

Section D – Operational

1. Introduction

This section presents preliminary studies on the operations to be carried out in area **STS08**. Specifically, this section focuses on the general operating requirements for handling, storing, and distributing liquid bulk, in the Port of Santos-SP, Brazil.

2. Description of Activities

For illustrative purposes, the study segments the essence of **STS08**'s operation under the following three main activities: Pipeline reception of petroleum by-products from the Presidente Bernardes refinery in the City of Cubatão, storing the product in specialized tanks, and shipping the product using cabotage vessels.

Figure 1 illustrates the standard dynamics of the liquid bulk operation in **STS08A**:



Figure 1 - STS08A's liquid bulk operational flowchart.

Source: EPL.

With regard to LPG operation, the vector seen in Figure 1 is inverted, as LPG is an import product. Storing LPG is also quite different as it requires to be contained in one of STS08A's spheres or in its specialized tanks. Finally, in its last step, LPG is shipped out of the terminal to distribution centers via pipeline, as illustrated in figure 2.



Figure 2 - STS08A's LPG operational flowchart.

Source: EPL.

The handling of liquid bulk occurs predominantly in two regions in the Port of Santos: Alamoia and Barnabé island. The terminal in question is located in Alamoia and will use the region's existing coastal infrastructure in its handling operation. Additionally, the new lessee is also going to build an entire new pier with a new berth.

In Alamoia, liquid bulk vessels currently have four berth options available: two with 400m each (AL1 and AL2) and two others with 272m each (AL3 and AL4). In addition to these berths, it is possible for smaller vessels to be moored on the inside of the pier's west side. This smaller berth was designed for barges measuring 80 meters (length), with 6-meter draughts, and capacity of 4,000 TPB. The barges themselves are used to fuel bunker to docked vessels in the Port Complex. The following figure illustrates the berthing infrastructure described above:

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Figure 3: Location of liquids bulk berths in the Alamoia region of the Santos Port Complex.

Source: Master Plan for the Santos Port Complex (2018).

In addition to the primary handling and storage activities, , the following auxiliary activities are also permitted:

- Quality control;
- Heating or cooling;
- Marking;
- Weighing;
- Cleaning; and
- Other

3. Operational Performance

The operational performance of handling and storing liquid bulk in port terminals can be measured by the following aspects:

- Average Cargo per vessel;
- Average cargo-handling rate;
- Berth Occupancy Rate; and
- Service Level.

In the next chapter the study will present liquid bulk’s historical statistics in Alamoia.

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3.1 Average Cargo per Vessel

This indicator measures the average cargo weight a vessel loads or unloads during its stay at the port. The following table presents the average cargo per liquid bulk vessel at Alamoá's two main berths between 2014 and 2018.

Liquid Bulk – Alamoá	2014	2015	2016	2017	2018	Average
Alamoá 1 - Total	27.131	22.705	21.936	22.524	22.309	23.321
Alamoá 1 - GLP	22.745	16.914	19.189	16.473	20.304	19.125
Alamoá 1 – Derivados de Petróleo	28.331	24.115	22.714	24.372	22.766	24.460
Alamoá 2 - Total	24.231	19.694	17.101	18.335	19.201	19.712
Alamoá 2 - GLP	25.230	23.708	21.782	15.597	14.827	20.229
Alamoá 2 – Derivados de Petróleo	25.238	20.845	18.021	21.003	22.635	21.548

Table 1 - Historical average cargo per vessel, 2014 - 2018 period.

Source: adapted from Antaq Yearbook data (2018).

It is worth noting that the Alamoá 1 berth handled only petroleum by-products (including LPG) during the referred period. Meanwhile, Alamoá 2 handled petroleum by-products and smaller amounts of other liquid bulk cargo. The period's average cargo per vessel, segmented by berth and product, is specified in the table's last column.

3.2 Average Cargo Handling Rate

The mean handling rate represents the average ton of product that can be loaded or unloaded at a given berth, during a specified timeframe. The usual convention is to show this indicator on a per hour basis (ton/hour). Furthermore, the hours considered in the denominator of the ratio also allow for the two following distinctions: Operating Handling Rate (only considers the time when the vessel is being loaded or unloaded), and General Handling Rate (considers the entire time the vessel is berthed).

The following table shows productivity data for petroleum by-products in Alamoá during the period 2014-2018.

Alamoá 1	2014	2015	2016	2017	2018	average
Alamoá 1 - LPG (Operational)	640	558	559	601	539	579
Alamoá 1 – Petroleum By-products. (Operational)	1018	994	920	987	846	953
Alamoá 1 – LPG (General)	487	400	403	396	383	414
Alamoá 1 – Petroleum By-products (General)	789	699	633	661	579	672
Alamoá 2						
Alamoá 2 - LPG (Operational)	681	727	694	578	536	643
Alamoá 2 - Liquid Petroleum By-products (Operational)	824	760	589	656	647	695
Alamoá 2 – LPG (General)	531	519	459	376	354	448
Alamoá 2 - Petroleum By-products (General)	663	558	418	485	483	521

Table 2 - Average handling rate in Alamoá during period 2014 – 2018 (ton/hour).

Source: adapted from Antaq Yearbook (2018).

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It is important to mention that the berth productivity for unloading liquid petroleum by-products is strongly influenced by the model of ships served. Indeed, liquid bulk vessel's model specification determines the power of its pump, which greatly affects the unloading rate of products from the ship.

In fact, this productivity becomes evident when a comparison is made between Alamoia's berth one and two. Alamoia 1's productivity is much higher (953 t/h), as Alamoia 1 only handles petroleum by-products. On the other hand, berth AL02, which mostly handles products other than petroleum by-products, has an average cargo handling rate of 700t/h. The reasons are the available equipment for higher flow loading and the size of the vessels that dock there.

3.3 Berth Occupancy Rate

Between 2014 and 2018, the average occupancy rates at Alamoia corresponded to approximately 66%, according to the data below. More recent measurements point to higher occupancy level of 70%.

OCCUPANCY RATE OF BERTHS IN SANTOS						
Berths	2014	2015	2016	2017	2018	Average
Alamoia 1 (SSZ0101)	52,8%	61,1%	67,7%	74,2%	72,2%	65,6%
Alamoia 2 (SSZ0102)	55,5%	67,2%	71,0%	65,8%	71,7%	66,2%

Table 3 - Berth occupancy rates of liquids and gas in Santos.

Source: data adapted from ANTAQ (2019).

3.4 Service Level

Service level is defined as the ratio of waiting time to operating time. According to UNCTAD1, the ideal service level for any type of cargo is 30%. Levels higher than 30% may indicate a high probability of vessels incurring demurrage expenses. On the other hand, levels below the benchmark point to infrastructure underutilization. Finally, levels above 100% indicate that the ship's waiting time is longer than its operating time.

The table below shows the service levels for the period 2014 and 2018 in Alamoia's berth 1 and 2.¹

Port of Santos	2014	2015	2016	2017	2018
Alamoia 1	250,51%	301,18%	262,31%	354,55%	239,45%
Alamoia 2	322,26%	356,03%	337,01%	442,95%	320,12%

Table 4 - Historical ship service level in Alamoia berths 1 and 2, period 2014 - 2018.

Source: adapted from Antaq Yearbook (2018).

The service level average in the last 5 years was 281.6% in Alamoia 1 and 355.7% in Alamoia 2.

¹ The average time to dock and the average operating time

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4. Operating Costs and Expenses

In this subsection, the study addresses cost and expense projections for the terminal over the contract horizon. The terminal’s cost structure is divided into fixed costs and variable costs. To appropriately allocate cost to fix or variable, the study evaluates the nature of each cost according to the list below:

Fixed Costs:

- Own Labor;
- Utilities;
- Maintenance;
- General and Administrative;
- Environmental Costs;
- Fees and other Contributions

Variable Costs:

- Independent Contractors (OGMO);
- Utilities;
- Port Tariffs

Each cost group considered above will be further elaborated on in the next few chapters.

4.1 Fixed Costs

4.1.1. Labor

For the purpose of correctly sizing fixed labor costs, the study considered a team of 181 employees to operate **STS08**.

To estimate the size of the administrative staff, the study assumes a correlation between the size of the team and of the enterprise, measured by the business’s expected revenue.

However, it is important to note that the evolution of the size of the teams occurs gradually, which means that the growth of the administrative team does not continuously follow the revenue curve. Indeed, the study assumes that the growth of the administrative team occurs under a set of revenue intervals. The following table sets out the required administrative staff for each revenue interval.

Annual Gross Revenue								
Team	< 3800	<18,000	<30,000	<45,000	<60,000	<110,000	<160,000	> 160.000
General Manager	0	0	1	1	1	1	1	1
Senior Manager	1	1	2	2	3	3	4	6
manager	3	2	3	3	4	5	6	10
Administrative 1	1	1	1	3	4	6	8	15
Administrative 2	0	3	2	3	3	5	6	10
Total	5	7	9	12	15	20	25	42

Table 5: Administrative staff (gross revenue x 1,000).

Source: EPL.

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According to the classification in the table above, Terminal **STS08A** would fall in the highest gross revenue category - a yearly revenue above R\$ 160 million/year. Thus, the terminal’s corresponding administrative staff size would be 42 people.

For the environmental area, the study followed IBAMA’s methodology for the licensing of terminals. Namely, the agency classifies a terminal as small, medium, or large and assigns a recommended number of environment personnel in the company. The table below presents IBAMA’s recommendation of internal company staff according to the enterprise’s size:

Team	Small-Sized	Medium-Sized	Large-Sized
Supervisor	1	1	1
Environment Technician	0	1	2
Total	1	2	3

Table 6: Level of the terminal's internal environmental team

Source: EPL

Additionally, in compliance with Resolution 52/2018 of the National Public Security Commission for Ports, Terminals, and Waterways (CONPORTOS), the study assumes the inclusion of one port security supervisor on the terminal’s payroll.

Unlike the administrative staff, the number of operational employees at any given terminal relates with the amount of cargo handled, and not with revenues generated. Therefore, to estimate the size of STS08’s operational labor force, the study first collected data on 8 different liquid bulk terminals.

The sample for calculating the productivity ratio is shown below:

Terminal	Handling/m ³	Operational Employees	Productivity m ³ /employee	Productivity t/employee
1	1,055,631	28	37,701	34,308
2	972,193	28	34,721	31,596
3	498,739	24	20,781	18,911
4	384,546	17	22,620	20,584
5	347,409	6	57,902	52,691
6	146,164	3	48,721	44,336
7	576,000	27	21,333	19,413
8	750,000	36	20,833	18,958
			Average	30,100

Table 7: Tons/employee in eight port terminals

Source: EPL Database

On average, liquid bulk terminals handle 28,115 tons per employee per year. Hence, considering **STS08A**’s own yearly throughput, the study calculates that 221 operational personnel will be needed. It is important to point out that, in order to calculate the volume in tons, the study assumed an average density of 0,91 ton/m³.

Wage values were taken from the following government databases: SICRO (SP), SINAPI (SP) and SINE/SINE/Trabalha Brasil (Nacional). In relation to payroll taxes, the study formulated a specific composition reflecting a sample from the national collective bargaining dataset. The number of employees, wages and payroll taxes are detailed in the following table:

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	Quant.nt	Salary, R\$	Payroll taxes	Total (R\$/year)	Source
General Manager	1	48.918	103,25%	1.193.110	SINE Nacional, 06/2020
Senior Manager	6	18.286	103,25%	2.675.973	SINE Nacional, 06/2020
Mid-Level Managers	10	12.190	103,25%	2.973.141	SINE Nacional, 06/2020
Administrative Support Team (1)	15	3.051	103,25%	1.116.121	SICRO SP, 04/2020
Administrative Support Team (2)	10	1.886	103,25%	459.898	SICRO SP, 04/2020
Environment/Port Security					
Supervisors	2	4.329	103,25%	211.169	SICRO SP, 04/2020
Environmental Technicians	2	3.111	103,25%	151.753	SICRO SP, 04/2020
Maintenance					
Supervisors	6	4.329	103,25%	633.506	SICRO SP, 04/2020
Maintenance Technicians	28	1.679	103,25%	1.146.493	SINAPI SP, 06/2020
Operation					
Operational Officer	25	4.329	103,25%	2.639.608	SICRO SP, 04/2020
Ship Transfer Team	54	1.630	103,25%	2.146.183	SINAPI SP, 06/2020
Storage Facilities	54	1.630	103,25%	2.146.183	SINAPI SP, 06/2020
Receipt and Delivery	54	1.630	103,25%	2.146.183	SINAPI SP, 06/2020
Total	267			19.639.321	

Table 8 - Direct Employees of Area STS08A.

Source: EPL.

Annex D-1 details unit and quantitative values.

4.1.2 Utilities

This category encompasses the fixed costs and expenses of the administrative and support areas, such as: electricity, water/sewage supply and communication.

Fixed electricity expenditures are generated by support activities, lighting, energy for non-operational and administrative uses.

Regarding electricity expenses, Companhia Piratininga de Força e Luz (CPFL) shared with EPL its unitary charges for industry in the Baixada Santista region. The average rate per kWh is comprised of the distribution charge (TUSD) and energy consumption charges (TE). Hence, **STS08A's** electricity rate, measured in Kwh, is **R\$ 0.49867/kWh**.

Expenses with water supply and sewage treatment services depend on the level of consumption at the terminal. The study assumed a rate of consumption equal to 100 liters per employee per day, as per PAP parameters. The total cost also depends on the rate currently charged in the region. According to Companhia de Saneamento do Estado de São Paulo (SABESP), the current unit value for water and sewage for the commercial sector and services is **R\$ 33.40/m³**.

Regarding electricity and water/sewage services, the study assumes that the lessee will enter into direct contracts with the utility companies.

The communication category includes expenses with telephony, internet, correspondence, and advertising. To estimate this expense, the study consulted estimates in the Port Leases Program. To adjust for inflation, the original values were adjusted using the accumulated IPC-A index, representing 43.27% (from July/2013 to June/2020). Finally, the final expense was set at **R\$ 14.327,00/month**.

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Utilities	Cost/Year (R\$)
Electricity	584.000
Water	326.000
Communication	172.000
Total	1.082.000

Table 9 - Utility costs in area STS08A.

Source: EPL.

Annex D-1 details unit and quantitative values.

4.1.3 Maintenance

The study chose two main drivers of maintenance costs: civil construction infrastructure and equipment upkeep at the terminal. In practical terms, the assumption applies a maintenance fee over the value of new assets, reflecting a scenario of adequate PP&E conservation, perpetuating the operational capacity.

In the case of the **STS08A** lease area, considering that it is a brownfield operation which entails the acquisition of new operational assets, the level of annual maintenance required to maintain existing and future infrastructure is estimated at, respectively, 1% and 0.5% of asset value.

Regarding equipment, such as pipelines and loading stations, there is greater wear due to the recurrent utilization. Thus, the required annual upkeep to maintain existing and future equipment is, respectively, 2% and 1% of asset value.

Given the rates of upkeep defined in the last few paragraphs, once existing and future asset values are established, the study can directly calculate the maintenance expense. The estimated maintenance for **STS08A**, according to the rationale discussed in this chapter, is shown in the table below.

Maintenance	Asset Base (kR\$)	R\$/Year(R\$)
0,61% Infrastructure	738.853	5.130.000
1.31% Equipment	152.958	2.850.000
Total	891.811	7.980.000

Table 10 - Projected maintenance costs for STS08A.

Source: EPL

Further quantitative details are found in Annex D-1.

4.1.4 General and Administrative

This cost group encompasses cleaning, accounting, legal consultants, insurance, security, vehicles, fuel, and others.

To determine the appropriate cleaning expenses for the **STS08A** are the following items were considered:

- Cleaning team total wage expense is R\$ 224.438,00 assuming 5 people and all payroll taxes.
- Expenses with cleaning products were set as 10% of the cleaning team's total wage per year, R\$ 22.444,00.

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Based on the assumptions adopted, the total yearly cleaning expenses are set at **R\$ 247.000,00** (rounded out).

For outsourced accounting, legal and consulting services, the study adopted the same assumptions as PAP, updating the original amount from R\$ 100.000,00/year using the accumulated IPC-A index of 43,27% (from July/2013 to June/2020), resulting in the final amount of **R\$ 144.000,00** per year (rounded out).

The insurance policies applicable to **STS08A** are summarized in the table below:

Phase	Insurance	BASIS OF	kR\$ / Year
During the Contract	Insurance guarantee of contract execution	Contract value	901
During construction	Engineering risk insurance	Construction	23
	Insurance - Civil liability from construction	Construction	10
During operation	Specific /multi-risk risk insurance	Capex total	1.249
	Civil liability insurance for contractual activities	Contract value	134
TOTAL cost (ROUNDED OUT)			2.290

Table 11: Insurance policy applicable to STS08A.

Source: EPL.

The security cost refers to expenses with the terminal’s own security personnel, as well as with security cameras, software, and equipment. The study estimates the need for a total contingent of 12 security guards, with salaries plus payroll taxes totaling R\$ 659.697,00. As for the remaining cost of software and equipment, the study assumes that the related cost will be equivalent to 10% of total security spending, or R\$ 65.290,00 per year. Therefore, the total yearly security cost was set at **R\$ 726.000,00** (rounded out).

For the expense category of vehicles and fuels, the study only considers light vehicles that circulate within the port or are used for external meetings/purchase of raw materials. The study assumes the need for three vehicles and three drivers, with salaries and payroll taxes adding up to R\$ 155.269,00 per year. In addition, the study also considers expenses with fuels, lubricants, IPVA taxes and insurance estimated at 20% of the amount of wages and payroll taxes, R\$ 31.054,00. Based on these assumptions, the total expenses with fuel and vehicles are **R\$ 187.000,00** a year (rounded out).

On the item “Others”, less representative expenses are grouped together such as: food, IT, and supplies. To set the level of these expenses, the study assumed the expenses under “Others” to be equal to 10% of the sum of SG&A expenses discussed above. Hence, the final spending on “Other” costs is **R\$ 360.000,00** per year.

The cost categories discussed in this chapter are listed below:

General and Administrative	Cost (R\$)
Cleaning	247.000
Accounting /Legal / Consulting	144.000
Insurance	2.290.000
Security	726.000

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Vehicles/Fuel	187.000
Other	360.000
Total	3.954.000

Table 12STS08A area.

Source: EPL.

Annex D-1 further details the calculations shown above.

4.1.5 Environmental Costs

The environmental cost is composed of expenses with licenses, studies, and environmental programs. The cost must also represent disbursements related with the preliminary studies for acquiring licenses for operating the port terminal.

The preliminary diagnosis concerning environmental issues, as well as the assumptions for sizing the costs for area **STS08A** are discussed in Section F - Environmental.

4.1.6 Fees and other Contributions

Regarding fees and contributions, Law No. 13,467 of July 13, 2017, is particularly significant, as it disavows all mandatory trade union contributions, lowering payroll costs for all companies. Hence, in modeling **STS08A**, the study did not have to assume provisions for trade union contributions.

On the other hand, the Supreme Federal Court's (STF) decision declaring that State-owned lands leased to private companies or mixed ownership companies are subject to Urban Property and Territorial Tax (IPTU), directly increases the cost for all current and future lessees of port terminals.

Therefore, the study recognizes annual IPTU expense in its financial model for **STS08A** area. To establish the actual amount to be paid, the study bases its estimate on the unitary cost the area currently incurs, valued at R\$ 8.30/m²/year. Regarding cost classification, IPTU general classification falls under fixed operating expense. In conclusion, given **STS08A's** dimensions, total annual IPTU expense considered in the feasibility study is **R\$ 2.353.000,00/year** (rounded out).

It is worth mentioning that during STS08's pre-operational period (transition phase lasting 2 years), **STS08A's** lessee will be responsible for paying IPTU on STS08's area that it occupies. Thus, **STS08A's** additional IPTU during the transition phase is **R\$ 388.083,10**.

4.1.7 Reimbursements for preparing this Study

The pricing methodology for port studies, validated by the Federal Audit Court (TCU) and defined in Technical Note 72/2015/DOUP/SPP/SEP/PR, sets a "ceiling" value for EVTEAs prepared under Ordinance No. 38 of the Port Lease program (PAP). The "ceiling," defined in March 2013, is the basis used to set the actual value to be reimbursed to EVTEA. The actual price ceiling was adjusted according to the IPCA until the base date of this EVTEA, that is, June 2020. Hence, the June 2020 maximum reimbursement for this study is **R\$ 471.563,80**.

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According to the internal pricing method, considering the sum of the efforts allocated for the preparation of this study, the amount due to Companhia Docas do Estado de São Paulo – CODESP is **R\$ 316.655,64** (04/2019); adjusted to the base date of 06/2020, this amount corresponds to a **R\$ 323.860,03**.

Additionally, the final reimbursement value must consider EPL's revision of SPA's work. Hence, the required amount due to EPL for services rendered corresponds to **R\$ 147.703,77**. It is worth noting that the value above is limited by TCU's ceiling. Indeed, EPL's unlimited reimbursement for the study would have been R\$ 186,910.87.

Finally, the final balance due to federal government entities involved in creating STS08A's feasibility study is **R\$ 471.563,80**.

It is noteworthy that the compensation amount on the study is being considered in the economic-financial equation of the project, with contribution to be made in the first year of the contract.

4.1.8 Auctioning Cost

In the case of terminal STS08A, the study assumes that the auction will be conducted by B3 (São Paulo Stock Exchange), as established by the federal government.

The amount due to B3 is based on its contract with Antaq. The amount to be paid to B3 for the lease of STS08A is **R\$ 420.813,47** (base date of 06/2020).

It is important to mention that the payment of the referred amount is being considered in the project's economic-financial equation, such payment due in the first year of the contract.

In addition, as the future lessor is responsible for paying for the auctioning, it is also fair to include the value as a first-year expense in its feasibility model.

4.1.9. Payment of indemnity on non-reversible assets

For the STS08A area lease project, the payment of indemnity on non-reversible assets is foreseen. The indemnity was considered in the economic-financial assessment of the feasibility study, considering that these assets are essential for the continuity of the foreseen liquid bulk operations, as per section B – Demand Study.

The indemnification amounts came to **R\$ 365.490.678,00**, to be paid in 4 equal annual installments by the future lessee.

4.2 Variable Costs

4.2.1 Operational Costs

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A supplementary cost was considered for the first two contractual years, in the transition phase of the LPG operation. It is estimated an expense of R\$ 16.36 per ton of LPG, as currently observed in the terminal.

It is estimated that of this cost, R\$ 13.52 per ton are due to the semi-manufacturing process of transforming refrigerated LPG into pressurized LPG. This cost was maintained in the modeling as from the third year until the last contractual year.

4.2.2 Utilities

Under variable cost, the utilities expense group refers to operating disbursements with electricity consumption and equipment lubrication.

To define the variable utilities expense, the study consulted the terminal's past expenses with these costs. In addition, for simplicity, electricity consumption values were rebased as a per ton value (Kwh/ton). Thus, the variable utilities expense per metric ton of liquid bulk handled is **R\$ 0,52/ton**.

4.2.3 Port Tariffs

Regarding the port tariffs applicable to this enterprise, the study considered the schedule in force in June/2020, which corresponds to the monetarily adjusted schedule of June 2018.

The following port tariff applies to the referred terminal:

- **Table II** - Use of land infrastructure - reimburses the port authority for the use of the following state infrastructure: paved facilities, road accesses and streets, parking lots, among others. The tariff is currently priced at **R\$ 0.30/m²/month**, according to item 2.1.a (Right Bank not including pier) up to the fifth contractual year.
- **Table II** - Use of land infrastructure - reimburses the port authority for the use of the following state infrastructure: paved facilities, road accesses and streets, parking lots, among others. The tariff is currently priced at **R\$ 1.61/m²/month**, according to item 2.1.a (Right Bank including pier) as from the sixth contractual year.

4.2.4 Taxes

The taxes applicable to the enterprise can be subdivided into two groups:

- Indirect taxes on revenue: PIS, COFINS and ISS;
- Direct taxes on profit: IRPJ and CSLL.

In this study, the model attempts to minimize tax expenses by choosing the most advantageous regime at any given year. To give the reader some context, in the Brazilian tax code, there are two valid tax regimes for medium-sized companies: (I) the real profit regime, where taxes are based on actual revenue and expenses incurred and (II) the presumed profit regime, where the government estimates the company's profitability based on its revenue.

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The table below summarizes direct and indirect tax rates for both regimes, as well as respective limits and qualitative differences.

Tax Rates	Real Profit	Presumed Profit
PIS (on revenue)	1,65%	0,65%
COFINS (on revenue)	7,60%	3,00%
ISS (on revenue)	5,00%	5,00%
CSLL (on profit)	9,00%	9,00%
IR (on profit)	15,00% + 10,00%	15,00% + 10,00%
IR below R\$ 240k	15,00%	15,00%
Presumed Profit Method		
Qualification criteria:	Smaller, equal to or greater	Same or less
Gross Revenues >	78.000.000	78.000.000
Tax Incentives:	%credit	Applicable on:
PIS/COFINS Credits	9,25%	Utilities
REIDI	applicable	

Table 13: Summary of tax assumptions for the **STS08A** area
Source: EPL.

The study also considered the following points regarding taxation:

- Tax benefit on accumulated losses permits offsetting current tax against accumulated losses from other periods, limited to 30% of current period's profit.
- The study considers PIS/COFINS credits under the real profit regime.
- The study recognizes tax incentives for asset acquisition (REIDI).

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Annex D -1 (1/4)

Opex Summary (STS08A)

Base Throughput 6.047.485 Tons

Staff Salaries	Staff	Avg Salary (R\$/month)	Social Costs	Total Cost (R\$/yr)	Notes
Administrative					
Director General	1	48.918	103,25%	1.193.110	
Senior Manager	6	18.286	103,25%	2.675.973	
Mid-level Manager	10	12.190	103,25%	2.973.141	
Other admin support (lv 1)	15	3.051	103,25%	1.116.121	
Other admin support (lv 2)	10	1.886	103,25%	459.898	
-	-	-	103,25%	-	
Environmental					
Supervisors	2	4.329	103,25%	211.169	
Environmental Technician	2	3.111	103,25%	151.753	
-	-	-	103,25%	-	
Maintenance					
Supervisors	6	4.329	103,25%	633.506	
Maintenance Technicians	28	1.679	103,25%	1.146.493	
Operations					
Operational Officer	25	4.329	103,25%	2.639.608	
Ship Transfer Crew	54	1.630	103,25%	2.146.183	
Storage Facilities	54	1.630	103,25%	2.146.183	
Receiving and Delivery	54	1.630	103,25%	2.146.183	
Total	267			19.639.321	
Sub-total - Admin staff				8.781.164	
Sub-total - Maintenance / Operations Staff				10.858.157	

Maintenance	Base de cálculo	%
Equipment - maintenance and spares	152.958	1,86%
Infra - civil/structural maintenance	738.853	0,69%

Electricity usage

Unit cost	0,49867	R\$/kWh	Fonte: CPFL			
Staff	Persons	Hours/day	Days/Year	Consumption (kW/person)	Cost (R\$/year)	Notes
Admin	46	12	252	2,625	182.088	
Maintenance	34	16	252	1,313	89.725	
Operations	187	16	365	0,063	34.037	
Total - Staff	267				306.000	rounded to nearest 000

Notes on electricity usage

Admin	100w light; 1500W AC; 500W for computers and misc; 25% common area
Maintenance	100w light; 1500W AC; 500W computers & misc; 25% common area; 50% reduction factor for mainten/operations staff
Operations	100w light; no AC; 25% common area; 50% reduction factor for mainten/operations staff

Lighting

Watt =	lux * sq-m / luminous efficiency
Luminous efficiency (lm/w)	varies by type of lighting source
Fluorescent lamp	Range is 45 - 75 lm/w
Sodium vapor lamp	Range is 85 - 150 lm/w

Area type	Size (sq m)	Luminous Effic. (lm/w)	Light (lux)	Hour/day	Days/Year	Consumption (kW)	Cost (R\$/year)	Notes
Covered Warehouse	3.030	50,00	200	10	365	12,12	22.060	-
Open (yard / tank area)	280.399	100,00	50	10	365	140,20	255.183	-
Open (berth)	-	100,00	50	10	365	-	-	-
Total (lighting)							278.000	rounded to nearest 000

Notes Open area lighting: Avg of 50 lux used; guidelines suggest: parking areas: 20 lux; gates: 75 lux; fences: 10 lux

Fuel

Diesel Unit Cost	-	R\$/litro
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Water

Office usage	100	liters/person/day
Tarifa	33,4	R\$/m3
1 m3=	1.000	liters
Cost	3,34	R\$/employee/day

Misc G&A Costs

Vehicles	3	vehicles at	5.176	R\$ per month	-
Security	1	posts	725.667	R\$ per hour	-
Cleaning service	1	service/week	246.882	R\$ per service	-
Other misc G&A (office supplies, IT, food)	10%	staff	359.400	R\$/month/employee	-
Payment to Port Authority	0,3	R\$/m²		up to year 5, afterwards :	1,61 R\$/m²
Applicable to	3.401.148	m²/ano			

Section D – Operational

Annex D -1 (2/4)

Summary of OpEx Estimate

Cost Category	Expense Type	Unit Cost	Units	Number of Units	Cost (R\$)
Labor					
Administrative	Fix	8.781.164	R\$	1	8.782.000
Operations / Maintenance / Environ.	Fix	10.858.157	R\$	1	10.859.000
Operational Costs	Var	-	R\$/Tons	1.882.646	-
Utilities					
Electricity - office	Fix	306.000	R\$/year	1	306.000
Electricity - lighting	Fix	278.000	R\$/year	1	278.000
Electricity - equipment	Var	0,52	R\$/ton	6.047.485	3.144.700
Water	Fix	3,34	R\$/day/employee	267	326.000
Communications	Fix	14.327	R\$/month	12	172.000
Fuel & lubricants	Var	-	R\$/TON	6.047.485	-
Maintenance					
Equipment - maintenance and spares	Fix	2.849.370	R\$/year	1	2.850.000
Infra - civil/structural maintenance	Fix	5.129.290	R\$/year	1	5.130.000
General and Admin					
Cleaning	Fix	246.882	R\$/year	1	247.000
Accounting, legal and consultants	Fix	144.000	R\$/year	1	144.000
Insurance	Fix	2.290.000	R\$/year	1	2.290.000
Security	Fix	725.667	R\$/year	1	726.000
Vehicles, fuel	Fix	15.527	R\$/month	12	187.000
Other misc G&A (office supplies, IT, food)	Fix	359.400	R\$/year/employee	1	360.000
Fees and other contributions	Fix	-	-	-	-
IPTU	Fix	2.353.000	R\$/year	1	2.353.000
Contribution to Syndicates	Fix	-	R\$/month	12	-
Payment to Port Authority	Fix	0,30	R\$/m ²	3.401.148	1.021.000
Sub-total					39.175.700
Contingency		5%			1.907.735
Total (R\$/year)					41.083.435

Note: All costs figures are rounded up to the nearest 000.

Cost Category	Expense Type	Movement			
		3.023.742	4.535.614	6.047.485	7.559.356
Labor					
Administrative	Fix	5.269.200	7.025.600	8.782.000	9.660.200
Operations / Maintenance / Environ.	Fix	6.515.400	8.687.200	10.859.000	11.944.900
Operational Costs	Var	-	-	-	-
Utilities					
Electricity - office	Fix	183.600	244.800	306.000	336.600
Electricity - lighting	Fix	278.000	278.000	278.000	278.000
Electricity - equipment	Var	1.572.346	2.358.519	3.144.692	3.930.865
Water	Fix	195.600	260.800	326.000	358.600
Communications	Fix	103.200	137.600	172.000	189.200
Fuel & lubricants	Var	-	-	-	-
Maintenance					
Equipment - maintenance and spares	Fix	2.280.000	2.565.000	2.850.000	2.850.000
Infra - civil/structural maintenance	Fix	5.130.000	5.130.000	5.130.000	5.130.000
General and Admin					
Cleaning	Fix	172.900	222.300	247.000	247.000
Accounting, legal and consultants	Fix	100.800	129.600	144.000	144.000
Insurance	Fix	2.290.000	2.290.000	2.290.000	2.290.000
Security	Fix	726.000	726.000	726.000	726.000
Vehicles, fuel	Fix	130.900	168.300	187.000	187.000
Other misc G&A (office supplies, IT, food)	Fix	216.000	288.000	360.000	396.000
Fees and other contributions	Fix	-	-	-	-
IPTU	Fix	2.353.000	2.353.000	2.353.000	2.353.000
Contribution to Unions	Fix	-	-	-	-
Payment to Port Authority	Fix	1.021.000	1.021.000	1.021.000	1.021.000
Sub-total		28.537.946	33.885.719	39.175.692	42.042.365
Contingency		5%	5%	5%	5%
Total (R\$/year)		29.913.793	35.528.955	41.083.427	44.093.433
Unit Cost		9,89	7,83	6,79	5,83

Fixed Cost Categories	PIS/COFINS Credit (1=yes, 0=no)	Fixed Cost (R\$ k)				
		0	12.374	16.498	20.623	22.685
FO1 Labor (Admin, O&M / Environ.)	0	12.374	16.498	20.623	22.685	
FO2 Utilities - Electricity, Water, Comm.	1	798	967	1.136	1.221	
FO3 Maintenance - Equip / Infra	0	7.781	8.080	8.379	8.379	
FO4 General and Admin	0	3.818	4.015	4.152	4.190	
FO5 Fees and other contributions	0	2.471	2.471	2.471	2.471	
Variable Cost Categories		PIS/COFINS Credit (1=yes, 0=no)	Unit Cost	Unit Cost	Unit Cost	Unit Cost
VO1 Labor - OGMO	0	-	-	-	-	-
VO2 Utilities - Electricity, water, fuel, lubricants	1	0,55	0,55	0,55	0,55	0,55
VO3 Blank	0	-	-	-	-	-

Summary of Volume Groups for OpEx estimates

Volume (k t)	Group
0	4
3053,97942	5
4580,97014	6
6107,95985	7
7634,94956	7

Section D – Operational

Annex D -1 (3/4)

Summary of Insurance Costs and Guarantees

Operation	2.290,0 k R\$/ano
Implementaion (Execution Guarantee)	910,0 k R\$/ano

INSURANCE AND GUAANTEES

Total Capex / Value of Existing Assets	891.811 k R\$
Capex/Value of Existing Assets	738.853 k R\$
Equipment/Value of Existing Assests	152.958 k R\$
Contract Value	7.207.146 k R\$
OPEX - LABOR	19.641 k R\$
Capex/Value of Existing Public Assets	217.953 k R\$

BEFORE THE OPERATION

Insurance - Engineering Risk -civil works in progress, installation and assembly

Insured Amount - Construction Capex	100%
Percentage	0,02%

Periodicity	annually during construction
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General and Cross Liability Insurance of the works

Insured Amount - Construction Capex	30%
Percentage	0,03%

Periodicity	annually during construction
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DURING THE OPERATION

Specified risks/Multi-Risks insurance

Insured Amount - Total Capex	100%
Percentage	0,14%
Cost	1.248,53 k R\$
Periodicity	annually during the operation period

Liability Insurance for contract's activities

Insured Amount - Contract Value	3,5%
Percentage	0,053%
Cost	133,69 k R\$
Periodicity	annually during the operation period

GUARANTEES

Contract performance guarantee (during concession period)

Insured Amount - Contract Value	2,5%
Percentage	0,50%
Cost	900,89 k R\$
Periodicity	annually during the concession period

Section D – Operational

Annex D -1 (4/4)

Operating Expenditures Forecast		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	Year 21	Year 22	Year 23	Year 24	Year 25	
Input to the Financial Sheet		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	
Fixed Operating Expenses + Environmental Costs		38.408	38.955	39.006	37.479	37.975	33.210	37.957	37.879	37.845	38.088	37.889	38.598	39.383	39.295	39.358	39.450	39.261	39.295	39.372	39.392	39.304	41.591	41.445	41.479	41.654	
Variable Operating Expenses		15.312	14.688	12.348	10.879	10.459	14.174	13.808	13.470	13.159	13.213	13.269	13.326	13.384	13.444	13.505	13.567	13.631	13.697	13.764	13.833	13.903	13.975	14.049	14.125	14.202	
Payments to Govt Agencies + Studies + Auction		205.618	205.601	206.531	189.854	99.118	93.798	94.383	95.006	95.667	96.590	97.535	98.502	99.493	100.507	101.545	102.609	103.698	104.813	105.955	107.124	108.322	109.548	110.804	112.091	113.408	
Opex Forecasts (STS08A)																											
Forecasts in kRS. All values are in Real																											
		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	Year 21	Year 22	Year 23	Year 24	Year 25	
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	
Operating year (1=yes, 0=no)		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Cargo Volume (k K Tons)		6.646	6.741	6.841	5.044	5.113	4.540	4.603	4.670	4.741	4.841	4.942	5.047	5.153	5.263	5.374	5.489	5.606	5.726	5.849	5.975	6.104	6.237	6.372	6.510	6.652	
Cost Group (For fixed costs - step function)		7	7	7	6	6	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	7	7	7	7	
Payments to Govt Agencies																											
Fixed Annual Payments		51.651	51.651	51.651	51.651	51.651	51.651	51.651	51.651	51.651	51.651	51.651	51.651	51.651	51.651	51.651	51.651	51.651	51.651	51.651	51.651	51.651	51.651	51.651	51.651	51.651	
Variable Payment + Auctioning & Study Expenses		62.594	62.577	63.507	46.830	47.467	42.147	42.732	43.355	44.016	44.939	45.883	46.851	47.841	48.856	49.894	50.958	52.047	53.162	54.304	55.473	56.671	57.897	59.153	60.439	61.757	
Indemnity Payment		91.373	91.373	91.373	91.373	91.373	91.373	91.373	91.373	91.373	91.373	91.373	91.373	91.373	91.373	91.373	91.373	91.373	91.373	91.373	91.373	91.373	91.373	91.373	91.373	91.373	
Total Payments to Govt Agencies		205.618	205.601	206.531	189.854	99.118	93.798	94.383	95.006	95.667	96.590	97.535	98.502	99.493	100.507	101.545	102.609	103.698	104.813	105.955	107.124	108.322	109.548	110.804	112.091	113.408	
Fixed Operating Expenses																											
PIS/COFINS Credit (1=yes, 0=no)																											
FO1 Labor (Admin, O&M / Environ.)		0	22.685	22.685	22.685	20.623	20.623	16.498	20.623	20.623	20.623	20.623	20.623	20.623	20.623	20.623	20.623	20.623	20.623	20.623	20.623	20.623	22.685	22.685	22.685	22.685	
FO2 Utilities - Electricity, Water, Comm.		1	1.221	1.221	1.221	1.136	1.136	967	1.136	1.136	1.136	1.136	1.136	1.136	1.136	1.136	1.136	1.136	1.136	1.136	1.136	1.136	1.221	1.221	1.221	1.221	
FO3 Maintenance - Equip / Infra		0	5.293	6.136	6.648	7.160	7.671	7.388	7.671	7.671	7.671	7.671	8.379	9.087	9.087	9.087	9.087	9.087	9.087	9.087	9.087	9.087	9.087	9.087	9.087	9.087	
FO4 General and Admin		0	4.190	4.190	4.190	4.152	4.152	4.015	4.152	4.152	4.152	4.152	4.163	4.163	4.152	4.152	4.152	4.152	4.152	4.152	4.152	4.152	4.190	4.190	4.190	4.190	
FO5 Fees (IPTU, Syndicates)		0	2.859	2.859	2.471	2.471	2.471	2.471	2.471	2.471	2.471	2.471	2.471	2.471	2.471	2.471	2.471	2.471	2.471	2.471	2.471	2.471	2.471	2.471	2.471	2.471	
Total Fixed Operating Expenses			36.248	37.090	37.214	35.541	36.053	31.340	36.053	36.053	36.053	36.053	36.772	37.480	37.469	37.469	37.469	37.469	37.469	37.469	37.469	37.469	39.653	39.653	39.653	39.653	
Variable Operating Expenses																											
PIS/COFINS Credit (1=yes, 0=no)																											
VO1 Operating Costs		0	10.494	9.819	7.592	7.104	6.647	6.219	5.819	5.445	5.094	5.094	5.094	5.094	5.094	5.094	5.094	5.094	5.094	5.094	5.094	5.094	5.094	5.094	5.094	5.094	
VO2 Utilities - Electricity, water, fuel, lubricants		1	3.629	3.680	3.735	2.754	2.792	2.479	2.513	2.550	2.589	2.643	2.699	2.755	2.814	2.873	2.934	2.997	3.061	3.127	3.194	3.263	3.333	3.405	3.479	3.555	
VO3 Payment to Port Authority		0	1.189	1.189	1.021	1.021	1.021	5.476	5.476	5.476	5.476	5.476	5.476	5.476	5.476	5.476	5.476	5.476	5.476	5.476	5.476	5.476	5.476	5.476	5.476	5.476	
Total Variable Operating Expenses			15.312	14.688	12.348	10.879	10.459	14.174	13.808	13.470	13.159	13.213	13.269	13.326	13.384	13.444	13.505	13.567	13.631	13.697	13.764	13.833	13.903	13.975	14.049	14.202	
Opex Generating PIS / COFINS Tax Credit																											
Fixed Operating Expenses		1.221	1.221	1.221	1.136	1.136	967	1.136	1.136	1.136	1.136	1.136	1.136	1.136	1.136	1.136	1.136	1.136	1.136	1.136	1.136	1.136	1.221	1.221	1.221	1.221	
Variable Operating Expenses		3.629	3.680	3.735	2.754	2.792	2.479	2.513	2.550	2.589	2.643	2.699	2.755	2.814	2.873	2.934	2.997	3.061	3.127	3.194	3.263	3.333	3.405	3.479	3.555	3.632	
D&A		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Taxa			9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	
Total Opex Generating PIS/COFINS Tax Credit			449	453	458	360	363	319	338	341	345	350	355	360	365	371	377	382	388	394	401	407	413	428	435	442	449
Capex:																											
Guarantee, Insurance and Tax expense during construction		33	33	29	29	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Env Costs during Construction (k RS)		739	227	860	296	227	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Opex:																											
Env Costs during Operations (k RS)		2.161	1.865	1.792	1.938	1.922	1.870	1.904	1.826	1.792	2.035	1.836	1.826	1.904	1.826	1.889	1.981	1.792	1.826	1.904	1.923	1.836	1.938	1.792	1.826	2.001	
Opex Generating PIS / COFINS Tax Credit																											
D&A		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
D&A -Investment with no REIDI/REPORTO		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Taxa			9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	9,25%	
Total Opex Generating PIS/COFINS Tax Credit			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	