sector (CAE)	Coke and refined petroleum products	Electricity, gas, steam and air-conditioning	Rubber and plastics products	Warehousing and support services for transportation
Multiplier Type I	5,7112	2,8233	1,6396	1,7082
Multiplier Type II	7,3877	3,1570	2,0400	2,0982
Direct Effect ¹	0,0106	0,2181	0,3060	0,5025
Indirect Effect ¹	0,0498	0,3976	0,1957	0,3558
Induced Effect¹	0,0177	0,0728	0,1225	0,1960
Total Effect ¹	0,0780	0,6885	0,6242	0,6885

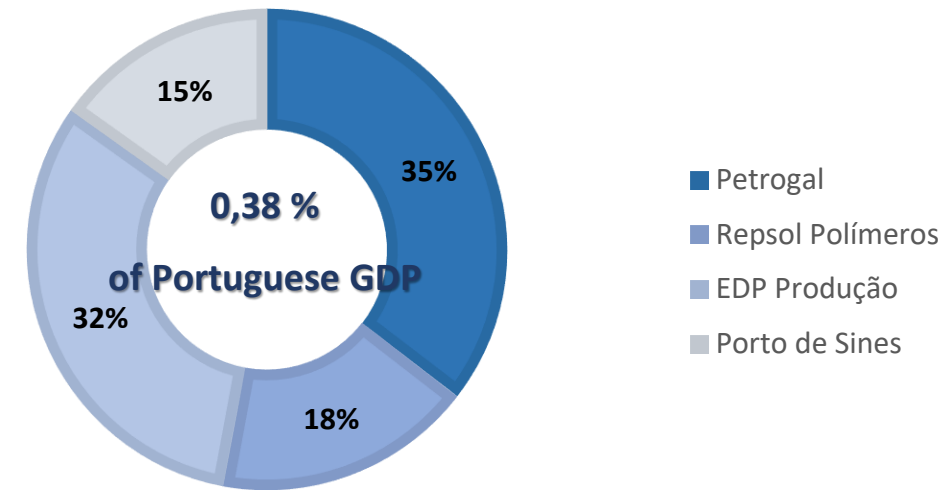
1 - Effect, in monetary units, on the variation of a monetary unit in the product of the sector

INDIRECT IMPACT

C. RESULTS

THE MAIN COMPANIES FROM ZILS AND THE PORT OF SINES CONTRIBUTE, INDIRECTLY, FOR 0,38% OF THE PORTUGUESE GDP

AREA	INDIRECT EFFECT	CONTRIBUTION TO GDP
Zona Industrial e Logística de Sines (Petrogal – Refinery of Sines, Repsol Polímeros and EDP Produção – Power Station of São Torpes)	€ 583 035 857	0,32 %
Port of Sines	€ 104 199 491	0,06 %



Indirectly, the main companies operating in ZILS contribute with more than €500 millions to Portuguese GDP. In percentage terms, these companies and the Port of Sines contribute for 0,38% of the Portuguese GDP. The Refinery of Sines, despite being highly dependent on imports, is the one that most contributes for the analyzed region’s indirect impact.

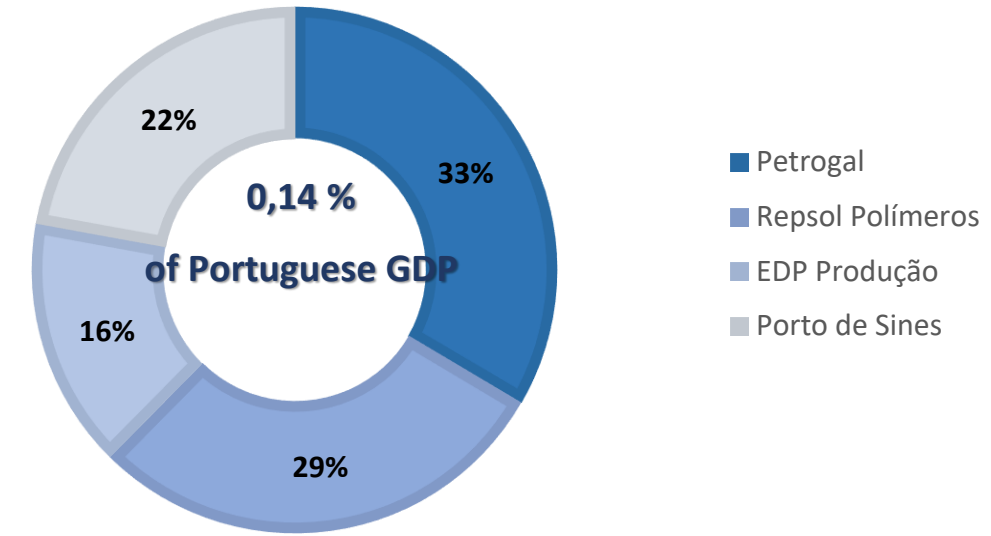
Port	Contribution to GDP
Antwerp (2014)	1,70%
Ghent (2014)	0,73%
Reino Unido (2013)	0,40%
Sines' Complex (Port, ZILS and ZIL)	0,38%
Setúbal e Sesimbra (2011)	0,23%
Liege (2014)	0,22%
Zeebrugge (2014)	0,14%
Ostend (2014)	0,07%
Sines	0,06%
Brussels (2014)	0,06%

INDIRECT IMPACT

C. RESULTS

THE MAIN COMPANIES FROM ZILS AND THE PORT OF SINES CONTRIBUTE, THROUGH THEIR INDUCED IMPACT, FOR 0,14 % OF THE PORTUGUESE GDP

AREA	INDUCED IMPACT	CONTRIBUTION TO GDP
Zona Industrial e Logística de Sines (Petrogal – Refinery of Sines, Repsol Polímeros and EDP Produção – Power Station of São Torpes)	€ 201 997 667	0,11 %
Port of Sines	€ 57 388 233	0,03 %



In 2015, the induced impact from the main companies present in ZILS and the Port of Sines was about € 360 millions, which corresponds to 0,14% of the total GDP. Again, the Refinery of Sines stands out for its subsequent effect on the national economy. Repsol Polímeros also exhibits a significant contribution to the Portuguese economy.

An aerial photograph of a port facility. In the foreground, a large stone breakwater curves across the bottom of the frame. Inside the harbor, several large cargo ships are docked at piers. To the left, an industrial area contains numerous storage tanks and buildings. The background shows a coastal town and a large body of water under a cloudy sky.

EXPORTS AND IMPORTS

EXPORTS AND IMPORTS

A. PORT OF SINES

GIVEN THE LOW ADDED VALUE OF THE CARGO THAT IS HANDLED IN THE PORTUGUESE MARITIME PORTS, A PROPER ANALYSIS OF EXPORTS AND IMPORTS MUST BE ONE OF VOLUME RATHER THAN VALUE.

Analysis in monetary terms



Analysis in terms of volume

- According to the study performed by CEGE (2011), a significant part of the international trade is conducted through the Portuguese ports, but the cargo that is handled in those same ports exhibits a low added value, which translates in low final prices for that cargo.
- The data that is provided by the INE in what concerns international trade does not include products whose origin/destination lies within the EU, given that these transactions do not require border controls. As such, the analysis that follows was performed according to the statistics provided by APS, which present the cargo volume that was traded through the Port of Sines.

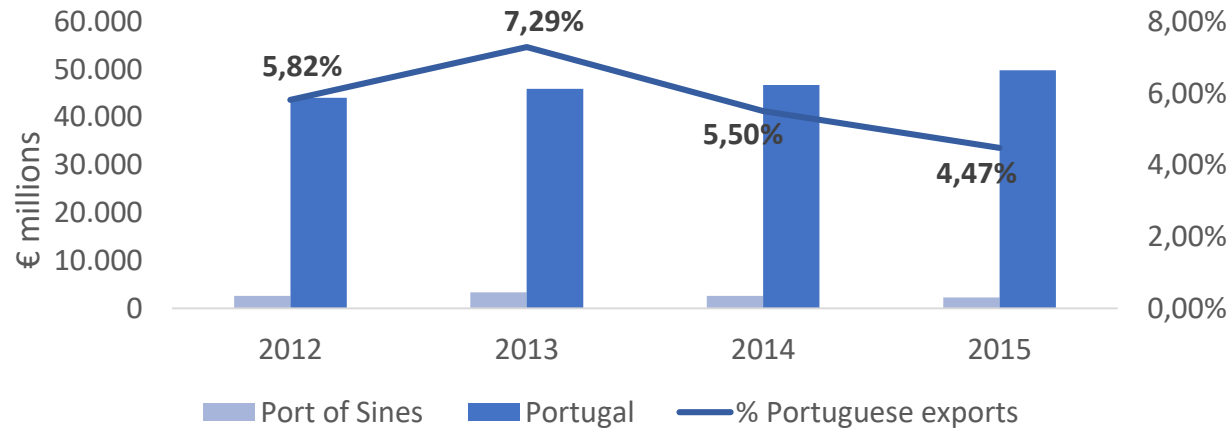
Having said this, and as a consequence of the relatively low added value of the cargo that is handled in the Port of Sines, a quantitative approach as opposed to a qualitative one appears to better suit the purpose of this analysis.

EXPORTS AND IMPORTS

A. PORT OF SINES

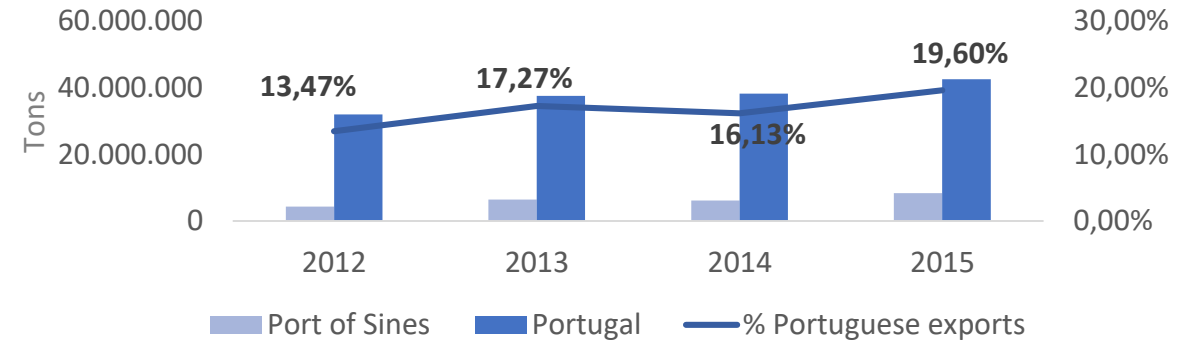
THE VOLUME OF EXPORTS THAT WERE CONDUCTED THROUGH THE PORT OF SINES HAS BEEN INCREASING SINCE 2012

Exports conducted through the Port of Sines and Portuguese exports (in monetary terms)



Source: Data from the Port of Sines – INE
National data – ETC 2012, 2013, 2014 and 2015 (INE)

Exports conducted through the Port of Sines and total Portuguese exports (in terms of volume)



Source: Data from the Port of Sines obtained from *Estatísticas de tráfego*;
National data – ETC 2012, 2013, 2014 and 2015 (INE)

There is a notorious difference in the contribution of the Port of Sines for the Portuguese exports when a monetary analysis is opposed to a volume one, as previously suggested by the study performed by CEGE.

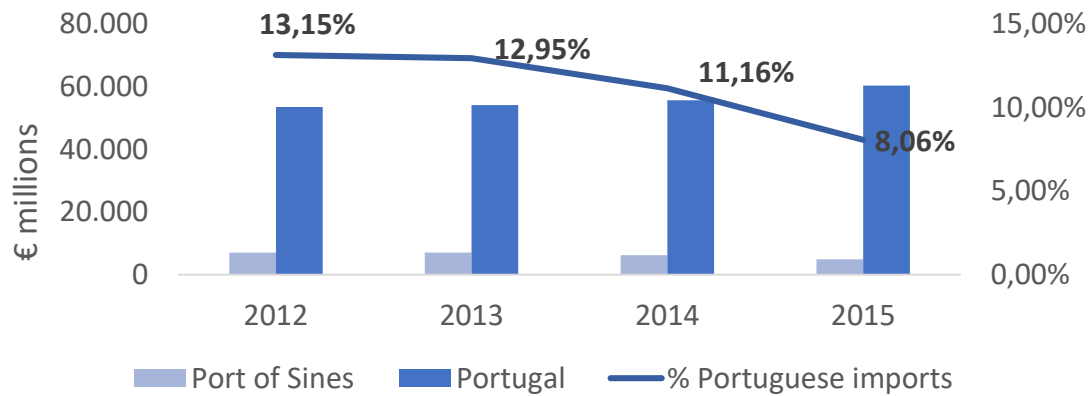
This analysis follows the data's correction mentioned in Appendix 18.

EXPORTS AND IMPORTS

A. PORT OF SINES

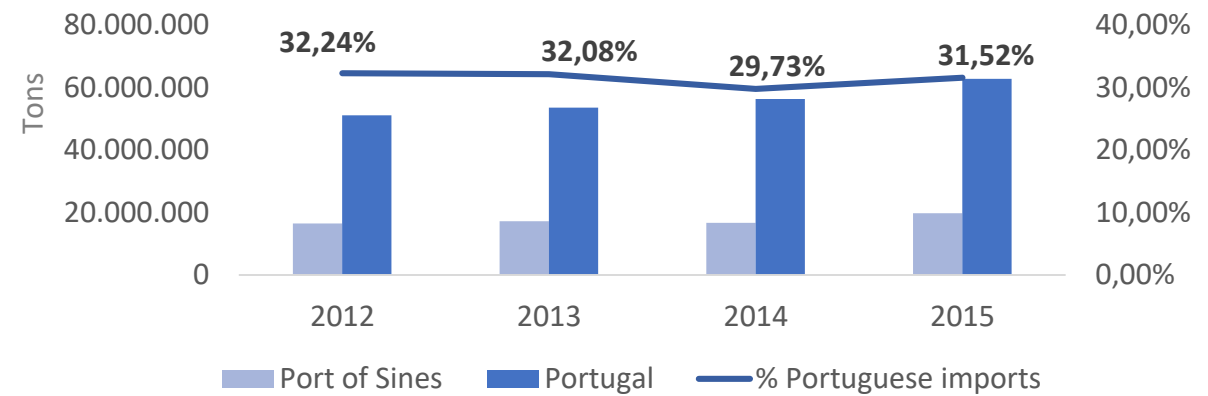
THE VOLUME OF IMPORTS THAT ENTERED THE COUNTRY THROUGH SINES HAS ALSO INCREASED, THOUGH AT A LOWER PACE

Imports conducted through the Port of Sines and total imports (in monetary terms)



Source: Data from the Port of Sines – INE
 National data – ETC 2012, 2013, 2014 and 2015 (INE)

Imports conducted through the Port of Sines and total imports (in volume terms)



Source: Data from the Port of Sines obtained from *Estatísticas do tráfego*;
 National data – ETC 2012, 2013, 2014 and 2015 (INE)

The difference in the two types of analysis is even more significant for the case of imports.

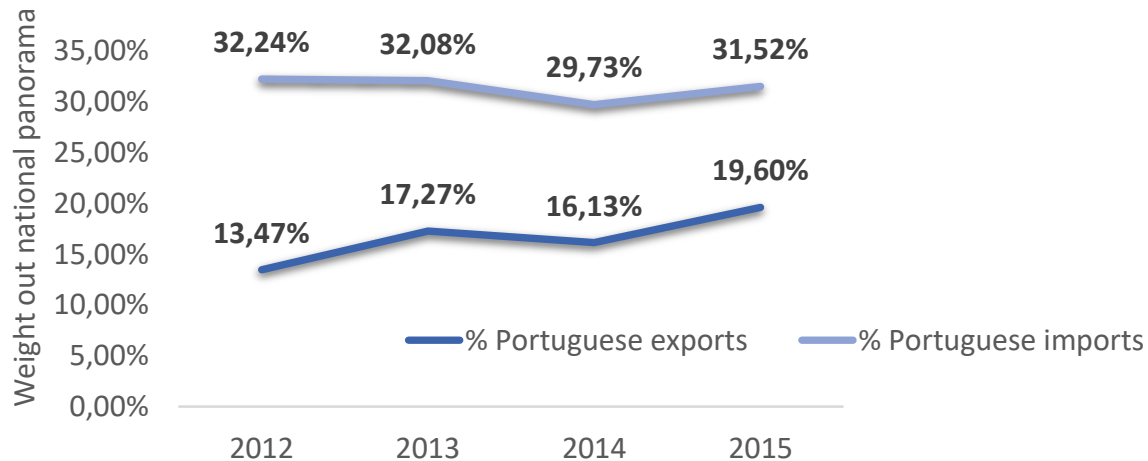
This analysis follows the data's correction mentioned in Appendix 18.

EXPORTS AND IMPORTS

A. PORT OF SINES

THE PORT OF SINES CAN BE DEEMED AS AN ESSENTIAL GATEWAY BOTH FOR EXPORTS AND IMPORTS, SHOWING AN INCREASING CONTRIBUTION TO THE EXPORTS AND EXHIBITING A FLAT BUT SIGNIFICANT CONTRIBUTION TO THE IMPORTS

Contribution of the Port of Sines to the Portuguese exports and imports



- ⚓ In terms of the contribution to the portuguese imports, a relatively flat contribution of the Port of Sines can be observed – the behavior of the imports conducted through Sines has been replicating the national trend.
- ⚓ In what concerns the relative contribution to total exports, one can confirm an increasing importance of the Port of Sines – the decrease from 2013 to 2014 was more than offset by the increase in 2015.

More than 30% of total imports are conducted through the Port of Sines.

In a four-year period, the weight of the exports performed through Sines increased by, approximately, 600 basis points.

EXPORTS AND IMPORTS

B. ZILS

TWO OUT OF THE TEN BIGGEST EXPORTERS AND IMPORTERS (IN MONETARY TERMS) ARE SETTLED IN THE ZILS

Exporters

1º Petrogal (comprises the Refineries of Sines and Matosinhos)

2º Autoeuropa

3º Portucel Soporcel

4º Continental Mabor

5º Repsol Polímeros

6º Volkswagen Aktiengesellschaft

7º Delphi Automotive Systems

8º Philip Morris (Tabaqueira)

9º Bosch Car Multimedia

10º SN Seixal – Siderurgia Nacional

Importers

1º Petrogal (comprises the Refineries of Sines and Matosinhos)

2º Galp Gás Natural

3º Volkswagen Autoeuropa

4º Pingo Doce

5º SIVA (representing Volkswagen Group)

6º Modelo Continente

7º LIDL

8º Mercedes Benz

9º Repsol Polímeros

10º Peugeot Citröen

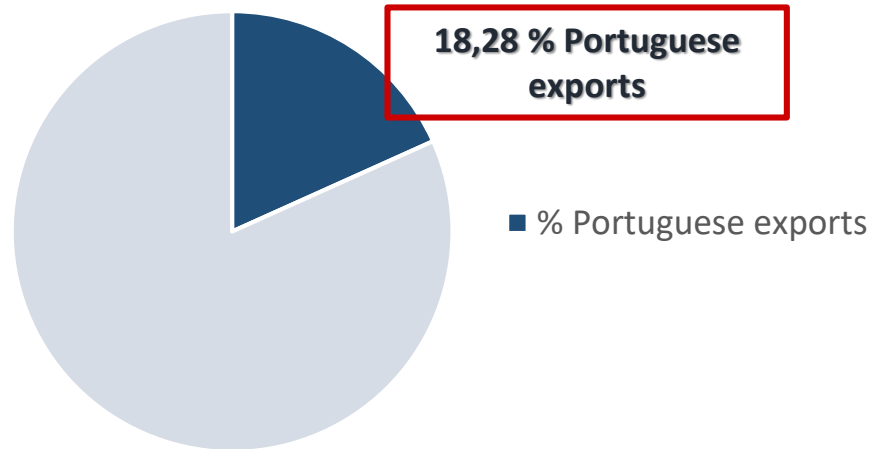
1 - <http://observador.pt/2015/10/27/dez-maiores-garantem-20-das-exportacoes-duas-sao-da-volkswagen/>

EXPORTS AND IMPORTS

B. ZILS

THE COMPANIES WHICH ARE PRESENT IN THE ZILS ARE RESPONSIBLE FOR, APPROXIMATELY, ONE-FIFTH OF THE PORTUGUESE EXPORTS

Contribution of the companies of ZILS to the total Portuguese exports (2015)



Source: Data for companies settled in ZILS – INE and *Relatório e Contas 2015* of Galp Energia
National data – ETC 2012, 2013, 2014 and 2015 (INE)

Exports (Tons)	
Petrogal – Refinery of Sines	7 089 033,360
Companies settled in the municipality of Sines	679 449, 670
Total	7 768 483, 030
Portuguese exports	42 505 278, 11

Clients of the park which are settled in the municipality of Sines:

- Repsol Polímeros
- Euroresinas
- Enerfuel
- Gypfor

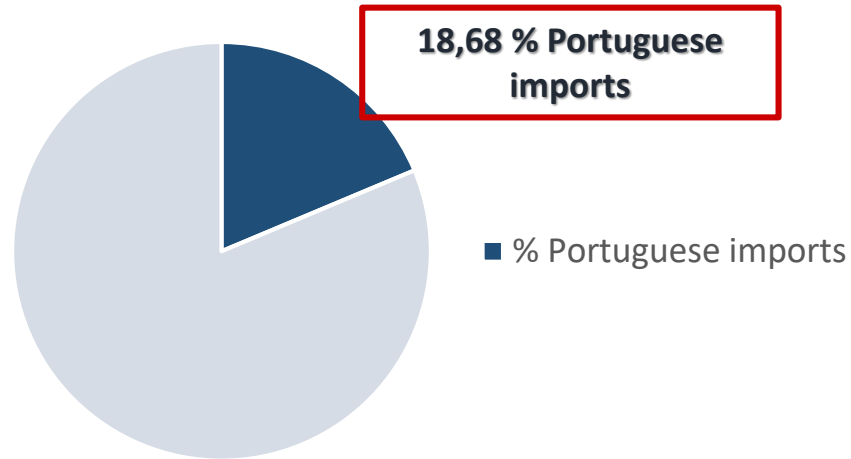
The data for the Refinery of Sines (Petrogal) exports was estimated from the information provided by Galp Energia: the study took into account the weight of this unit in the group’s business. When looking at the companies that are present at ZILS, one can note that some of the largest exporters are based in the municipality of Sines, so it was assumed that all the exports assigned to the city arise from this industrial area.

EXPORTS AND IMPORTS

B. ZILS

JUST LIKE EXPORTS, THE IMPORTS DERIVING FROM ZILS AMOUNT TO 19% OF TOTAL PORTUGUESE IMPORTS

Contribution of the companies of ZILS to the total Portuguese imports (2015)



Source: Data for the companies settled in ZILS – INE and *Estatísticas do tráfego* (APS)
National data – ETC 2012, 2013, 2014 and 2015 (INE)

Imports (Tons)	
Petrogal – Refinery of Sines	11 158 616, 000
Companies settled in the municipality of Sines	547 807 , 058
Total	11 706 423, 060
Portuguese imports	62 678 370, 780

Clients of the park which are settled in the municipality of Sines:

- Repsol Polímeros
- Euroresinas
- Enerfuel
- Gypfor

Knowing that the terminal operated by CLT transacts the cargo whose main destination is the Refinery of Sines, it was assumed that all the goods that were unloaded at this terminal, from the external market, represent Petrogal’s imports. Concerning the remaining companies’ imports, it was taken the value from companies based in the municipality of Sines’ imports.

SOCIAL IMPACT

1. EMPLOYMENT IN THE AREA OF “SINES”

- A. NUMBER OF JOBS CREATED
- B. AVERAGE MONTHLY INCOME

2. SOCIAL ECONOMIC INDICATORS

- A. PURCHASING POWER
- B. UNEMPLOYMENT AND ILLITERACY
- C. EDUCATION LEVEL

3. EDUCATIONAL AND SCIENTIFIC INSTITUTIONS

- A. SINES TECNOPOLO
- B. ETLA AND CENFIM

4. ONGOING INITIATIVES

- A. COMSINES

EMPLOYMENT IN THE AREA OF SINES

A. NUMBER OF JOBS CREATED

AS OF 2015, THE PORT OF SINES, ZILS AND ZIL TOGETHER WERE RESPONSIBLE FOR THE DIRECT EMPLOYMENT OF OVER 3400 PEOPLE. WHEN INCORPORATING INDIRECT AND INDUCED EMPLOYMENT IN THE ANALYSIS, TOTAL EMPLOYMENT RISES TO 24 126 PEOPLE

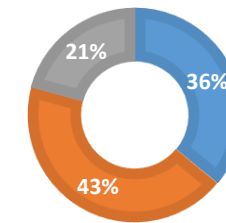
AREA	DIRECT EMPLOYMENT
ZILS *	1 471
Port of Sines	1 223

AREA	INDIRECT EMPLOYMENT
ZILS *	2 428
Port of Sines	11 317

AREA	INDUCED EMPLOYMENT
ZILS *	5 436
Port of Sines	1 544

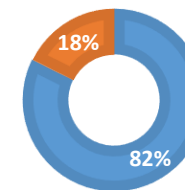
DIRECT EMPLOYMENT

■ Porto de Sines ■ ZILS ■ ZIL 2



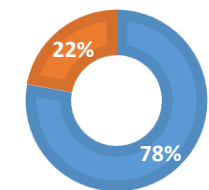
INDIRECT EMPLOYMENT

■ ZILS ■ Port of Sines



INDUCED EMPLOYMENT

■ ZILS ■ Port of Sines



SOURCES: APS, AICEP GLOBAL PARQUES, D&B

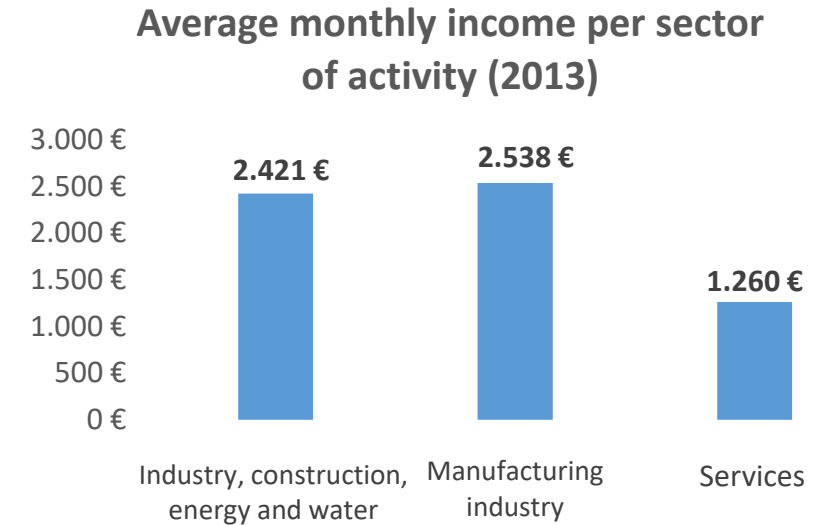
*data respects to the following entities: Petrogal – Refinery of Sines, EDP and Repsol Polímeros

EMPLOYMENT IN THE AREA OF SINES

B. AVERAGE MONTHLY INCOME

AN AVERAGE MONTHLY INCOME WAS COMPUTED FOR THE CITY OF SINES, WHICH AMOUNTS TO 2327€.

	Industry, construction, energy and water	Manufacturing Industry	Services
Port of Sines	-	-	x
Petrogal	-	x	-
Repsol Polímeros	-	x	-
EDP	x	-	-



	GAV
Port of Sines	171 167 928€
Petrogal	598 160 275€
Repsol Polímeros	168 461 895€
EDP	224 475 000€
Total GAV	1 148 274 736€



An average monthly income was computed, taking into account the contribution of the different sectors to the GAV of the region.



Average monthly income



2327€

* The GAV of these 4 entities corresponds to 87,1% of the GAV of the entire sample

Sources: GEP/MTSSS (até 2009) | GEE/MEc (a partir de 2010), PORDATA

SOCIAL ECONOMIC INDICATORS

A. PURCHASING POWER

THE CITY OF SINES IS RECOGNIZED FOR ITS HIGH PURCHASING POWER, NOT ONLY AT A REGIONAL LEVEL BUT ALSO IN NATIONAL TERMS

Sines as a national reference

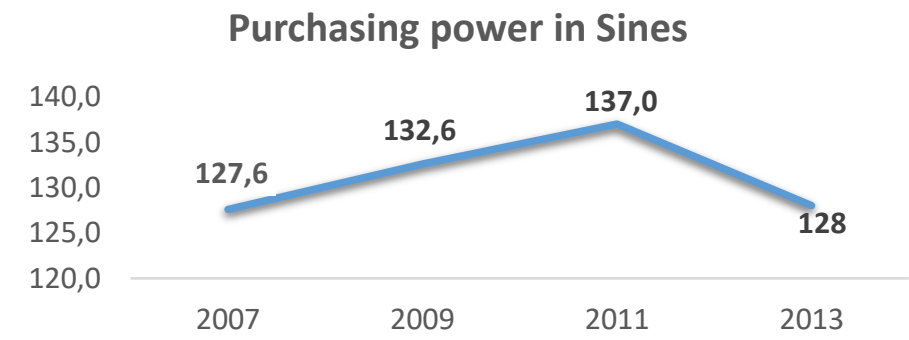
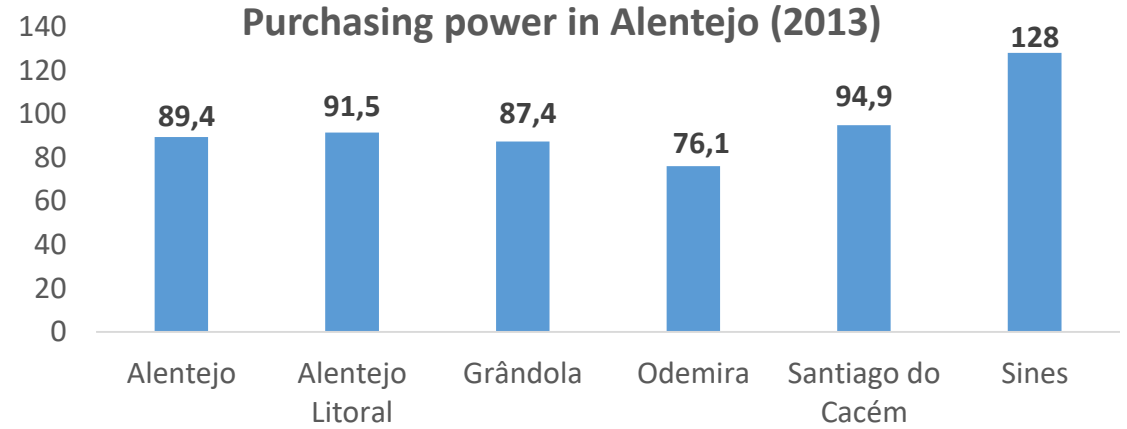
The city of Sines stands in a privileged position when it comes to the purchasing power of its residents – since 2009 that Sines is part of the national top 10, and in 2011 and 2013 it ranked 4th and 7th in the cities with the highest purchasing power, respectively.

Sines in the context of Alentejo

Sines is in a rather favorable position when compared to the region of Alentejo as a whole or to the Coastal Alentejo in particular. Sines is the only city from the Coastal Alentejo whose purchasing power is above the portuguese average.

Recent trendline

The tendency of the past 10 years has been one of an improvement in the purchasing power index. Nevertheless, this trajectory was jeopardized by the economic crisis that haunted the country, but is expected to go back to its initial behavior in the years to come.



SOURCES/ENTITIES: INE, PORDATA

SOCIAL ECONOMIC INDICATORS

B. UNEMPLOYMENT AND ILLITERACY

SINES EXHIBITS A MODERATE UNEMPLOYMENT RATE, WHICH IS BELOW THE PORTUGUESE AVERAGE

Unemployment rate

Sines exhibits an unemployment rate which is below the portuguese average, accounting for 9,7% in 2011, according to statistics provided by the CENSOS of 2011.

Illiteracy rate

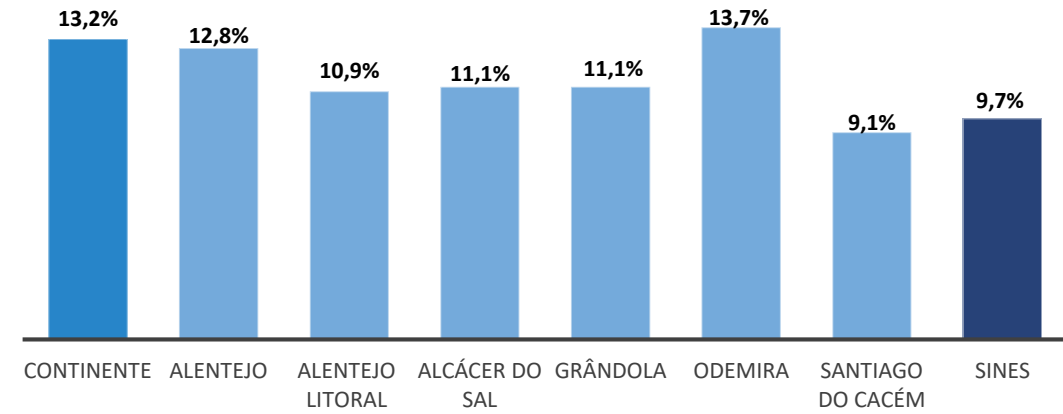
Sines exhibits a rate of illiteracy which surpasses the portuguese average by 70 basis points. However, when opposed to the remaining cities comprising the Coastal Alentejo, one can easily acknowledge the advantageous position of the former.



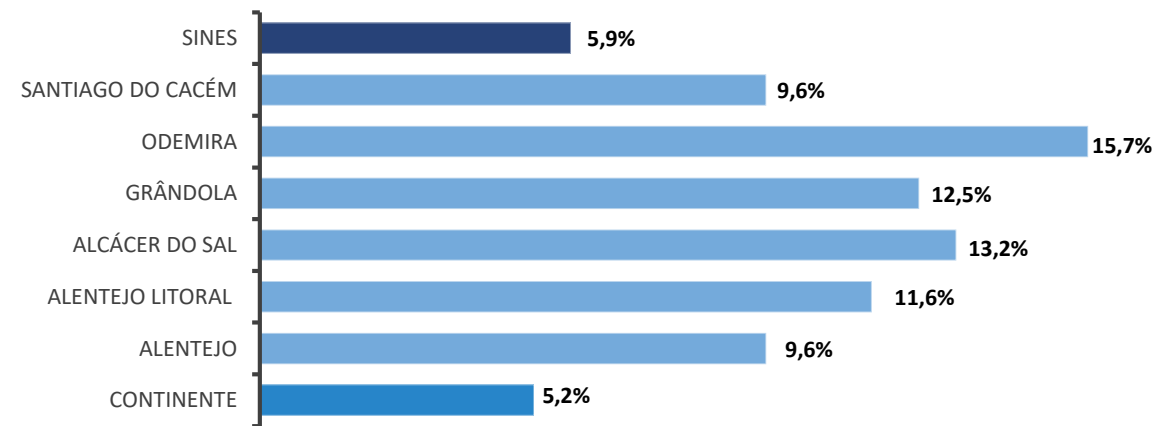
Aimed at improving this social economic indicator, a great amount of attention is being devoted to the improvement in the formation and qualification of the population, of which ETLA and Sines Tecnopolo are great testaments.

SOURCES/ENTITIES: INE, PORDATA

Unemployment rate (Censos 2011)



Illiteracy rate (Censos de 2011)



SOCIAL ECONOMIC INDICATORS

C. EDUCATION LEVEL

IN WHAT CONCERNS THE LEVEL OF EDUCATION OF ITS POPULATION, SINES STANDS IN A PRIVILEGED POSITION WHEN COMPARED TO THE COASTAL ALENTEJO

Education level

The level of education reinforces once again the position of Sines when opposed to the remaining Coastal Alentejo: 29,8% of its population owns a secondary school degree or above, whereas the portion of the population with na equivalent education is not greater than 24,9%.

Education level

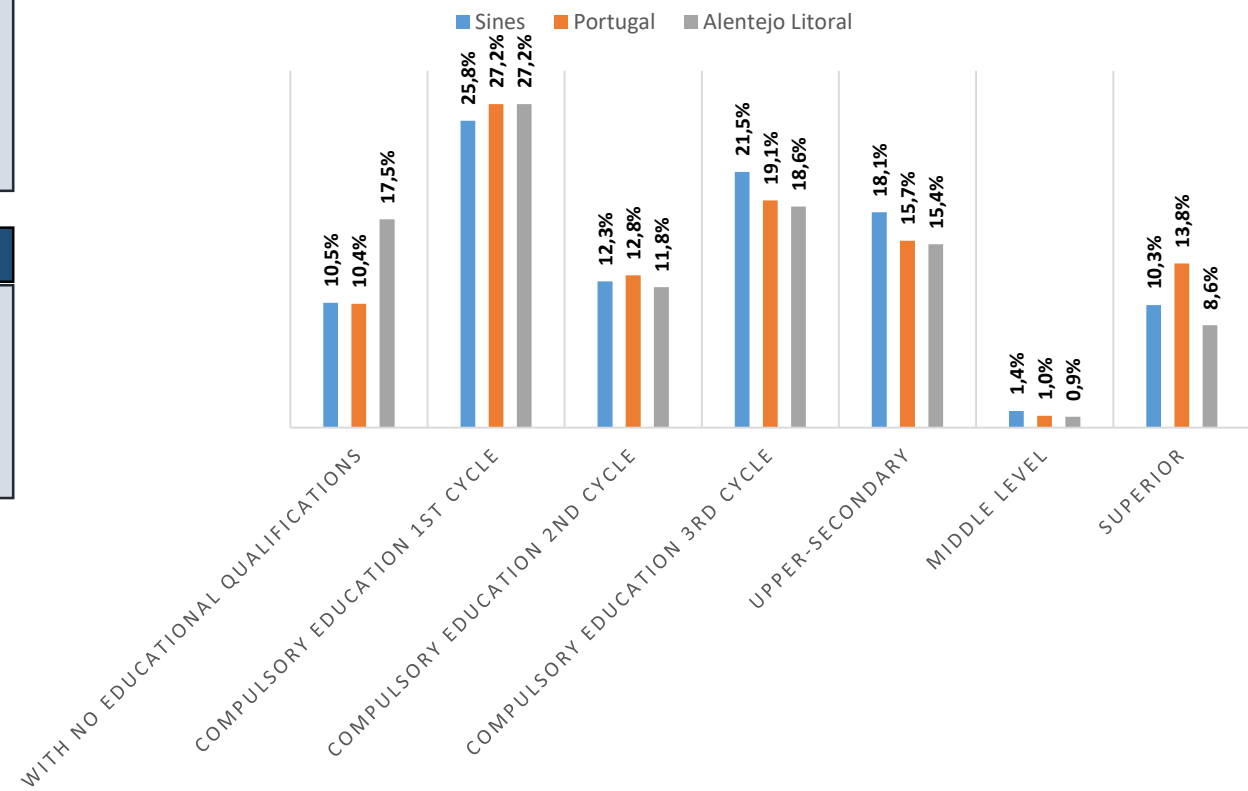
The percentage of the population of Sines that is not educated whatsoever is below the portuguese average. Sines is below the portuguese average for the following levels: básico 1º ciclo, básico 2ºciclo and superior



Aimed at improving this social economic indicator, a great amount of attention is being devoted to the improvement in the formation and qualification of the population, of which ETLA and Sines Tecnopolo are great testaments.

SOURCES/ENTITIES: INE, PORDATA

POPULATION PER LEVEL OF EDUCATION



EDUCATIONAL AND SCIENTIFIC INSTITUTIONS

A. SINES TECNOPOLO

THE OBJECTIVE OF THE SINES TECNOPOLO IS TO CONTRIBUTE TO THE SUSTAINABLE ECONOMIC DEVELOPMENT OF SINES

SINES TECNOPOLO

The **Sines Tecnopolo** acts as a catalyst of the “ecosystem “ of Sines, being recognized as the Business Incubation Center of the Alentejo. It consists of a platform that promotes the interaction between all types of organizations: the biggest companies settled in the region, SMEs, the public administration, universities and other local teaching institutions.

Its ultimate goal is to contribute to the sustainable economic development of Sines, in its multiple sections, thereby promoting the competitiveness of people and organizations (through an investment in their formation), the access to shared services and the implementation of common projects.

Its action plan may be split into three major work streams: formation (adjusted to the specific needs of the region), incubation (support to innovative projects) and entrepreneurship (support to new businesses at their different stages, from the incentives to entrepreneurship to the product development).



EDUCATIONAL AND SCIENTIFIC INSTITUTIONS

B. ETLA AND CENFIM

ETLA AND CENFIM INTEND TO REINFORCE THE COMPETITIVENESS AND EMPLOYABILITY OF THE WORKFORCE

The main objective of ETLA (Escola Tecnológica do Litoral Alentejano) is to contribute to the competitiveness of the human resources of its surrounding area, providing initial formation in the technical areas of greater importance and pertinence for the region.

According to its educative proposal, the success of that mission depends on four main pillars, which will hopefully be absorbed by ETLA's students: citizenship, relationship with the surrounding environment and correct use of the best available methodologies.

The **CENFIM** (Centro de Formação de Industria Metalúrgica e Eletromecânica) – Center of Formation of the Metal and Electromechanical industry) has been focused in the improvement of its professionals' competences, not only of those already present in the industry but also of those who are about to enter the job market, thereby reinforcing the competitiveness and employability of its workforce.

The activity of the **CENFIM** in Sines, in cooperation with other associations from the sector, is part of a decentralization and regional intervention process in the areas with relevant presence of the metal and electromechanical industry, aimed at addressing the needs of the local industries.



ONGOING INITIATIVES

A. COMSINES

THE PROJECT “COMSINES” INTENDS TO RAISE AWARENESS TO THE IMPORTANCE OF THE INDUSTRY FOR THE REGION OF SINES

COMSINES

The project **COMSINES** (Conselho das Comunidades de Sines) was born in 2014 as the result of a partnership celebrated between the *Associação das Indústrias da Petroquímica, Química e Refinação* (AIPQR) and the companies and administrative and social entities present in the region of Sines.



Main objectives

- Make people aware of the importance of the industry for the region**
- Increase the transparency in the relationship between the industry and the people**
- Promote the sustainable development, the well being and the quality of life of the community of Sines.**



Competitiveness, logistics and transports

Acknowledge the needs which are common to all players in the region and that can be addressed with a global intervention.

Health and environment

Create a respectful and collaborative coexistence between the population and the industry; provide more and better information to the people in order to put an end to the prejudices on the negative externalities of the industrial activity.

Heritage and culture

Make people aware of the historical strategic relevance of Sines, in a call for the regional pride.

Prevention and safety

Ensure the safety and well being of the population.

ENVIRONMENTAL IMPACT

1. METHODOLOGY

- A. PORT OF SINES AND ZIL
- B. ZILS

2. RESULTS

- A. GENERAL ASSESSMENT
- B. PORT OF SINES
- C. ZILS
- D. ZIL

METHODOLOGY (1/2)

A. PORT OF SINES

FOR PORT OF SINES, ENVIRONMENTAL IMPACT WAS ANALYZED UNDER THREE VARIABLES: CO2 EMISSIONS, ELECTRICITY CONSUMPTION AND WASTE GENERATED. AT ZIL THERE IS NO AVAILABLE DATA ON THESE INDICATORS, THUS THE ENVIRONMENTAL IMPACT WAS ANALYZED THROUGH THE INITIATIVES TAKING PLACES.

CO2 Emissions / Electricity consumption/ Waste generated	Data regarding the port of Sines was obtained directly from this entity, who provided the estimated values for each one of the three studied indicators.
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B. ZIL

Initiatives	The majority of the activities occurred at ZIL are related to light industry, with no combustion processes. Therefore, its environmental impact is reduced when compared to that of ZILS. So in order to analyze the environmental impact of ZIL itself, the focus was on the initiatives that are promoted on this area.
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METHODOLOGY (2/2)

B. ZILS

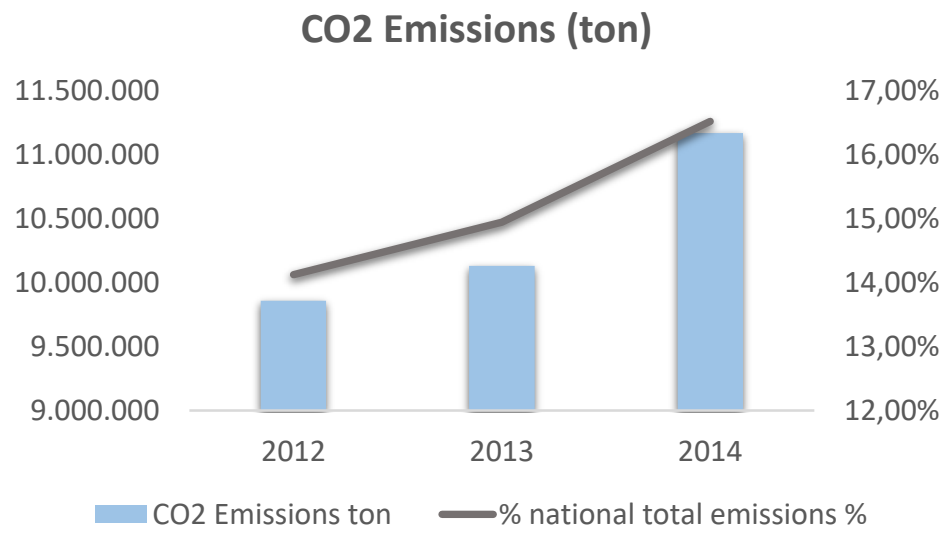
ENVIRONMENTAL IMPACT WAS ANALYZED THROUGH THE SAME THREE VARIABLES. HOWEVER, GIVEN THAT THOSE VALUES ARE NOT PUBLICLY REPORTED BY ALL ENTITIES, THE THREE GREATEST ENTITIES IN GROSS VALUE ADDED WERE ANALYZED SO AS TO GET AN ESTIMATE OF THE TOTAL VALUE

<p>CO2 Emissions</p>	<p>Emissions data is publicly available for Petrogal’s and EDP’s units from 2012 to 2014 in its environmental reports unit-specific. Repsol’s values were obtained through estimation using its relative weight considering gross value added; its close activity to Petrogal’s unit enables such an estimation.</p>
<p>Electricity consumption</p>	<p>Both EDP and Petrogal units report their electricity consumption values in their unit-specific environmental reports. Repsol’s values were obtained in a similar approach as it was done for CO2 emissions.</p>
<p>Waste generated</p>	<p>Waste generated values were estimated just as CO2 emissions and electricity consumption were. Both EDP and Petrogal’s directly through their environmental impact’s reports and Repsol’s by taking into account its relative weight on ZILS as a whole, and through refinery’s values.</p>

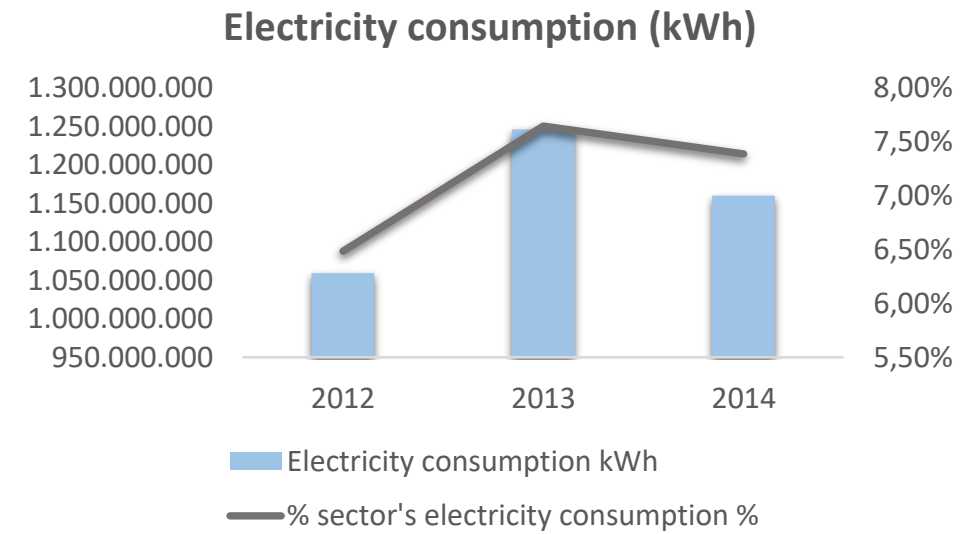
RESULTS

A. GENERAL ASSESSMENT (1/2)

CO2 EMISSIONS AND ELECTRICITY CONSUMPTION'S GROWTH RATE HAVE BEEN BELOW THE RATE OF INCREASE IN GROSS VALUE ADDED FOR THIS AREA



CO2 emissions **has been increasing** in the last few years, with a 10% increase from 2013 to 2014. This movement follows the increase in cargo handled.

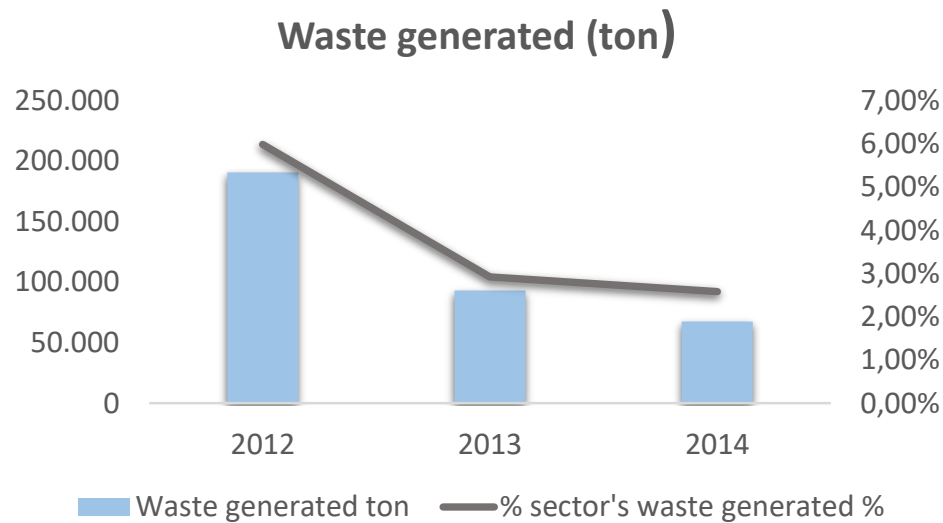


Electricity consumption has been **constantly increasing for the last three years**. This is highly correlated with port's activity and industrial activities at ZILS and ZIL. Nevertheless, if we consider the gross value added rate of increase, the increase in electricity consumption is still below that rate.

RESULTS

A. GENERAL ASSESSMENT (2/2)

THE EVOLUTION OF WASTE GENERATED IN THE REGION TRANSLATES THE EFFORTS MADE IN ORDER TO MITIGATE THE ENVIRONMENTAL IMPACT



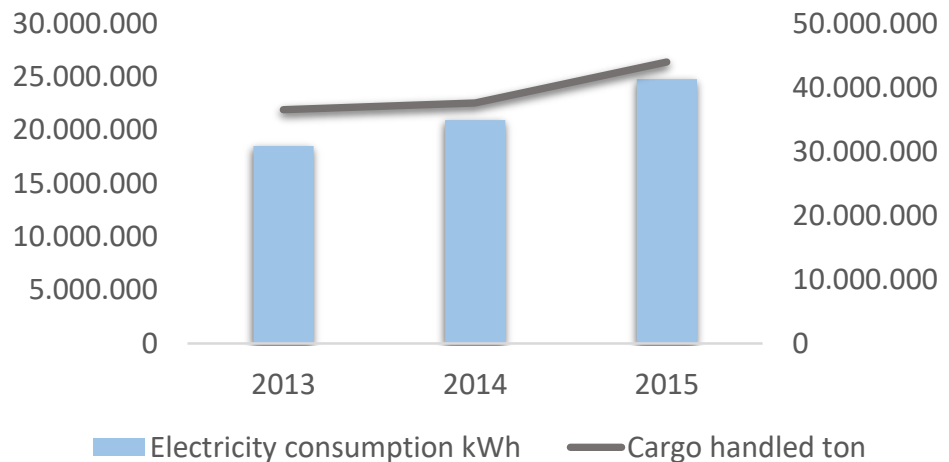
Waste generated by the activity that took place on the three entities studied **has been decreasing in the last three years**. From 2012 to 2013, there is a **sharp decrease of about 50%** of waste generated (whose main driver was EDP's power station). This trend is the ultimate outcome of the initiatives developed to mitigate the environmental impact of this area, which incorporates traditionally pollutant's activities.

RESULTS

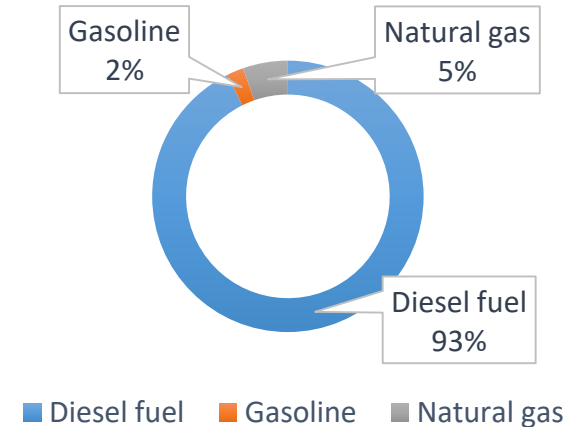
B. PORT OF SINES

GIVEN THE COMPLEXITY AND DIVERSITY OF ACTIVITIES OCURRED AT THE PORT, THERE IS A GREAT EFFORT IN MINIMIZING THE IMPACT OF ELECTRICITY CONSUMPTION, CO2 EMISSIONS AND WASTE GENERATED

Electricity consumption vs. Cargo handled



Direct energy consumption by primary energy source



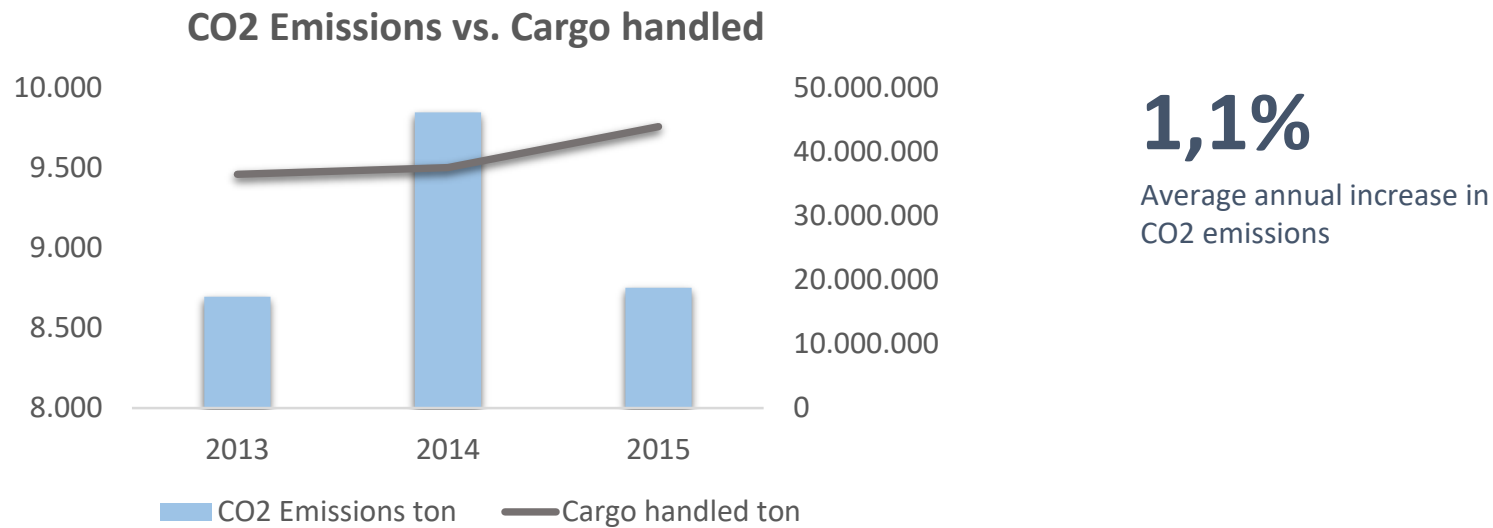
Electricity consumption is **highly correlated with the activity** occurred and thus there is little margin for reversal on this regard. Still, it is possible to choose primary energy sources that result in a softer environmental impact.

Source:Relatórios de Sustentabilidade do Porto de Sines (APS); Port de Barcelona Annual Report 2015

RESULTS

B. PORT OF SINES

GIVEN THE COMPLEXITY AND DIVERSITY OF ACTIVITIES OCURRED AT THE PORT, THERE IS A GREAT EFFORT IN MINIMIZING THE IMPACT OF ELECTRICITY CONSUMPTION, CO2 EMISSIONS AND WASTE GENERATED



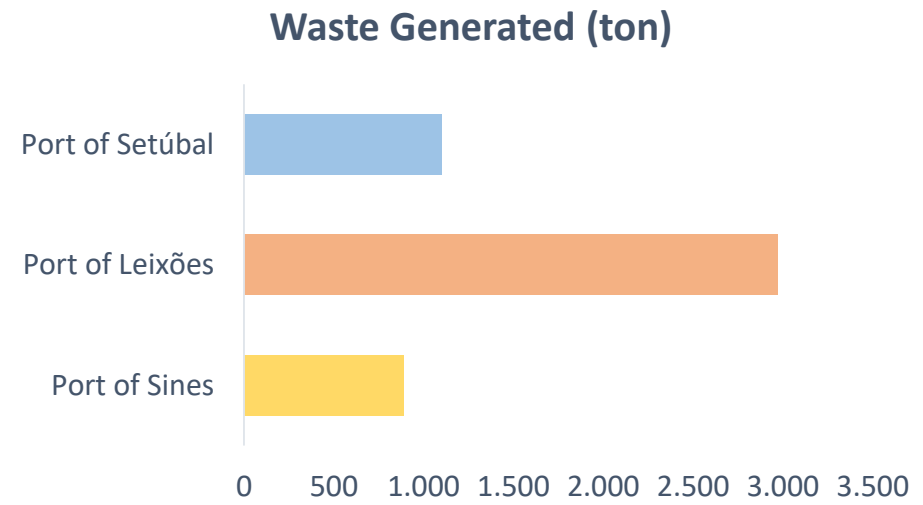
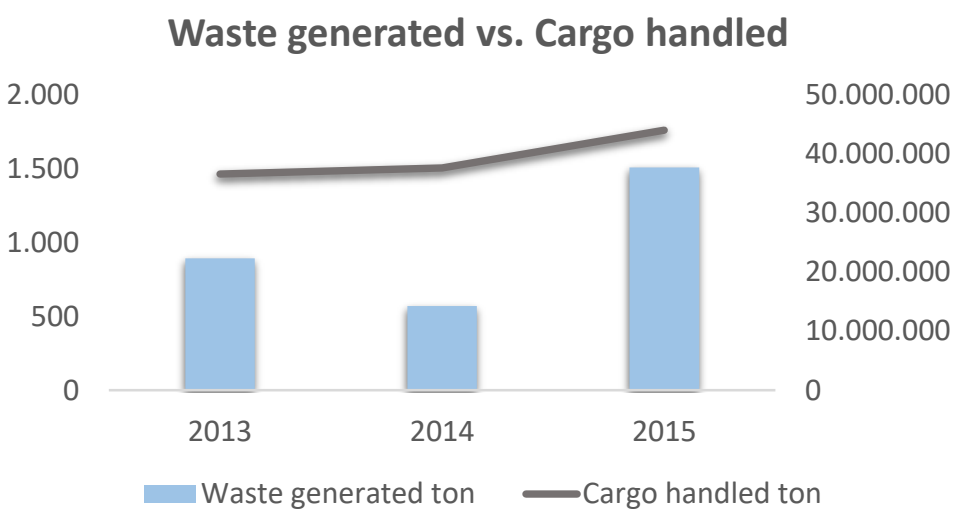
The investments made in optimizing processes on seaport activity have contributed for a softer rate of increase in port’s CO2 emissions. Even though there was a considerable increase in 2014, the average growth rate for the last three years has been lower than that of cargo handled.

Source:Relatórios de Sustentabilidade do Porto de Sines (APS); Eurostat Data

RESULTS

B. PORT OF SINES

GIVEN THE COMPLEXITY AND DIVERSITY OF ACTIVITIES OCURRED AT THE PORT, THERE IS A GREAT EFFORT IN MINIMIZING THE IMPACT OF ELECTRICITY CONSUMPTION, CO2 EMISSIONS AND WASTE GENERATED



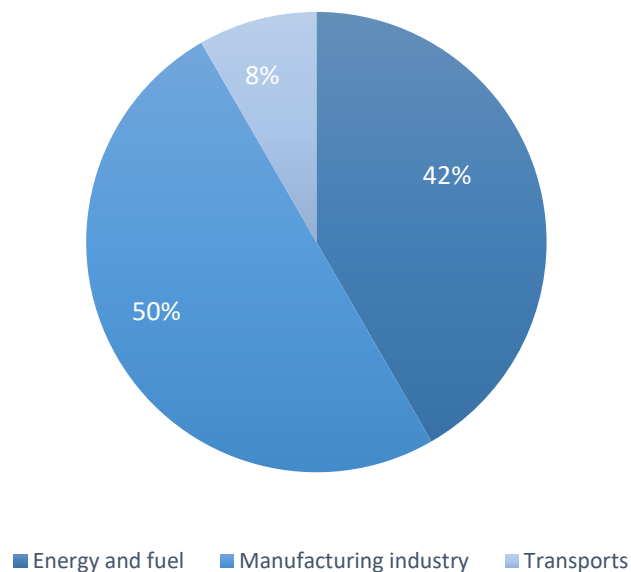
Waste generated at Port of Sines has been increasing on average for the last three years. Nevertheless, waste generated at port of Sines is **still below other Portuguese ports' waste**, emphasizing its best practices.

Source:Relatórios de Sustentabilidade do Porto de Sines (APS); Eurostat Data

RESULTS

C. ZILS

IT IS CRUCIAL TO UNDERSTAND THE EXISTING INDUSTRY AT ZILS TO BETTER GRASP ITS ENVIRONMENTAL IMPACT



Sector	Emissions (kton CO2 eq.)	% Total (POR)
Energy and fuel	14565	11,12%
Manufacturing industry	7376	21,96%
Transports	15094	22,76%



56%

Of total national emissions are made by these three sectors

The sectors represented by the majority of companies present at ZILS are those **that contribute the most for CO2 emissions in Portugal**, accounting for 56% of total national emissions in 2015.

Source: <http://ec.europa.eu/eurostat/tgm/refreshTableAction.do?tab=table&plugin=1&pcode=tsdcc210&language=en>

RESULTS

C. ZILS (2014)

ACCORDING TO THE ANALYSIS MADE TO THE MAIN COMPANIES EXISTING AT ZILS, ONE CAN ESTIMATE ITS TOTAL ENVIRONMENTAL IMPACT IN TERMS OF CO2 EMISSIONS, ELECTRICITY CONSUMPTION AND WASTE GENERATED

Company	Emissions (ton CO2)	Energy consumed (GWh)	Waste (ton)	GVA
Repsol Polímeros S.A.	320.611	47	774	6,01%
Galp	3.458.323	318	8.350	64,81%
EDP	7.398.654	592	58.659	28,82%
ZILS	11.177.588	1.142	67.783	100,0%

99,6%
Of ZILS' gross value added



17%
Of Portugal's CO2 emissions

2%
Of national energy consumption

3%
Of sector's waste generated

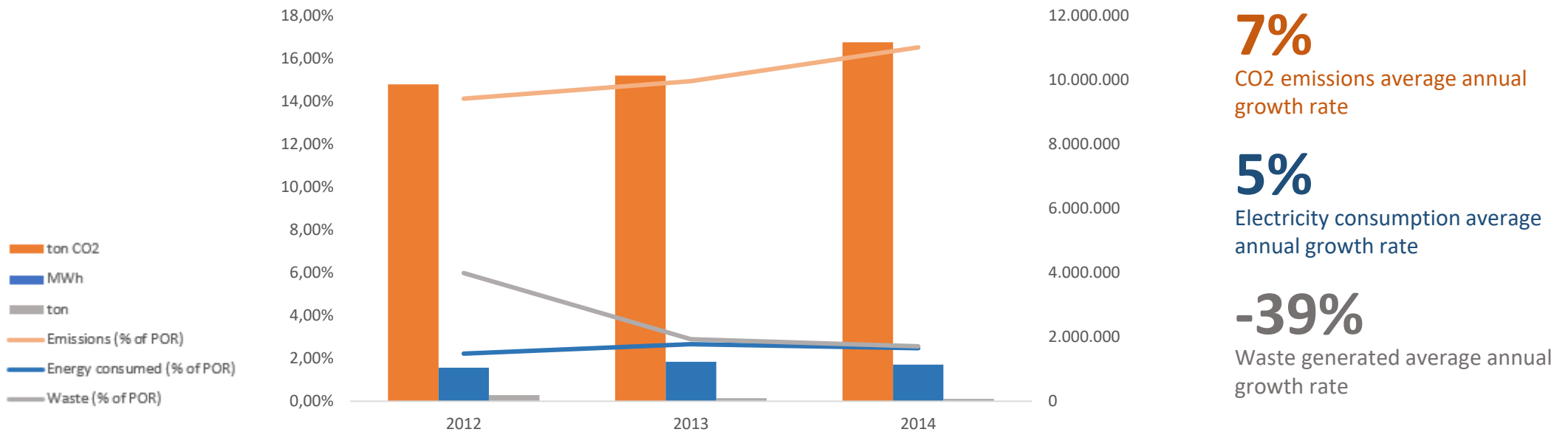
Taking into consideration the environmental impact of ZILS' main companies and accounting for their relative weight in terms of ZILS' gross value added, one can estimate total value of CO2 emissions, energy consumption and waste generated as a whole. By conducting this estimate, ZILS accounts for 17% of Portuguese CO2 emissions.

Source: <http://www.globalparques.pt/zils/parques-empresariais/zils-global-parques/sumario/19>; Refinaria de Sines - Desempenho de Segurança, Saúde e Ambiente (2014); Declaração Ambiental 2014 Central Termoeléctrica de Sines; Eurostat

RESULTS

C. ZILS

COMPANIES ARE EVER MORE IMPLEMENTING INITIATIVES IN ORDER TO MITIGATE ITS ENVIRONMENTAL IMPACT, AS A RESULT OF A GROWING CONCERN FOR THESE MATTERS BY POPULATION IN GENERAL



7%
CO2 emissions average annual growth rate

5%
Electricity consumption average annual growth rate

-39%
Waste generated average annual growth rate

CO2 emissions are still the most relevant measure of environmental impact and thus require a thorough analysis. Still, its increase has been slower than the increase in gross value added, on average. The same happens with electricity consumption. Waste generated at ZILS has been substantially reduced over the last few years, even though it is strictly connected with the cyclicity of the industrial activity.

Source: <http://www.globalparques.pt/zils/parques-empresariais/zils-global-parques/sumario/19>; Refinaria de Sines - Desempenho de Segurança, Saúde e Ambiente (2012, 2013, 2014); Declaração Ambiental (2012,2013,2014) Central Termoelétrica de Sines; Eurostat

RESULTS

D. ZIL

EVEN THOUGH ZIL’S ENVIRONMENTAL IMPACT IS NOT AS WORRISOME, SEVERAL INITIATIVES ARE TAKING PLACE IN ORDER TO MINIMIZE ITS NEGATIVE ENVIRONMENTAL IMPACT AND PROMOTE CIRCULAR ECONOMY IN SINES.

GISA	Study over the air quality in the region. GISA stands for <i>Gestão Integrada Saúde e Ambiente</i> and it is a protocol signed by 21 entities in order to minimize the impacts on air pollution and public health
COMSINES	It’s a private association partnering up with local health authorities and the university of Évora that aims at bonding local community and industry agents and empowering both to take into considerion environmental impacts and public health.
Odors	Study still in the pipeline phase promoted by COMSINES in order to control odor-related problems created by the industry and minimizing its impact in local community.
GISA II	Study under design phase.

It stands as a difficult exercise to measure the edge obtained through those measures in terms of environmental impact reduction. Nevertheless, it is important to emphasize the impact that those initiatives have when it comes to draw the attention of local community and promote social responsibility among companies towards initiatives that encourage public health.

CONCLUSIONS

1. FINAL REFLECTIONS

- A. ECONOMIC IMPACT
- B. SOCIAL IMPACT
- C. ENVIRONMENTAL IMPACT

2. CONCLUSION

3. LIMITATIONS

4. RECOMMENDATIONS

5. INDIVIDUAL REPORTS

FINAL REFLECTIONS

A. ECONOMIC IMPACT

THE PORT OF SINES, *ZILS* AND *ZIL* HAVE CONTRIBUTED TO 1,43 % OF PORTUGUESE GDP, MATCHING WITH THE ANALYZED BENCHMARK VALUES

Port of Sines

The Port of Sines contributes to 0,22 % of Portuguese GDP, taking into account both the direct, indirect and induced impacts. Given its growth potential, it's almost safe to say that this contribution to national economy will likely increase in the next years. In terms of exports and imports, the Port of Sines has been establishing itself as a gateway to the entrance and shipping of goods, as confirmed in the evolution of its contribution to these indicators.

ZILS

ZILS accounts to 1,18 % of national GDP, accounting the studied impacts. This contribution shows that this area is well established as a value-creation axis for national economy. Two out of the biggest national exporters are settled at *ZILS*, which helps to explain the reason why this area accounts for more than 18 % of Portuguese exports.

ZIL

The economic importance of *ZIL* is than the Port of Sines' and *ZILS* 's ones. However, it is important to take into account that in this area the settled companies are smaller, whose main objective is to take advantage of the activities developed at *ZILS*. Nevertheless, they support the entities existing in Sines' region.

FINAL REFLECTIONS

B. SOCIAL IMPACT

SINES STANDS IN A PRIVILEGED POSITION, NOT ONLY IN THE CONTEXT OF THE COASTAL ALENTEJO BUT ALSO IN NATIONAL TERMS

Municipality of Sines

The dynamics and economic relevance inherent to the region of Sines, which are scrutinized in this paper, have also had repercussions in the surrounding community: Sines stands out, among other indicators, for its high purchasing power and low level of unemployment and illiteracy. On the other hand, and as a result of the type of industry installed in the region, it exhibits a fairly reasonable average monthly income, with a special focus in what concerns the manufacturing industry.

Additionally, it is worth highlighting the efforts and initiatives which have been taken in an attempt to improve the employability and qualification of the population (through the creation of technical schools and formation centers), as well as the going concern for the pacific coexistence between the industry and population.

FINAL REFLECTIONS

C. ENVIRONMENTAL IMPACT

GIVEN THE NATURE OF THE ACTIVITY DEVELOPED AMONG THESE THREE ENTITIES AND THE ENVIRONMENTAL IMPACT THAT CAN BE ASSESSED, ONE CAN ASSUME THAT IT IS FAIR TO ACKNOWLEDGE THE EFFORTS IN MITIGATING THE ENVIRONMENTAL IMPACT IN THIS REGION

Port of Sines	Port of Sines shows energetic efficiency levels that are close to the main european benchmarks. Additionally, it has been firmly slowing down the rate of increase in its CO2 emissions. Waste generated has been increasing even though at a slower pace than the growth of cargo handled, which also applies to the electricity consumed.
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ZILS	Hosting traditionally pollutant activities in its area is inevitably repercutated in the environmental impact results. ZILS has a great weight on national CO2 emissions (17%). Electricity consumption has been increasing at a slower rate and waste production was heavily reduced, which shows the effect of several initiatives made towards mitigating environmental impact in this area.
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ZIL	Its traditionally lighter industry translates into a much lower environmental impact, when compared to ZILS. Thus, the priority here is to raise awareness over the importance of this small industry for the region. <i>Comsines</i> project takes this place as the main agent responsible for promoting good environmental practices among industries and community but also to draw community's attention to this industry's importance as an economic propeller.
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CONCLUSION

This project aimed at producing both a snapshot of current economic, social and environmental values of the three entities involved, but also to create a framework to better assess those in the future. The complexity of companies and institutions involved in this region requires a universal metric that can better estimate each participant's value without compromising its identity.

Accordingly, it delivered a model that is capable of estimating those three impacts (economic, social and environmental) on a yearly basis by introducing some required inputs, expected to ease the way sustainability is assessed for this entities.

Our team truly believes those deliverables can both contribute for a better understanding of the current real value of each entity in the Portuguese economy and also facilitate future assessments.



LIMITATIONS

THIS CHAPTER AIMS TO HIGHLIGHT THE LIMITATIONS OF THIS STUDY.

- ✓ **Time available to carry out the project:** the available time to complete the challenge was limited, taking into consideration the complexity of part of the analysis
- ✓ **Assumptions required for the application of the input-output model:** By adopting the classic model of Leontief, it was necessary to depart from strong assumptions which may limit the interpretation of the results
- ✓ **Outdated matrix:** The most recent available matrix is relative to 2013, which again led to the establishment of some assumptions
- ✓ **Data collection from companies applying the 80/20 rule:** notwithstanding its efficiency, this rule also harms the analysis, as the adjustment for the whole universe of companies will be an estimate.
- ✓ **Assumptions adopted to measure the environmental impact:** Due to the lack of data that is required to evaluate the environmental impact, it was necessary to come up with assumptions that could enable a proper interpretation of the results.
- ✓ **Underestimation of the value of exports and imports from Port of Sines whose origin/destination is the EU:** It is difficult to track all the traffic between European countries due to the policy of open borders

RECOMMENDATIONS

POINTS TO IMPROVE

Collection of data: it was not possible to collect the data from all the companies involved in the project

Input-output matrix: the most recent available matrix is relative to 2013

Collect the data from social impact indicators **on an individual and** thus more reliable **manner**, as **opposed** to resorting **to the regional information** and applying it to the entities under scrutiny

Pursue a further research concerning the environmental analysis: identify the main initiatives of each terminal operator in the Port

SOLUTION

- ✓ Highlight the importance of this type of project to the companies involved, in order to facilitate the access to the required data. This solution can be implemented at the moment of updating the model.
- ✓ Although it requires a significant investment by the entities involved, one possible alternative is the production of a regional matrix
- ✓ Keep the contact with INE and try to increase the periodicity of these publications, emphasizing their underlying importance in the design of these studies.
- ✓ It is possible to obtain the data through surveys and interviews
- ✓ Schedule meetings with the companies responsible for each terminal of the Port of Sines, stressing the main goal of promoting the environmental best practices for each company.

INDIVIDUAL REPORTS

A. BELBIN RESULTS AND KEY LEARNINGS

JOSÉ MARIA BENITO GARCIA #2305

THE BELBIN TEST PROVED TO BE VERY USEFUL IN A WAY, AS IT HELPED UNVEIL SOME HIDDEN BEHAVIOURS THAT ARISE WHEN TAKING PART IN A GROUP WORK

RESULTS

MAIN ROLES



- **FINISHER** – I totally agree. I am someone who likes to go “the extra mile” and make sure that everything is done in the proper way. I seek the perfection in the outcome by searching for mistakes or inconsistencies.
- **PRESIDENT** – I partially agree. I consider myself a mature and confident person who is good at delegating and taking the lead but not always do I take the first step within a group.



LESS PROMINENT BEHAVIOURS

- **PLANT** - I am more an orthodox kind of person and I am not usually that one member who comes up with a disruptive solution
- **INTELLECTUAL** - I believe I keep a reasonable balance between my practical and intellectual skills, but sometimes I take too much time wondering about the way to perform something instead of moving forward with anything plausible

KEY LEARNINGS

- **SYNDICATION** – throughout the project I got to learn how important it is to make sure that interests and expectations are aligned between the parties, and that everyone is on the same page.
- **RESILIENCE** – the challenging periods that we have faced helped me further develop by resilience skills. In such a consulting project we cannot let negative feelings, such as distrust or inertia, spread within the team, as it is the success of the entire work that is at stake.
- **FEEDBACK** – no one is expected to do everything right all the time, specially in the initial stage of a career. As such, learning from our own mistakes and receiving feedback and counselling from those who are more experienced is a cornerstone for a sustainable personal development.

INDIVIDUAL REPORTS

A. BELBIN RESULTS AND KEY LEARNINGS

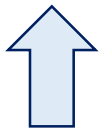
MARIANA DA SILVA DUARTE #2960

THE BELBIN TEST PROVED TO BE VERY USEFUL IN A WAY, AS IT HELPED UNVEIL SOME HIDDEN BEHAVIOURS THAT ARISE WHEN TAKING PART IN A GROUP WORK

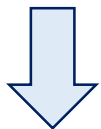
RESULTS

KEY LEARNINGS

MAIN ROLES



- **TEAM WORKER**— I agree. I am a versatile person, since I am capable of working with any person and under different environments. I am perceptive and diplomatic, since I look for different points of view in order to reach a consensus between the group. Also, I appreciate for well structured tasks in order to complete it on behalf of the team.
- **MONITOR** – I agree. I consider myself a cautious person, that looks for both sides of the problem. Furthermore, I have a critical thinking ability in evaluating ideas and suggestions.



LESS PROMINENT BEHAVIOURS

- **FINISHER** - I partially disagree, since I am an objective person, that make sure that I do everything that is possible to accomplish the goals. Also, in my point of view, it is necessary to make the last effort to make sure that the outcome is delivered at the highest standards.
- **STRATEGIST** - I believe that I embrace new ideas with positivism, but usually I am not the member that comes with creative ideas.

- **SYNDICATION** – A good relation with the client is essential for the success of the project. In according to this, it is important to manage the client expectations by giving constant follow-ups in the new findings in the project.
- **UNDER PROMISE OVER DELIVER** – Never promise to deliver something that is not possible. The main goal is to exceed the client’s expectations, by presenting our best work.
- **RESILIENCE** – Being persistent in order to overcome the difficulties of the project. I have learned how to keep a focus on solutions.
- **RECEIVE FEEDBACK**— The project involved more than one entity, in which we had different teams guiding our work. Its is important to listen to others advices and ideas so that we can learn from it. Furthermore, this also required to be flexible in order to adapt the work project among the opinions of different teams.

INDIVIDUAL REPORTS

A. BELBIN RESULTS AND KEY LEARNINGS

JOANA ALEMÃO GOMES #2525

THE BELBIN TEST PROVED TO BE VERY USEFUL IN A WAY, AS IT HELPED UNVEIL SOME HIDDEN BEHAVIOURS THAT ARISE WHEN TAKING PART IN A GROUP WORK

RESULTS

KEY LEARNINGS

MAIN ROLES



- **MONITOR** – I totally agree with this conclusion. During the project, I always tried to keep a critical view. Before taking a decision, I analyzed all the available options.
- **TEAM WORKER** – I also agree with this one. When it was possible I helped the group members and I tried to be always there when it was needed. Besides, I consider myself as a flexible person being able to adapt to different situations and people



LESS PROMINENT BEHAVIOURS

- **PRESIDENT** – It is hard to deny that I am a “president”. I don’t think I have the qualities to delegate the group. However, when it is needed I am able to take this position, in my opinion.
- **OPERATIONAL** - I totally agree. Being flexible, I don’t see that the things have to be done in a certain way: if it is necessary we should adjust our way of working to the situation.

- **COMMUNICATION SKILLS** - During the project, there were different presentations (client, group members, professor) and it was necessary to adapt the speech to the audience. Moreover, I was able of summarizing and passing the main message.
- **CRITICAL OBSERVATION** - Given the project proposed, it was important to keep a critical view when analyzing the data and the results. This is also important to apply this vision when communicating with the client.
- **RESILIENCE** – Facing different obstacles and adversities, it was important to keep the focus on finding a solution. Without losing the motivation, the group was able to work even harder in order to deliver the best solution possible.

INDIVIDUAL REPORTS

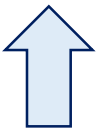
A. BELBIN RESULTS AND KEY LEARNINGS

MÁRIO JARDIM FERNANDES GOUVEIA #2629

THE BELBIN TEST HAS BEEN A GOOD PHOTOGRAPH OF ONE’S CONTRIBUTION FOR THIS PROJECT.

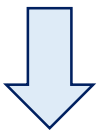
RESULTS

MAIN ROLES



- **TEAMWORKER** – Indeed, I believe the versatility with which I faced this project defines my contribution. I have been always ready to take one bullet for the team which sometimes might represent an obstacle.
- **FINISHER** – I agree that this also fits my profile. When in the middle of a sizeable assignment, I seek to make sure no detail is left unseen and that every inch is covered with effort.

LESS PROMINENT BEHAVIOURS



- **PROSPECTOR** – This type of behavior is seldom applicable to my personality. Sometimes this means I will lack enthusiasm and positive energies towards a specific task, even though I consider myself an extroverted and social person.
- **INTELECTUAL** – In fact, I tend to be that kind of person who likes to do things and make it happen rather than prioritizing the thinking behind it.

KEY LEARNINGS

- **Syndication** – By the end of the day, it is a good relationship with the client that will determine a given project’s success. In order to deliver what the client is looking for, we ought to fully understand her/his thinking. It is key to keep up a regular contact during the project.
- **Resilience** – This (and probably every) project had a lot of surprises and unexpected obstacles that implied focus but also will power to keep up the pace and look for alternative solutions to overcome them. Maintaining that ultimate goal on sight is crucial.
- **Feedback** – Especially at this phase, there should be no arrogance in what we do despite the knowledge previously obtained. It is important to humbly listen to what others have to say on a given issue, be it a client or a colleague. Listening is a gift, learning is what it fosters.

BOOKS AND STUDIES

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