1. Introduction

This section presents the market analysis for the bidding process of the leasing area named **SUA05** in the Recife and Suape Port Complex, for the handling and storage of containerized cargoes.

The market analysis aims to verify the economic viability of the project, guiding the design and the size of the project, being composed by the projection of the flow of cargo, the competitive environment and the estimation of service prices along the contractual scope.

The projections are used for:

- Guiding the engineering design and the design of the terminal for the period of 25 years;
- Performing the financial analysis to verify the viability of the project; and
- Establishing appropriate contractual terms for the operation of the area/facility.

2. The Containerized Cargo Market

The containerized cargo is the one transported in standardized containers. In general, containers are classified by size: 20[1] or 40 feet.

The practice of transporting in containers (of uniform shape and size) has revolutionized foreign trade, being characterized as the "containerization phenomenon," which peak in developed countries, and continues to expand in developing countries.

The process of loading and unloading of goods on ships, which previously took about ten days, can now be carried out between 24 and 48 hours, which has reduced not only time but also logistical costs.

One of the main differentials of this mode of loading is that the containers are loaded at the place of production. In terms of value, this mode of transport accounts for around 60% of world merchandise trade.

With respect to the sectorial organization, there are currently about 400 container shipping companies, with a fleet of approximately 5,100 vessels worldwide (IDB, 2017).

It is worth mentioning that the logistics chain of the container presents a worldwide tendency to increase container ships – the so-called mega-ships. These vessels make it possible to obtain economies of scale. Currently the largest ship can carry 21,413 TEU (unit equivalent to 20 feet).

In addition to the increase in the size and capacity of container ships, there is an intensification of the mergers, alliances and acquisition processes of the main regular line operators, as well as the emergence of the port stratification process, with consolidation of hubs and regional feeder lines.

[1] TEU - Twenty-foot Equivalent Unit.

In Brazil, the handling of containerized cargo in 2016 totaled 95.8 million tons, equivalent to 8.8 million TEUs, mostly for long haul navigation.

The representations of products transported in containerized cargoes in Brazil 2016 by long distance navigation are presented below.

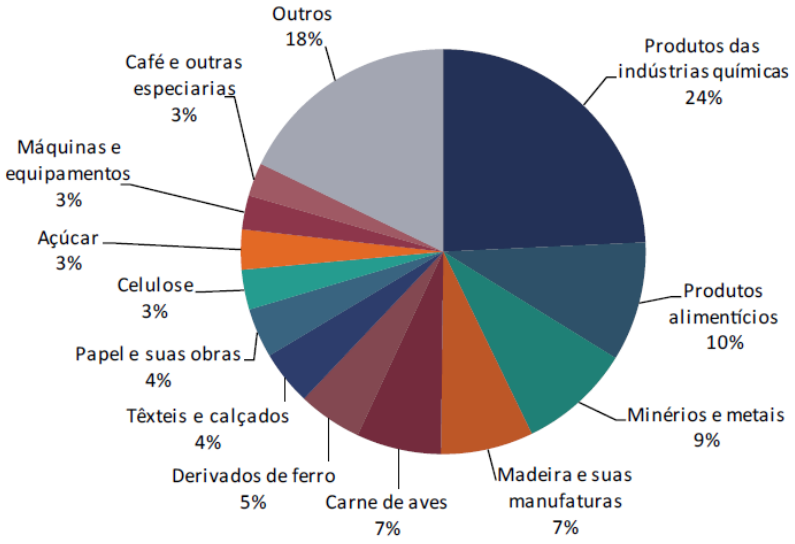

Figure 1- Products transported in containers in Brazil, year 2016

Source: Report on the projection of demand and allocation of cargoes – Base year 2016 (PNLP, 2017)

According to the National Port Logistics Plan (PNLP), the expected growth in long-haul transport is 169% by 2060, considering export and import, and that cabotage is up by 143%. Import volumes should show a higher growth rate over the period (2.2 per year) and a gain in relative participation from 29% to 33% between 2016 and 2060, compared to exports and cabotage. Such behavior can be explained by the growth prospects of the Brazilian economy, since increases in GDP tend to drive a higher demand for imported goods.

3. Cargo Flow Projection

3.1. Methodology

The demand projections for the terminal were structured from two stages, reflecting two competitive evaluation blocks, called macro demand analysis and micro demand analysis.

The macro demand analysis seeks to identify how the cargoes produced and consumed in the country are distributed by the Brazilian ports. This scenario corresponds to inter-port competition.

For the micro demand, it seeks to identify how the cargoes destined to a Port Complex are distributed between the existing terminals. This scenario corresponds to inter-port competition.

The potential demand for port facilities in Brazil has been the subject of several studies at the national and regional levels. For the estimation of potential demand related to the **SUA05** leasing area, the following studies were the basis for the demand projection:

- National Port Logistics Plan – PNLP (2017), updating of demand projection and mesh loading (Base Year 2016); and
- Preliminary projections of demand for containerized cargo from the Master Plan of the Recife and Suape Port Complex (2018)[2].

At the national level, these studies are the official planning instruments for the port sector, indicative for attracting investments and identifying opportunities, enabling the participation of society in the development of ports and their relationship with the cities and the environment, as well as integration with national transport infrastructure expansion policies and rationalization of the use of public resources.

3.1.1. Macro Demand Projection Methodology

The macro demand projections for the port sector are made available in the National Port Logistics Plan – PNLP and in the Mater Plans of Port Complexes, published periodically.

The PNLP is the most comprehensive instrument in terms of planning and aims to show the diagnosis and prognostics of the sector for the evaluation of scenarios and the proposal of medium and long-term actions that allow decisions on infrastructure, operations, capacity, logistics and access, management and environment.

With regard to cargo projections, the PNLP presents traffic flows distributed in port clusters. For more details, consult the PNLP report "Projection of Demand and Allocation of Cargoes – base year 2016," published in 2017.

Demand projections in port clusters consider that product outlets can be run for a range of ports that theoretically compete with each other. In the methodology adopted, this process corresponds to inter-port competition.

The following figure illustrates the location and composition of the port clusters defined in the national planning.

[2] This is an anticipation of demand projection data of the revision of the Master Plan of the Port Complex of Recife and Suape (3rd Cycle), not yet published.

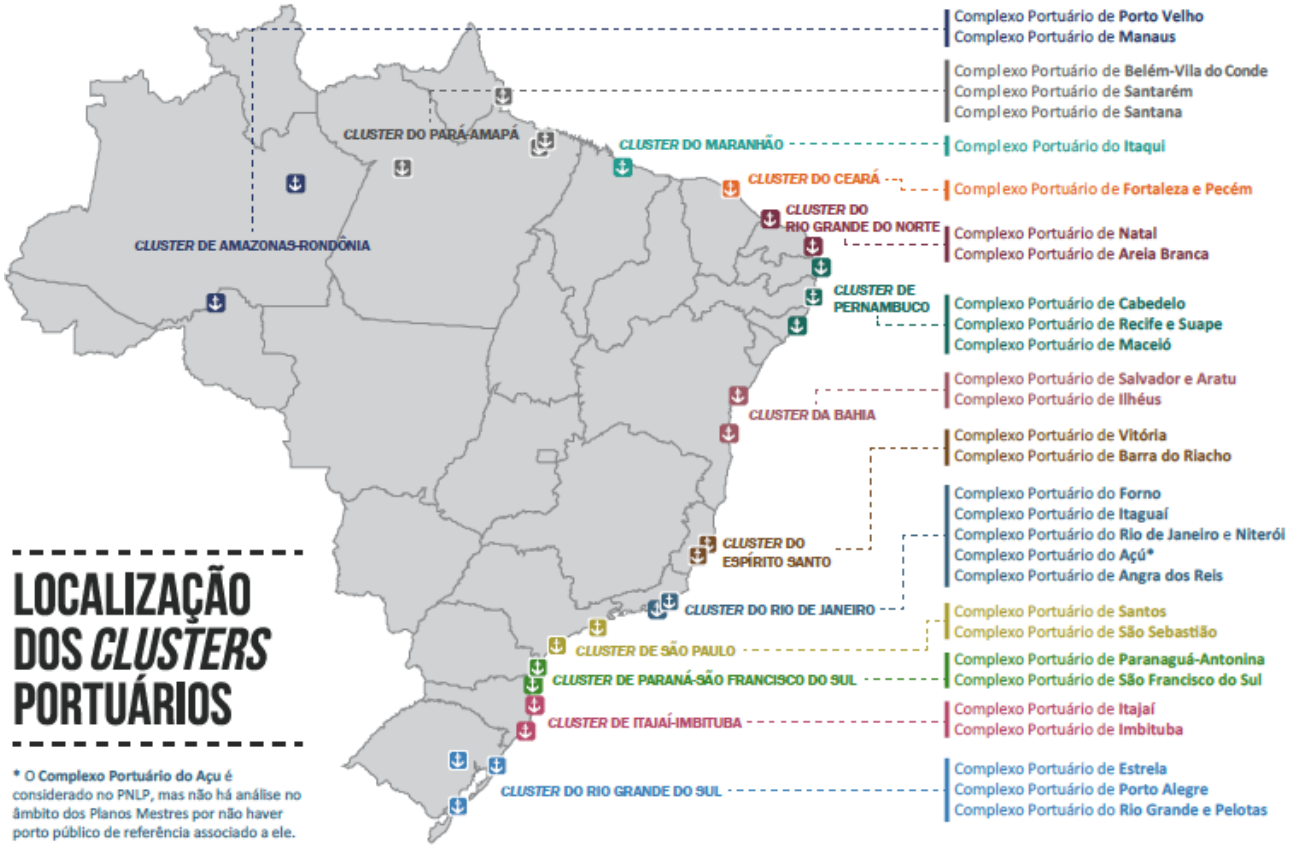

Figure 2 – Location of Port Clusters

Source: Report on the projection of demand and allocation of cargoes – Base year 2016 (PNLP, 2017)

With the same macro demand perspective, however, approaching the Port Complex, and no longer a port Cluster, the Master Plan is the State planning instrument aimed at the port unit, considering the perspectives of the strategic planning of the national port sector contained in the National Plan of Port Logistics – PNLP, which aims to direct actions, improvements and short-, medium- and long-term investments in the port and its accesses.

It should be noted that the Master Plan brings a greater level of detail in relation to the PNLP, however, in terms of demand project, it only deals with macro demand without identifying the micro demand in existing or planned terminals.

It is also worth mentioning that the forecasts presented in both planning instruments indicate in a generic way the freight traffic flows, without detailing the allocation of products handled at specific port terminals.

Demand forecasting methods are composed of three main activities:

1. Projection of demand flows in Brazil;
2. Allocation in port clusters, in the case of the PNLP, or in Port Complexes, in the case of Master Plans; and

3. Validation/adjustments of results.

The projections of demand flows are based on econometric models that consider the historical behavior of the demand of a given cargo and the way in which it responds to changes in variables considered determinants of exports, imports and cabotage handling. Among these variables, GDP, the exchange rate and the average price in the case of commodities stand out. Thus, it is assumed that a positive change in income results in a positive impact on demand, and that an increase in the exchange rate (devaluation of the real) has a negative impact on imports, but positive for exports. In addition, it is considered that the handling history is also relevant in the determination of future demand, so that it is possible to capture the inertia of the demand, that is, a trend, which cannot be captured in the other variables.

From the generation of a cargo matrix, projected by source-destination, the next step is the allocation of these flows, by the criterion of minimization of logistics costs, for the national port clusters/complexes. By means of mathematical algorithms, the georeferenced analysis system evaluates and selects the best alternatives for the cargo flow, based on three main parameters: source-destination matrix, logistics mesh and logistics cost. It should be noted that, in addition to the current logistics network, different infrastructure scenarios were considered, from which road, railway and waterway works planned in Federal Government plans are integrated into the planned transport network.

The studies also include stages of discussions of the results for the evaluation of expectations. These discussions are carried out during the technical visits to the Port Complexes, within the scope of the Master Plans and through thematic meetings organized by the National Secretariat of Ports (SNP), linked to the MTPA. The qualitative results obtained were incorporated to the projections of demand, in order to reflect the changes in the trajectory of the cargo volume, referring both to the expectations of each productive sector and to the new investments. The aim is to absorb expectations and intentions not capture by statistical models such as commercial issues, investment projects, new products and new markets. With this new information, it is possible, finally, to adjust the models, as well as to create alternative scenarios of demand.

These scenarios refer to variations in the projection of trend demand, and are estimated from changes in the assumptions in relation to one or more independent variables. In the projections of economic variables, such as cargo handling, it is of fundamental importance to evaluate the uncertainty of the estimated forecasts. To do so, the scenarios are used, which take into consideration the following aspects:

» **Type 1 Shock**: Weights alternatives to GDP growth in Brazil and its main trading partners. For the elaboration of the optimistic and pessimistic scenarios, the average deviation and elasticity of the GDP of Brazil and its main trading partners is considered.

» **Type 2 Shock**: It presents a qualitative character, based on interviews with institutions and the productive sector. This shock aims to incorporate to the projection of demand changes in volume levels, due to possible investments in new production facilities, such as new plants and

expansion of existing plants. It should be noted that such investments are evaluated based on documents that confirm the beginning/progress of these investments, such as letters of intent and previous studies, in addition to the actual investment.

Finally, it seeks to identify the amount of possible cargoes to be captured in the area of influence of the terminal under study, in a process known as inter-port competition. Subsequently, this demand is subdivided between the terminals/facilities, reaching micro demand.

3.1.2. Micro Demand Analysis Methodology

Based on macro demand projections in different scenarios, we set out to define the micro demand for the terminal under study, which is performed through the division of demand by the market participants, that is, the terminals that make up the aggregate of macro demand adopted.

Based on the macro demand indicative adopted in the trend scenario, it seeks to identify the specific demand that could be attracted to the terminal under study, by means of competitive analysis covering the intra-port approach.

To define the projection of future market division, the assumption is that the market share of each terminal will be proportional to its capacity against the total capacity of the cluster/port complex. In this process, existing and planned capacities for the relevant market are considered, including the forecast of new terminals, as well as expansions and contractual extensions of existing terminals.

In cases where the terminal is in operation, it is possible to observe the history of the handling of the installations participating in the relevant market for the initial definition of the market division, applying a process of convergence between the current division and the future division, defined on the basis of the capacity offered.

Finally, the potential demand for the terminal under study, according to the market share, is calculated, which must be compatible with the estimated effective capacity of handling, arriving at the projection of demand captured by the terminal.

3.2. Macro Demand Analysis

The area named **SUA05**, as already discussed, is located in the Governador Eraldo Gueiros Industrial Port Complex, better known as the Port of Suape, in the municipality of Ipojuca/PE.

According to the PNLP approach, the Recife and Suape Port Complex is included in the Pernambuco Cluster, which also includes the Cabedelo Port Complex and the Maceió Port Complex. The adopted version of the PNLP is included in the document entitled “Projection of Demand and Cargo of the Mesh, Base Year 2016” (published in 2017).

According to data from the PNLP (2017), the port handling of containerized cargo in Brazil in 2016 reached 95.8 million tons, and is expected to reach 250.0 million tons in 2060.

With regard to projections of containerized cargo demand for the Pernambuco Cluster, a weighted average annual growth rate of approximately 3% is expected for the period of 25 years (2020 to 2044), with an estimated handling of 450,000 TEU in 2020, reaching 817,391 TEU in 2044.

The Port of Suape is responsible for approximately the totality of the existing handling in the Cluster of Pernambuco, as shown in the table below, which shows the historical data of handling of general cargo containers in the Cluster of Pernambuco.

Total Port Handling (in tons)

Merchandise group: Containers

Organized Port	Year							
	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Cabedelo	923	-	-	-	992	525	-	-
Maceió	66,345	-	-	-	-	-	-	-
Recife	-	94,143	36,536	156,989	3,978	4	-	-
Suape	3,892,933	4,948,714	4,661,656	4,678,039	4,889,073	4,598,437	4,777,447	5,375,423
Grand Total	**3,960,201**	**5,042,857**	**4,698,192**	**4,835,028**	**4,894,043**	**4,598,966**	**4,777,447**	**5,375,423**

Table 1 – Historical handling of containerized cargoes in the Cluster of Pernambuco
Source: Own elaboration, based on GIS/ANTAQ

With respect to the demand projections of the Mater Plan of the Port Complex of Recife and Suape, it is worth mentioning that recent data on the projection of demand for the sectorial planning for containerized cargoes were provided, given the projections currently published in the 2012 Master Plan are out of date. In this context, the MTPA anticipated demand data to enable the elaboration of the **SUA05** terminal feasibility study, even before the full publication of the Master Plan of the Recife and Suape Port Complex (2018).

Therefore, the main demand projection database adopted for the **SUA05** terminal is the preliminary demand data of the Master Plan of the Recife and Suape Port Complex (2018).

It is important to highlight that the preliminary demand projections prepared in the scope of sector planning and forwarded in the EPL consider the specific demand for the Organized Port of Suape, therefore there is no need for segregation of demand between the Organized Ports included in the port complex, namely Recife and Suape.

It should be noted that the preliminary demand projections of the Organized Port of Suape (2018) that will be used for the **SUA05** terminal contain estimates of port handling in different scenarios, called trend,

pessimistic and optimistic scenarios, which reflect the possible variations in demand versus economic and market oscillations.

The following chart illustrates the handling history for the 2010-2017 period and the projection of demand for the 2016-2060 period of containerized cargo provided by the PNLP (2017).

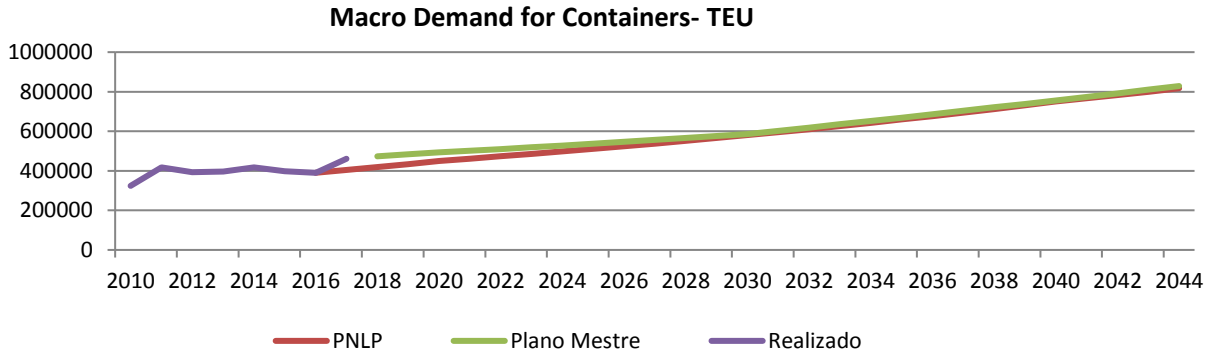

Chart 1: Comparison of demand projections for the 2018-2044 period for containerized cargoes
Source: Own elaboration ,based on the SIG/ANTAQ Suape Master Plan (2018) and PNLP (2017)

It is worth mentioning that the contractual scope foreseen for the study contemplates a total term of 25 years, sufficient to amortize the foreseen investments, as well as to provide adequate return to investors. It is estimated that the contractual period will begin for the year 2020 and end in the year 2044. In this sense, the projection of macro demand was delimited for the same contractual period.

The following table consolidates the macro demand projections of containerized cargoes, which include long-haul flows and cabotage, in different scenarios, which will be used to design the micro demand according to the capacity of the terminal.

MACRO DEMAND IN SCENARIOS – Containers (in TEU)			
YEAR	**Trend**	**Pessimistic**	**Optimistic**
2020	493,055	490,178	618,117
2021	500,953	497,053	686,212
2022	509,704	504,739	761,783
2023	518,618	512,548	845,741
2024	527,690	520,476	938,999
2025	536,939	528,539	1,042,704
2026	546,500	536,869	1,125,833
2027	556,070	545,165	1,215,521
2028	565,795	553,572	1,312,372
2029	575,731	562,144	1,416,933
2030	585,670	570,675	1,529,785
2031	601,997	585,373	1,592,296
2032	618,733	600,399	1,657,341
2033	635,086	614,985	1,725,117
2034	651,872	629,919	1,795,636
2035	668,881	644,996	1,869,038
2036	686,228	660,327	1,916,639
2037	703,589	675,600	1,956,633
2038	721,010	690,857	1,985,512

2039	738,192	705,813	2,008,196
2040	755,842	721,144	2,025,064
2041	773,647	736,548	2,037,938
2042	791,850	752,256	2,047,537
2043	810,475	768,286	2,054,707
2044	828,569	783,739	2,060,068

Table 2 – Scenarios of port handling of containerized cargoes to the Port of Suape

Source: Own elaboration, based on preliminary data from the Master Plan of the Port Complex of Recife and Suape (2018).

The following chart illustrates the behavior of the estimated scenarios for handling containerized cargoes to the Organized Port of the Port of Suape.

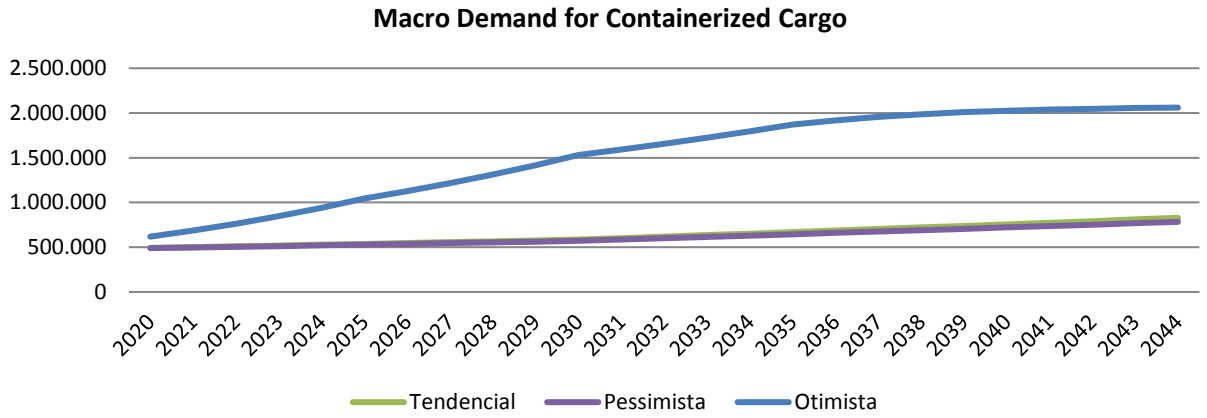

Figure 3 – Scenarios of container handling for the Organized Port of Suape

Source: Own elaboration, based on preliminary data from the Master Plan of the Port Complex of Recife and Suape (2018).

3.3. Micro Demand

In order to estimate port demand at the **SUA05** terminal, an assessment was made of the competitive market dynamics at the Organized Port of Suape, including an analysis of the current and future capacity of existing and projected facilities, in order to estimate the potential demand for the terminal under study.

The relevant facilities for the analysis of market share are those that make up the aggregate of demand adopted, which only covers the Organized Port of Suape.

Therefore, to estimate the micro demand it is necessary to identify and define the following information from the Organized Port of Suape:

- Installed capacities (existing); and
- Planned capabilities (future).

3.3.1. Installed Capabilities

In order to identify the market participants that compose the competitive environment, surveys of historical handling of containerized cargoes were carried out in the ports and facilities located in the area of influence of the **SUA05** terminal. The surveys were carried out at two levels of aggregation, reflecting inter-port competition within the Pernambuco Cluster, and intra-port competition at the Organized Port of Suape.

For the inter-port competition environment of the **SUA05** terminal, the Pernambuco Cluster is considered, which involves the Organized Ports of Suape, Recife, Cabedelo and Maceió. The following table shows the data collected from historical handling.

Market Share in the Pernambuco Cluster (%)								
Merchandise Group: Containers								
Organized Port	**Year**							
	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Cabedelo	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Maceió	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Recife	0.0%	1.9%	0.8%	3.2%	0.1%	0.0%	0.0%	0.0%
Suape	98.3%	98.1%	99.2%	96.8%	99.9%	100.0%	100.0%	100.0%
Total Port Handling (%)	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Table 3: Market share of ports in the Pernambuco Cluster (%) for containerized cargo, 2010-2017 period
Source: Own elaboration, based on GIS/ANTAQ port handling data.

According to the data presented above, it can be noted that the handling of containerized cargoes occurred historically in the ports of Suape and Recife, and it should be noted that from 2014 the operations migrated in total to the Port of Suape.

It can be seen that there are residual port operations in the Port of Recife until 2014, which may be disregarded in the future market division due to the irrelevance of the amounts, as well as the lack of availability of specific and adequate infrastructures to provide efficient services.

Therefore, in the context of inter-port competition, the model considers the Organized Port of Suape as the only port capable of performing efficient containerized port operations.

Regarding the competitive analysis in the intra-port optics, that is, the competition within the Port Complex of Suape, there is the existence of a facility dedicated to the handling of containers, called Tecon Suape, hereinafter simply called TECON I.

With regard to the installed capacity of TECON I, according to published information, it is estimated that the maximum capacity of handling is of the order of 688,000 TEU per year.

3.3.2. Planned Capabilities

For the area of influence of the Organized Port of Suape, it is estimated that the only project to be implemented is that of the present study, to be implemented in the **SUA05** leasing area.

With regard to the size of the **SUA05** leasing area, it is estimated that the terminal's future capacity is at least 840,000 TEU per year. For further details on the dynamic capacity of the terminal, see Section C – Engineering.

The possibility of future expansion of the area in contiguous areas, respecting the financial economic balance of the contract stands out.

For further details on the proposed conceptual layout, see Section C – Engineering.

It is estimated that the implementation of the project will occur in a maximum period of 3 years after the signing of the agreement, considering 1 year for environmental licensing and 2 years for the execution of engineering works, involving dredging, quay and storage yard construction.

Considering the conclusion of the agreement in 2020, the terminal is expected to start its operations in the year 2023.

From the start of operation of the terminal, market cap is expected to occur smoothly, due to market attendance by the existing terminal. In this way, the market cap (ramp up) is projected in a staggered way, in a period of 5 years after the entry into operation, reaching the market equilibrium in the year 2027.

The following table shows the market share projected for participants in the relevant market of containerized cargoes at the Organized Port of Suape, considering the ramp-up period.

	SUA05 Terminal			TECON I Terminal		TOTAL CAPACITY
YEAR	Nominal Capacity	Capacity Used (1)	(%)	Nominal Capacity	(%)	
2020	Pre-Operational		0%	688,000	0%	688,000
2021	Pre-Operational		0%	688,000	0%	688,000
2022	Pre-Operational		0%	688,000	0%	688,000
2023	840,000	168,000	19.6%	688,000	80.4%	856,000
2024	840,000	336,000	32.8%	688,000	67.2%	1,024,000
2025	840,000	504,000	42.3%	688,000	57.7%	1,192,000
2026	840,000	672,000	49.4%	688,000	50.6%	1,360,000
2027	840,000	840,000	55.0%	688,000	45.0%	1,528,000

Notes:
(1) Expected ramp up of 5 years, annual evolution of 20%.

Table 4: Market share of containerized cargo terminals that make up the Organized Port of Suape
Source: Own elaboration, based on several data.

The following table presents the demand forecast data for the **SUA05** Terminal in different scenarios, according to the assumptions adopted.

SUA05 (em TEU's)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Cenário TENDENCIAL																									
Macro Demanda	493.055	500.953	509.704	518.618	527.690	536.939	546.500	556.070	565.795	575.731	585.670	601.997	618.733	635.086	651.872	668.881	686.228	703.589	721.010	738.192	755.842	773.647	791.850	810.475	828.569
% de Mercado	0,0%	0,0%	0,0%	19,6%	32,8%	42,3%	49,4%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%
Micro Demanda Potencial	0	0	0	101.785	173.148	227.028	270.035	305.693	311.039	316.501	321.965	330.941	340.141	349.131	358.359	367.710	377.246	386.790	396.367	405.812	415.515	425.303	435.310	445.549	455.496
Limite de Capacidade	0	0	0	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000
Micro Demanda capturada	**0**	**0**	**0**	**101.785**	**173.148**	**227.028**	**270.035**	**305.693**	**311.039**	**316.501**	**321.965**	**330.941**	**340.141**	**349.131**	**358.359**	**367.710**	**377.246**	**386.790**	**396.367**	**405.812**	**415.515**	**425.303**	**435.310**	**445.549**	**455.496**
Longo Curso	0	0	0	31.383	53.320	69.559	82.512	93.042	94.340	95.693	97.026	99.402	101.861	104.395	107.020	109.598	112.432	115.373	118.436	121.614	124.936	128.391	131.994	135.755	139.667
Embarque	0	0	0	6.738	11.395	14.902	17.612	19.785	19.982	20.178	20.356	20.727	21.095	21.460	21.820	22.177	22.526	22.869	23.205	23.537	23.863	24.187	24.507	24.826	25.143
Desembarque	0	0	0	24.644	41.925	54.656	64.900	73.257	74.358	75.515	76.669	78.674	80.766	82.936	85.200	87.421	89.906	92.505	95.231	98.077	101.072	104.204	107.486	110.929	114.524
Cabotagem	0	0	0	70.402	119.828	157.469	187.523	212.651	216.699	220.809	224.940	231.539	238.280	244.736	251.339	258.112	264.814	271.416	277.930	284.198	290.580	296.912	303.317	309.794	315.829
Embarque	0	0	0	43.237	73.808	97.267	116.147	132.058	134.915	137.815	140.730	145.194	149.757	154.150	158.645	163.256	167.831	172.350	176.821	181.141	185.540	189.915	194.340	198.817	203.015
Desembarque	0	0	0	27.165	46.021	60.202	71.377	80.592	81.784	82.994	84.210	86.344	88.523	90.586	92.693	94.856	96.983	99.067	101.110	103.057	105.040	106.997	108.976	110.978	112.813
Cenário PESSIMISTA	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**	**2043**	**2044**
Macro Demanda Aquaviária	490.178	497.053	504.739	512.548	520.476	528.539	536.869	545.165	553.572	562.144	570.675	585.373	600.399	614.985	629.919	644.996	660.327	675.600	690.857	705.813	721.144	736.548	752.256	768.286	783.739
% de Mercado	0,0%	0,0%	0,0%	19,6%	32,8%	42,3%	49,4%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%
Micro Demanda Potencial	0	0	0	100.594	170.781	223.476	265.276	299.698	304.320	309.032	313.722	321.802	330.062	338.081	346.291	354.579	363.007	371.403	379.790	388.013	396.441	404.909	413.544	422.356	430.851
Limite de Capacidade	0	0	0	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000
Micro Demanda capturada	**0**	**0**	**0**	**100.594**	**170.781**	**223.476**	**265.276**	**299.698**	**304.320**	**309.032**	**313.722**	**321.802**	**330.062**	**338.081**	**346.291**	**354.579**	**363.007**	**371.403**	**379.790**	**388.013**	**396.441**	**404.909**	**413.544**	**422.356**	**430.851**
Longo Curso	0	0	0	31.015	52.591	68.470	81.058	91.217	92.302	93.434	94.541	96.657	98.843	101.091	103.416	105.684	108.188	110.784	113.483	116.280	119.200	122.234	125.394	128.688	132.111
Embarque	0	0	0	6.659	11.239	14.669	17.302	19.397	19.550	19.702	19.835	20.155	20.470	20.781	21.085	21.385	21.675	21.959	22.235	22.505	22.768	23.027	23.282	23.534	23.783
Desembarque	0	0	0	24.356	41.352	53.801	63.756	71.820	72.752	73.733	74.706	76.502	78.372	80.311	82.331	84.299	86.513	88.825	91.248	93.775	96.432	99.207	102.112	105.154	108.328
Cabotagem	0	0	0	69.578	118.190	155.006	184.219	208.481	212.018	215.598	219.180	225.145	231.219	236.989	242.874	248.895	254.819	260.619	266.307	271.733	277.240	282.674	288.150	293.668	298.741
Embarque	0	0	0	42.731	72.799	95.746	114.100	129.469	132.001	134.562	137.127	141.185	145.319	149.271	153.303	157.427	161.497	165.493	169.426	173.195	177.023	180.808	184.623	188.467	192.031
Desembarque	0	0	0	26.847	45.392	59.260	70.119	79.012	80.017	81.036	82.053	83.960	85.900	87.718	89.572	91.468	93.322	95.126	96.881	98.537	100.218	101.866	103.527	105.201	106.710
Cenário OTIMISTA	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**	**2043**	**2044**
Macro Demanda Aquaviária	618.117	686.212	761.783	845.741	938.999	1.042.704	1.125.833	1.215.521	1.312.372	1.416.933	1.529.785	1.592.296	1.657.341	1.725.117	1.795.636	1.869.038	1.916.639	1.956.633	1.985.512	2.008.196	2.025.064	2.037.938	2.047.537	2.054.707	2.060.068
% de Mercado	0,0%	0,0%	0,0%	19,6%	32,8%	42,3%	49,4%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%	55,0%
Micro Demanda Potencial	0	0	0	165.987	308.109	440.875	556.294	668.218	721.461	778.942	840.981	875.346	911.104	948.363	987.130	1.027.481	1.053.650	1.075.636	1.091.512	1.103.982	1.113.255	1.120.332	1.125.609	1.129.551	1.132.498
Limite de Capacidade	0	0	0	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000
Micro Demanda capturada	**0**	**0**	**0**	**165.987**	**308.109**	**440.875**	**556.294**	**668.218**	**721.461**	**778.942**	**840.000**	**840.000**	**840.000**	**840.000**	**840.000**	**840.000**	**840.000**	**840.000**	**840.000**	**840.000**	**840.000**	**840.000**	**840.000**	**840.000**	**840.000**
Longo Curso	0	0	0	51.178	94.880	135.079	169.981	203.382	218.823	235.509	253.138	252.304	251.553	251.173	250.857	250.366	250.348	250.559	250.996	251.732	252.568	253.580	254.703	255.941	257.566
Embarque	0	0	0	10.988	20.277	28.939	36.283	43.249	46.348	49.659	53.109	52.611	52.097	51.632	51.147	50.660	50.157	49.665	49.177	48.720	48.242	47.771	47.291	46.805	46.368
Desembarque	0	0	0	40.189	74.604	106.139	133.698	160.133	172.475	185.850	200.029	199.693	199.456	199.541	199.711	199.705	200.191	200.894	201.818	203.012	204.326	205.809	207.412	209.136	211.199
Cabotagem	0	0	0	114.809	213.229	305.796	386.313	464.836	502.638	543.433	586.862	587.696	588.447	588.827	589.143	589.634	589.652	589.441	589.004	588.268	587.432	586.420	585.297	584.059	582.434
Embarque	0	0	0	70.509	131.337	188.887	239.272	288.668	312.939	339.175	367.161	368.535	369.834	370.881	371.867	372.945	373.704	374.296	374.727	374.947	375.085	375.094	375.010	374.832	374.389
Desembarque	0	0	0	44.300	81.892	116.909	147.041	176.168	189.699	204.257	219.701	219.161	218.613	217.946	217.275	216.689	215.948	215.146	214.277	213.321	212.347	211.326	210.287	209.228	208.044

Table 5 – Micro demand for the **SUA05** Terminal for the containerized cargo market

Source: Own elaboration, various data.

4. Service Price Estimate

The prices charged by the container port terminals are intended to remunerate the services rendered to the users, in particular the receipt, storage and dispatch of containers.

In the scope of feasibility studies, prices are referential, used as an input variable to quantify the revenues and value of the enterprise. The establishment of the price level effectively practiced along the contractual scope will be freely defined by the bidder, observing the modality of prices.

In the case of container terminals it is possible to synthesize the activities carried out in: quay operations and yard operations. Wharf activities are related to horizontal activities (moving onshore, from ship's side to terminal gate) and yard operations are related to import storage services, refrigerated container storage support, Positioning for Fumigation, etc.

As a general rule, port terminals provide services to shipping companies to carry out horizontal activities. These services are negotiated and contracted by the ship-owners at the terminals. When the negotiated values do not distinguish dimensions from the containers, then the "box rate" is obtained. These amounts are intended to remunerate all activities necessary and sufficient for the container to be landed and delivered to the owner of the cargo or received from the owner of the cargo and shipped.

Yard operations, in turn, are provided to cargo owners. Thus, import storage prices, as well as ancillary services and export storage prices, are charged when they exceed the franchise periods, commonly set out in price lists of terminal services.

The horizontal activities will be remunerated by means of the collection of the price of the port handling, whose purpose is to compensate the handling of containers between the terminal's entrance and the interior of the vessel, during boarding, and between the interior of the vessel and its delivery to the customs warehouse or at the owner of the cargo, at the time of landing, including transient guarding of the containers for the period contracted between the requester and the terminal, at the time of shipment.

The values of the box-rate price reflect the negotiation process between the terminals and the shipping companies. These values are not expressed in the terminal price tables. However, some shipping companies disclose the THC (Terminal Handling Charge), which is the "terminal handling charge" that is charged to cargo owners by shipping companies.

The price of the handling of the terminal is a transfer of the box-rates charged by the terminals to the shipping companies in a certain port. It is worth mentioning that the costs incurred by the shipping companies with the box-rate services paid to the terminal may be transferred or not, in whole or in part, by the shipping companies to the cargo owners.

Thus, the shipping company, in addition to the freight value, which covers the maritime transportation stage, received the values related to the costs incurred due to the use of the berthing infrastructure of the

container terminal, as well as the values resulting from the handling of cargo from the side of the ship to the exit of the terminal, and vice versa, passing them to the terminal.

The parametric pricing model of the **SUA05** lease adopts a weighted single price, which contemplates two baskets of basic services and ancillary services, in which the service takers and the prices that make up the average unit revenue are identified.

The following figure illustrates the parametric price structure for the terminal, detailed in the sequence.

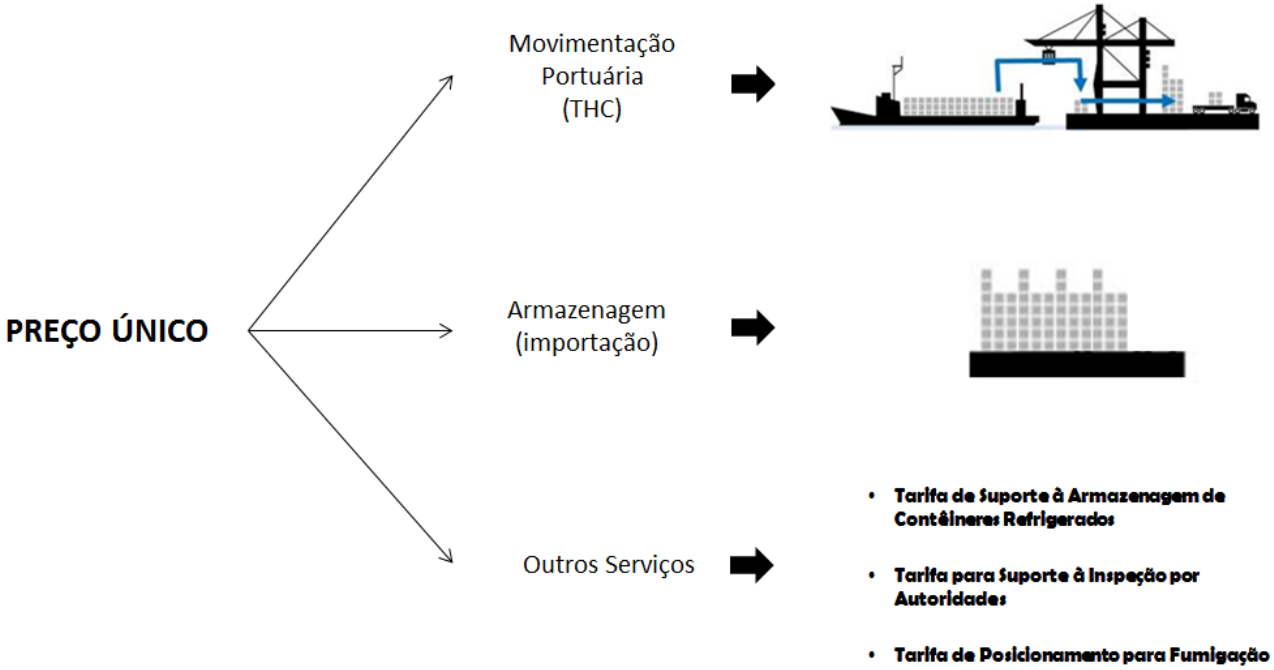

Figure 4 – Price structure for the **SUA05** terminal
Source: Own elaboration

4.1. Average Unit Revenue of Port Handling

The Average Unit Revenue of Port Handling has the purpose of remunerating the handling of containers embarked and landed.

The price of the "Port Handling" service is freely defined by the winning bidder, observing the items included in the service basket. The table below shows the basket of services established for the "Port Handling" activity.

Service Basket	Service Taker	Description of the Port Handling Service Basket

Name		(specified in contract)
Port Handling Price	Shipping Company	The purpose of the Port Handling Price is to compensate for the handling of containers between the terminal's door and the interior of the vessel during boarding and between the interior of the vessel and its delivery to the customs warehouse or the owner of the cargo at the time of landing, including transient guarding of the containers for the term contracted between the requester and the Lessee on boarding. It includes the following sub-activities: **For all containers[3]:** a) Provision of the berth infrastructure, when the used berth is for the exclusive use of the Lessee. If the docked vessel partially occupies the exclusive berth, the Port Handling Price will only cover the availability of this exclusive part; b) Checking of docking and unloading documents; c) Checking of documents and information processing in the Lease's order; d) Loading and weighing carried out at the Lessee's initiative; e) Handling, placement and removal of pile and other activities associated with non-invasive inspection and use of scanner for containers to be shipped; and landed between the time of unloading and delivery to the customs office of destination or owner of the cargo; f) Reimbursement for investments and costs arising from the implementation of the ISPS Code, required to provide the activities contemplated in the Port Handing Price. **For shipped containers:** a) Storage between the presence of cargo in the Lease and the time provided for the shipment, for a minimum period of seven (7) days; b) Placement and removal of containers from the stack in the storage area; c) Transportation from the storage area to the vessel; d) Embarkation of the container on the vessel and its placement and fixation in the right place inside the vessel. **For containers landed:** a) Unloading and placing the container on the side of the vessel; b) If the bonded warehouse defined by the owner of the cargo or its agent is the Lease itself, transportation of the container between the side of the vessel and the storeroom of the Lease; placement on the stack. c) If the bonded warehouse defined by the owner of the cargo or its agent is not he Lease itself: • Transport from the container to the holding area, including placement and removal of the stack, if necessary, as well as its subsequent transport to the place of removal by the destination customs office; • Positioning for sealing inspection or other activity motivated by Port Authorities; • Transitional custody for up to forty-eight (48) hours; loading of the container in the vehicle (truck or wagon) of the destination customs office and release of exit.

Table 5: Basket of Minimum Services that compose the Port Handing Price
Source: Own elaboration, based on market data.

The average unit revenue of "Port Handling" was estimated based on a sample of THC values in 17 ports in Brazil published by the shipping companies: Hamburg-Süd, MSC Shipping and CMA CGM.

The sample includes values for dry and refrigerated containers, since the terminals charge different prices to the ship-owners. For the purposes of modeling, a weighted average price is considered between dry and refrigerated containers, with a refrigerant ratio of 12.88% (national average), according to official database searches (ANTAQ, 2013-2017).

On the other hand, according to data collected by shipowners, it is observed that the market practice does

[3] It is observed that in the proposed regulatory model the reimbursement for the investments and costs resulting from the implementation of the ISPS Code or by the use of the scanner are included in the price of port handling.

not discriminate price differentiation for containers of 20 or 40 feet for the "Port Handing" service.

In the case of the **SUA05** terminal, the average unit revenue of "Port Handling" also considers the compensation due to the use of the dock, considering that the berths will be incorporated into the lease. In this situation, it is assumed that the lessee may receive revenues similar to the Public Rates of Port Authorities, specifically the berthing tariff, charged per linear/meter hour.

The following table shows a survey of port tariffs published by the Port Authorities (Table 2) of 19 Organized Ports, applied to average assumptions for the use of quays in the container terminals in Brazil extracted from the SIG-ANTAQ.

Average Berthing Revenue

Port	R$/meter/hour	LOA (B)	Average Mooring Time (hours) (C)	Average Consignment (unit) (D)	Average for Container Handled
Imbituba	R$ 3.32	300	21	632	R$ 8.68
Santos	R$ 1.45				
Porto Alegre	R$ 0.18				
Itajaí	R$ 0.31				
Paranaguá	R$ 0.48				
São Francisco Sul	R$ 0.38				
Vitória	R$ 0.44				
São Sebastião	R$ 1.66				
Vila do Conde	R$ 0.39				
Santarém	R$ 2.01				
Manaus	R$ 0.25				
Ilhéus	R$ 0.30				
Salvador	R$ 0.30				
Recife	R$ 3.09				
Suape	R$ 0.40				
Maceió	R$ 0.27				
Fortaleza	R$ 0.52				
Itaqui	R$ 0.39				
Macapá	R$ 0.41				
Average(A)	**R$ 0.87**				

Calculation formula:
Average for Container Handled = A*B*C/D

Table 6: Average price per container per berth
Source: Own elaboration, based on public tables of Port Authorities and SIG-ANTAQ.

The table below shows the values collected for the "Port Handling" price formation, which considers the box-rate and the average unit revenue from berths (linear meter/hour). It should be noted that the box-rate prices are considered over-the-counter prices, according to market research. In this sense, a discount of 10% was applied on published prices.

Porto	20 ou 40	Hamburg Sud	CMA CGM	MSC	Hamburg Sud	CMA CGM	MSC	Média Seco	Média Refrigerado
		Contêiner Seco			Contêiner Refrigerado				
Fortaleza	20 ou 40	668,00	655,00		750,00	750,00		661,50	750,00
Imbituba	20 ou 40	521,00	560,00		671,00	670,00		540,50	670,50
Itaguaí	20 ou 40	554,00	555,00		786,00	655,00		554,50	720,50
Itajaí	20 ou 40	693,00	720,00		864,00	870,00		706,50	867,00
Itapoá	20 ou 40	547,00	640,00	740,00	687,00	740,00	915,00	642,33	780,67
Manaus	20 ou 40	798,00	760,00	780,00	1.363,00	810,00	1.000,00	779,33	1.057,67
Navegantes	20 ou 40	680,00	720,00	740,00	880,00	870,00	890,00	713,33	880,00
Paranaguá	20 ou 40	880,00	930,00	950,00	1.129,00	1.029,00	1.050,00	920,00	1.069,33
Pecém	20 ou 40	648,00	725,00	725,00	846,00	850,00	850,00	699,33	848,67
Rio de Janeiro	20 ou 40	460,00	490,00	570,00	669,00	610,00	700,00	506,67	659,67
Rio Grande	20 ou 40	808,00	890,00	900,00	1.121,00	990,00	1.050,00	866,00	1.053,67
Salvador	20 ou 40	829,00	990,00	900,00	1.259,00	1.100,00	1.375,00	906,33	1.244,67
Santos	20 ou 40	667,00	750,00	800,00	839,00	900,00	1.050,00	739,00	929,67
São Francisco do Sul	20 ou 40	797,00	605,00		1.042,00	730,00		701,00	886,00
Suape	20 ou 40	1.200,00	1.200,00	1.200,00	1.599,00	1.300,00	1.375,00	1.200,00	1.424,67
Vila do Conde	20 ou 40	870,00	740,00	800,00	1.089,00	890,00	950,00	803,33	976,33
Vitória	20 ou 40	1.010,00	800,00	925,00	1.255,00	830,00	1.300,00	911,67	1.128,33
					Média			**761,86**	**949,83**
					Média Ponderada THC (1)				**786,07**
					Preço Médio (efetivo) (2)				**707,47**
					Preço Médio de Acostagem (3)				**8,68**
					Preço Final				**716,15**

Notas:
(1) Considera-se percentual de 12,88% para contêineres refrigerados (média Brasil últimos 5 anos)
(2) Considera-se desconto de 10% sobre o preço base (balcão).
(3) Os valores de atracação linear foram estimados com base nas tabelas tarifárias dos portos públicos por contêiner.

Table 7: Price per container filled for "Port Handling"
Source: Own elaboration, various data.

For modeling purposes, it is verified that the market usually applies a discount of 50% on the port handling price to price the empty containers, which represent 28% of the total containers handled (Brazil average), according to official database surveys (ANTAQ, 2013-2017).

Price	Value adopted	Share (%)	Weighted Average Revenue
Port Handling Price (full container)	R$ 716.15	72%	R$ 515.63
Port Handling Price (empty container)	R$ 358.07	28%	R$ 100.26
		Average Unit Revenue	**R$ 615.89**

Table 8: Average unit revenue per container for "Port Handling"
Source: Own elaboration, various data.

4.2. Average Unit Revenue of Import Storage

The average unit revenue of "Import Storage" has the purpose of remunerating the activities provided to the user, necessary and sufficient for the container to be stored in the Lease.

Storage in container terminal occurs predominantly in cases of imported containers. For exported and cabotage containers it is common for the terminals to grant a free period of 7 days on average.

In the case of imported containers that are stored, the terminals earn revenues basically in two ways:

- Revenue in the first storage period; and
- Additional revenues in the first period.

For modeling purposes, the study adopts an average unit revenue that includes all the activities included in the storage service.

4.2.1. Average Unit Revenue - 1st Period

In the parametric modeling, the average unit storage revenue from imports is established based on the following assumptions:

- Minimum storage values per period (7 days), extracted from published price lists of container terminals;
- Additional storage time (3 days) beyond the 1st period; and
- Handling mix:
  - Percentage of 20- and 40-foot containers;
  - Percentage of refrigerated containers;
  - Percentage of full and empty containers;
  - Percentage of import containers; and
  - Percentage of stored import containers.

The table below details the basket of services for the import storage activities.

Service Basket Name	Service Taker	Import Storage Services Basket Description (specified in contract)
Import Storage Price	Cargo Owner	The Import Storage Price is intended to remunerate the activities provided by the Lessee to the User, necessary and sufficient for the container to be stored in the Lease for a maximum period of seven (7) days (1st Storage Period), initiated with the registration of the presence of cargo by the Lessee. It includes the following sub-activities: a) Storage during the First Storage Period; b) Handling, stacking, withdrawals, weighing and other activities carried out at the initiative of the Lessee during the First Storage Period; c) Checking of documents and processing of information in the Leasing order, when the container comes from another bonded site; d) Weighing, except those requested by the Users, during the First Storage Period; e) Handling, placements and withdrawals, and other activities associated with non-invasive inspection and scanner utilization during the First Storage Period; f) Reimbursement for investments and costs arising from the implementation of the ISPS Code, required to provide the services contemplated by the Import Storage Rate.

Table 9: Minimum Service Basket that makes up the Import Storage Price
Source: Own elaboration, based on market data.

To define the minimum storage values for the 1st period, 16 price lists of port facilities were consulted in 14 Organized Ports.

Section B – Market Studies

The following table shows the periods of the 1st periods, the corresponding minimum values per container of 20 and 40 feet, as well as the parametric values per day for containers of 20 and 40 feet.

Terminal/Storage	Port	20" or 40"	1st Period	Minimum Value for the 1st Period	Base Date	Average per Day
Tecon (Santos Brasil)	Imbituba	20	10	195.81	01/01/2018	19.58
Tecon (Santos Brasil)	Imbituba	40	10	195.81	01/01/2018	19.58
Teconvi	Itajaí	20	5	843.00	23/03/2018	168.60
Teconvi	Itajaí	40	5	843.00	23/03/2018	168.60
Portonave	Navegantes	20	6	691.00	01/01/2018	115.17
Portonave	Navegantes	40	6	691.00	01/01/2018	115.17
Libra	Santos	20	7	1,383.46	09/01/2018	197.64
Libra	Santos	40	7	2,351.87	09/01/2018	335.98
Ecoporto	Santos	20	10	1,970.31	from 15/10/2016	197.03
Ecoporto	Santos	40	10	2,835.30	from 15/10/2016	283.53
BTP	Santos	20	3	1,108.17	01/04/2018	369.39
BTP	Santos	40	3	1,625.77	01/04/2018	541.92
Tecon Santos (Santos Brasil)	Santos	20	5	1,540.22	01/01/2018	308.04
Tecon Santos (Santos Brasil)	Santos	40	5	1,975.50	01/01/2018	395.10
Embraport (DP WORLD)	Santos	20	7	1,548.65	19/03/2018	221.24
Embraport (DP WORLD)	Santos	40	7	2,162.42	19/03/2018	308.92
Sepetiba Tecon	Itaguaí	20	7	887.00	19/02/2018	126.71
Sepetiba Tecon	Itaguaí	40	7	979.00	19/02/2018	139.86
Libra	Rio de Janeiro	20	7	986.45	19/02/2018	140.92
Libra	Rio de Janeiro	40	7	1,479.67	19/02/2018	211.38
MultiRio	Rio de Janeiro	20	7	933.93	01/01/2017	133.42
MultiRio	Rio de Janeiro	40	7	1,030.56	01/01/2017	147.22
TVV	Vitória	20	10	501.57	08/03/2017	50.16
TVV	Vitória	40	10	501.57	08/03/2017	50.16
Convicon (Santos Brasil)	Vila do Conde	20	7	770.23	01/01/2018	110.03
Convicon (Santos Brasil)	Vila do Conde	40	7	987.90	01/01/2018	141.13
Itapoá	Itapoa	20	1	87.00	01/01/2018	87.00
Itapoá	Itapoa	40	1	87.00	01/01/2018	87.00
Tecon	Rio Grande	20	10	1,370.00	01/02/2018	137.00
Tecon	Rio Grande	40	10	1,370.00	01/02/2018	137.00
Tecon	Suape	20	1	114.81	Until 30/06/2018	114.81
Tecon	Suape	40	1	229.63	Until 30/06/2018	229.63
Tecon	Salvador	20	5	1,363.18	Until 31/05/2018	272.64
Tecon	Salvador	40	5	1,520.47	Until 31/05/2018	304.09
TCP	Paranaguá	20	10	0	17/02/2018	0.00
TCP	Paranaguá	40	10	0	17/02/2018	0.00
Super Terminals	Manaus	20	15	740.00	01/01/2018	49.33
Super Terminals	Manaus	40	15	740.00	01/01/2018	49.33
					Average - Container 20	**150.13**
					Average - Container 40	**212.72**

Table 10: Average daily price tag for "Import Storage" for 20 and 40 foot containers in the 1st period
Source: Own elaboration, various data.

From the prices extracted from the terminal tables, which in practice represent over-the-counter princes, the 10% discount[4] was applied in order to arrive at the price actually charged by the terminals.

Price for the first storage period				
Price for the first storage period	**List Price (counter)**		**Effective Price**	
Import Storage Price (20 feet)	R$	150.13	R$	135.12
Import Storage Price (40 feet)	R$	212.72	R$	191.45

Table 11: Effective daily average price for "Import Storage" for 20- and 40-foot containers in the 1st period
Source: Own elaboration, various data.

For the estimation of the "Handling mix" of containers in the terminal **SUA05**, searches were made in the Management Information System – SIG of ANTAQ, using a national database, including all ports of containers in operation.

The following table shows the average share of the last five years for 20- and 40-foot containers; full and empty; and chilled and dried.

Year	Size (TEU)			Full/Empty (TEU(	
	40'	20'	Other	Full	Empty
2013	72.50%	26.00%	1.50%	72.10%	27.90%
2014	73.50%	26.20%	0.30%	71.20%	28.80%
2015	74.50%	25.10%	0.40%	70.80%	29.20%
2016	73.50%	25.60%	0.90%	71.50%	28.50%
2017	75.40%	24.00%	0.60%	73.50%	26.50%
Average	**73.88%**	**25.38%**	**0.74%**	**71.82%**	**28.18%**

Table 12: Average share of the last five years for 20- and 40-foot containers, full and empty and refrigerated and dry.
Source: Own elaboration, based on SIG-ANTAG

The following table summarizes the average participation of imported containers in the national market, for the period from 2013 to 2017, with an average of 37.39%.

Total Imported Containers Handled			
Year	**Total Handling**	**Long-Haul Landing**	**Share (%)**
2013	8,994,739	3,574,210	39,74%
2014	9,315,991	3,510,984	37,69%
2015	9,196,325	3,359,190	36,53%
2016	8,812,326	3,214,226	36,47%
2017	9,330,530	3,407,972	36,52%
Average	**9,129,982**	**3,413,316**	**37,39%**

Table 13: Share of imported containers, 2013-2017 period
Source: Own elaboration, based on SIG-ANTAG

Regarding the percentage of imported containers stored, that is, the portion of imported containers that is retained (stored) in the terminal, it is highlighted that several factors can influence this variable, such as the commercial strategy (relevance of storage revenue within the business portfolio), availability of area, competition with other bonded sites inside the port and in secondary zone (CLIA's and dry ports), among others. In this sense, there is no public information on the number of containers retained in the terminals.

[4] The 10% discount was defined based on market research.

Given this, based on market consultations, it was estimated that this value oscillates around 50% of the imported volume.

The deduction of volumes of transshipment containers is also relevant for the calculation of the amounts stored. The following table shows the average participation of the last five years in the total number of containers transshipped in Brazil, which presents an average of 15.11%.

Transshipment Share			
Year	**Total Amount (TEU)**	**Transshipment (TEU)**	**Transshipment % (TEU)**
2013	9,330,530	1,132,449	12.14%
2014	8,812,326	1,331,044	15.10%
2015	9,196,325	1,566,436	17.03%
2016	9,315,991	1,474,286	15.83%
2017	8,994,739	1,392,211	15.48%
AVERAGE	**9,129,982**	**1,379,285**	**15.11%**

Table 14: Share of transshipment containers, 2013-2017 period
Source: Own elaboration, based on SIG-ANTAG

Based on the assumptions adopted, we arrive at the average unit storage revenue from imports for the 1st Storage Period, according to the following table:

Composition of the Unit Average Revenue of Import Storage for the 1st Period		
A – Storage Time		7
B - Import Storage Price (40 feet)	R$	191.45
C - % of 40-foot containers		73.88%
D - % of Price of 20 in relation to 40		70.57%
E - % of Full Containers		71.82%
F - % of transshipment volume		15.11%
G - % of imported containers		37.39%
H - % imported containers stored		50.00%
Average Unit Revenue	**R$**	**192.49**
Formula:		
Average Unit Revenue = A*B*(C+D*C)*E*(1-F)*G*H		

Table 15: Average Unit Revenue of Import Storage for the 1st Period
Source: Own elaboration, various data.

4.2.2. Additional Average Revenue (in the 1st Period)

According to market research, the average length of stay of imported containers in Brazil is 10 days to nationalize the cargo with the Internal Revenue Service and other intervening agencies. Thus, it is considered that there will be, on average, an additional storage period of 3 days in addition to the first period of 7 days, totaling 10 days.

For the second storage period, based on market research, a 50% increase over the daily prices of the first

period (without 10% discount[5]) is considered, as shown in the table below.

Additional storage price after the first storage period				
Price	**1st Period**		**2nd Period**	
Import Storage Price (20 Feet)	R$	150.13	R$	225.20
Import Storage Price (40 Feet)	R$	212.72	R$	319.08

Table 16: Average Daily Price of "Import Storage" for 20 and 40-foot containers in the 2nd period
Source: Own elaboration, various data.

Based on the assumptions adopted, we arrive at the estimated average unit revenue for and remuneration of the additional storage period, according to the table below.

Composition of Average Unit Revenue of Import Storage for the 2nd Period	
A – Storage Time	3
B - % of additional price of the 2nd period in relation to the 1st period	50%
C - Import Storage Price (40 feet)	191.45
D - % of 40-feet containers	73.88%
E - % of Price of 20 in relation to 40	70.57%
F - % of Full Containers	71.82%
G – Exclusion of % of transshipment volume	15.11%
H - % of Imported Containers	37.39%
I - % of Imported Containers stored	50.00%
Average Unit Revenue	**R$ 123.74**
Formula:	
Average Unit Revenue = A*(1+B)*C*(D+E*D)*F*(1-G)*H*I	

Table 17: Average Unit Revenue per day of "Import Storage" in the 2nd period
Source: Own elaboration, various data.

4.3. Revenues for Other Services

It is important to note that the price lists of container terminals have a range of optional service items. From the point of view of revenue relevance, the following items stand out, which were considered in the present study:

- Storage of Refrigerated Containers;
- Inspection activities by Authorities;
- Positioning for Fumigation Activities;
- Transshipment Handling; and
- Stuffing and stripping activities.

[5] The 10% discount on the additional storage price (2nd period) was not applied to discourage the permanence of cargoes in the terminal beyond the 1st period, considering that the main activity of the terminal is port handling.

4.3.1. Refrigerated Container Storage Support

The price of Refrigerated Container Storage Support is intended to compensate for the necessary and sufficient activities so that the refrigerated container of 20 or 40 feet can be maintained in adequate temperature conditions during its stay in the Lease. This service includes the following sub-activities:

- Connection and disconnection of power supply and socket;
- Monitoring of temperature and power supply;
- Initial charge cooling;
- Set point changes.

The service is paid by the owner of the cargo handled in a refrigerated container. While in the terminal yard, the terminal supplies power and monitors and adjusts the temperature of the refrigerator. The value is the same for 20 or 40-foot containers and is charged per day.

For the estimation of the average market price, prices were searched in the price lists provided by 19 port terminals in Brazil.

Values for energy supply and monitoring of refrigerated containers				
Terminal	**Port**	**20" or 40"**	**Reefer outlet/day**	
Tecon (Santos Brasil)	Imbituba	20” or 40”	R$	110.27
Teconvi	Itajaí	20” or 40”	R$	270.00
Portonave	Navegantes	20” or 40”	R$	190.00
Libra	Santos	20” or 40”	R$	354.74
Ecoporto	Santos	20” or 40”	R$	270.71
BTP	Santos	20	R$	194.05
BTP	Santos	40	R$	228.72
Tecon Santos (Santos Brasil)	Santos	20” or 40”	R$	210.48
Embraport (DP WORLD)	Santos	20” or 40”	R$	163.27
Sepetiba Tecon	Itaguaí	20” or 40”	R$	207.00
Libra	Rio de Janeiro	20” or 40”	R$	296.74
MultiRio	Rio de Janeiro	20” or 40”	R$	205.35
TVV	Vitória	20” or 40”	R$	281.57
Convicon (Santos Brasil)	Vila do Conde	20” or 40”	R$	230.98
Itapoá	Itapoá	20” or 40”	R$	168.00
Tecon	Rio Grande	20” or 40”	R$	216.00
Tecon	Suape	20” or 40”	R$	204.10
Tecon	Salvador	20” or 40”	R$	371.87
TCP	Paranaguá	20” or 40”	R$	204.12
Super Terminals	Manaus	20” or 40”	R$	335.00
		Average Price	**R$**	**235.65**
		Average Price w/ Discount (10%)	**R$**	**212.08**

Note:
Only BTP Terminal differentiates prices for 20- and 40-foot containers.

Table 18: Average price per day of “Refrigerated Container Storage Support”
Source: Own elaboration, based on price lists of port terminals

According to container terminal movement records in Brazil, from 2013 to 2017, the average percentage of refrigerated containers (reefer) in relation to total traffic is 12.88%, according to the table below.

Year	Container Type (TEU)	
	Refrigerated (Reefer)	Dry
2013	9.20%	90.80%
2014	10.00%	90.00%
2015	12.10%	87.90%
2016	16.40%	83.60%
2017	16.70%	83.30%
Average	**12.88%**	**87.12%**

Table 19: Average percentage of refrigerated containers in Brazil
Source: Own elaboration, based on GIS/ANTAQ data

With regard to the average time of use of the "Support for the Storage of Refrigerated Containers" for imported containers, an average length of stay of 10 days is estimated.

For the other containers handled, that is, export containers and cabotage, an average time of use of the "Shelf Support of Refrigerated Containers" of 7 days, on average, is estimated. The following table shows the average share of exported and cabotage containers for the 2013-2017 period.

Total Exported and Cabotage Containers Handled			
Year	**Total Handling**	**Long-Haul and Cabotage Boarding**	**Share (%)**
2013	8,994,739	5,420,529	60.26%
2014	9,315,991	5,805,007	62.31%
2015	9,196,325	5,837,135	63.47%
2016	8,812,326	5,598,100	63.53%
2017	9,330,530	5,922,558	63.48%
Average	**9,129,982**	**5,716,666**	**62.61%**

Table 20: Average percentage of exported and cabotage containers in Brazil
Source: Own elaboration, based on GIS/ANTAQ data

From the exposed premises, we arrive at the estimated average unit revenue for and remuneration of the "Support for the Storage of Refrigerated Containers", according to the table below.

Composition of Average Unit Revenue of Storage Support of Refrigerated Containers		
A – Price of Storage Support of Refrigerated Containers	R$	212.08
B - % of Full Containers		71.82%
C - % of transshipment volume		15.11%
D - % of refrigerated containers		12.88%
E – Average length of stay for import containers		10
F - % of Imported Containers		37.39%
G - % of Imported Containers stored		50.00%
H – Average length of stay for export and cabotage containers		7
I - % of export and cabotage containers		62.61%
Average Unit Revenue	**R$**	**104.13**
Formula: Average Unit Revenue = A*B*(1-C)*D*(E*F*G+H*I)		

Table 21: Average Unit Revenue per day of "Storage Support of Refrigerated Containers"
Source: Own elaboration, various data.

4.3.2. Support for Inspection by Authorities

The "Authority Inspection Support" service is paid by the owner of the cargo to the terminal when

intervening bodies require movement, opening and, in general, the stripping of cargo for inspection. To carry out the activity of "Support for Inspection by Authority" it is necessary the unitization (stuffing) and disunitization (stripping) and positioning, as required depending on the type of cargo and accommodation inside the container.

In order to estimate the average price of the "Inspection Support by Authority" service, data were collected in national terminal price charts. Initially, we calculated the average of all stuffing and stripping services (mechanized and manual). To this value was added the average price of "Positioning," reaching the average price of the "Inspection Support by Authority" service. The following table shows the data collected, as well as the average values adopted.

Terminal/Armazenagem	Porto	20" ou 40"	Ova Mecanizada	Desova Mecanizada	Ova Manual	Desova Manual	Média Manual Mecanizada	Posicionamento	Total
Tecon (Santos Brasil)	Imbituba	20	478,20	422,55	619,40	562,71	1.041,43	258,68	1.300,11
Tecon (Santos Brasil)	Imbituba	40	580,23	529,73	709,05	681,23	1.250,12	258,68	1.508,80
Teconvi	Itajaí	20		2.192,00			1.096,00	1.040,00	2.136,00
Teconvi	Itajaí	40		2.192,00			1.096,00	1.040,00	2.136,00
Portonave	Navegantes	20	2.394,00		2.394,00		2.394,00	701,00	3.095,00
Portonave	Navegantes	40	2.394,00			2.394,00	2.394,00	701,00	3.095,00
Libra	Santos	20		953,66		1.716,59	1.335,13	172,39	1.507,52
Libra	Santos	40		1.144,39		2.059,91	1.602,15	172,39	1.774,54
Ecoporto	Santos	20	1.481,72	1.020,88	1.851,20	1.139,81	2.746,81	490,00	3.236,81
Ecoporto	Santos	40	1.424,73	1.276,07	2.621,56	1.424,73	3.373,55	490,00	3.863,55
BTP	Santos	20	574,16	574,16	867,93	867,93	1.442,09	373,88	1.815,97
BTP	Santos	40	803,83	803,83	1.215,09	1.215,09	2.018,92	523,42	2.542,34
Tecon Santos (Santos Brasil)	Santos	20	1.368,03	675,83	1.508,31	1.024,28	2.288,23	350,16	2.638,39
Tecon Santos (Santos Brasil)	Santos	40	1.520,04	826,68	1.744,50	1.089,76	2.590,49	350,16	2.940,65
Embraport (DP WORLD)	Santos	20	1.282,35	1.282,35	1.412,98	1.412,98	2.695,33	540,50	3.235,83
Embraport (DP WORLD)	Santos	40	1.424,28	1.424,28	1.632,17	1.632,17	3.056,45	540,50	3.596,95
Libra	Rio de Janeiro	20	1.467,72	1.119,45	2.297,41	1.949,14	3.416,86	503,51	3.920,37
Libra	Rio de Janeiro	40	1.900,29	1.448,79	3.005,49	2.553,99	4.454,28	755,28	5.209,56
MultiRio	Rio de Janeiro	20		441,01		1.321,18	881,10	223,29	1.104,39
MultiRio	Rio de Janeiro	40		565,68		1.414,23	989,96	353,57	1.343,53
TVV	Vitória	20	1.104,67	1.104,67	849,29	849,29	1.953,96	476,11	2.430,07
TVV	Vitória	40	776,80	776,80	1.531,45	1.531,45	2.308,25	476,11	2.784,36
Convicon (Santos Brasil)	Vila do Conde	20	1.239,91	762,83	1.367,05	928,35	2.149,07	330,05	2.479,12
Convicon (Santos Brasil)	Vila do Conde	40	1.377,68	835,56	1.581,17	987,71	2.391,06	330,05	2.721,11
Itapoá	Itapoa	20	1.365,00	1.365,00	1.610,00	1.610,00	2.975,00	480,00	3.455,00
Itapoá	Itapoa	40	1.680,00	1.680,00	1.980,00	1.980,00	3.660,00	480,00	4.140,00
Tecon	Rio Grande	20	660,00	660,00	1.112,00	1.112,00	1.772,00	478,00	2.250,00
Tecon	Rio Grande	40	863,00	863,00	1.580,00	1.580,00	2.443,00	478,00	2.921,00
Tecon	Suape	20	782,81	782,81	782,81	782,81	1.565,62		1.565,62
Tecon	Suape	40	887,19	887,19	887,19	887,19	1.774,38		1.774,38
Tecon	Salvador	20	907,00	907,00	983,00	983,00	1.890,00	362,79	2.252,79
Tecon	Salvador	40	975,34	975,00	1.027,92	1.027,92	2.003,09	362,79	2.365,88
TCP	Paranaguá	20	1.274,43	1274,43	1.506,67	1.506,67	2.781,10	619,88	3.400,98
TCP	Paranaguá	40	1.411,71	1411,71	1.685,44	1.685,44	3.097,15	619,88	3.717,03
Super Terminais	Manaus	20	428,00	428,00			428,00	443,00	871,00
Super Terminais	Manaus	40	428,00	428,00			428,00	443,00	871,00
				Preço Médio			**2.105,07**	**477,00**	**2.555,57**
				Preço Médio c/ Desconto (10%)					**2.300,02**

Table 22: Average service price for "Inspection Support by Authority"
Source: Own elaboration, based on price lists of port terminals

To estimate the percentage of surveys performed on the containers, a premise was drawn from the World

Bank's Connecting to Compete[6] (2016) study, which presents statistics for several countries, including Brazil. According to the report, Brazil presented a 6% index of physical inspections on the cargoes handled, which was adopted in the modeling of the present study.

Based on these assumptions, we arrive at the estimated average unit revenue for and remuneration of "Inspection Support by Authority," according to the table below.

Composition of Average Unit Revenue of Inspection Support by Authority		
A – Price for Support for Inspection by Authorities	R$	2,300,02
B - % of Full Containers		71.82%
C - % of transshipment volume		15.11%
D - % of Imported Containers		37.39%
E - % of Imported Containers stored		50%
F - % of containers that are not inspected		6.00%
Average Unit Revenue	**R$**	**15.73**
Formula:		
Average Unit Revenue = A*B*(1-C)*D*E*F		

Table 23: Average unit revenue for "Inspection Support by Authority" service
Source: Own elaboration, based on price lists of port terminals

4.3.3. Positioning for Fumigation

The price of the "Positioning for Fumigation" service includes moving the cargo to an isolated location and its maintenance for up to two days at the site, for later placement back to the pile for storage.

As a general rule, the application of chemicals is done by an outsourced company with a business relationship established between that company and the owner of the cargo.

The use of the service is necessary when the International Agricultural Surveillance System – Vigiagro (MAPA) requires the fumigation of the container for pest control.

For the definition of the average price, positioning values (for fumigation) were searched in the price lists of different terminals, with a discount of 10% on the surveyed average, according to a survey in the market.

The following table shows the values collected from "Positioning for Fumigation."

Terminal/Storage	Port	20" or 40"	Positoning
Tecon (Santos Brasil)	Imbituba	20	258.68

[6] Available at: https://openknowledge.worldbank.org/bitstream/handle/10986/24598/Connecting0to00n0the0global0economy.pdf?sequence=1&isAllowed=y

Tecon (Santos Brasil)	Imbituba	40	258.68
Teconvi	Itajaí	20	1,040.00
Teconvi	Itajaí	40	1,040.00
Portonave	Navegantes	20	779.00
Portonave	Navegantes	40	779.00
Libra	Santos	20	553.38
Libra	Santos	40	1,106.76
Ecoporto	Santos	20	661.09
Ecoporto	Santos	40	887.64
BTP	Santos	20	253.70
BTP	Santos	40	355.18
Tecon Santos (Santos Brasil)	Santos	20	710.05
Tecon Santos (Santos Brasil)	Santos	40	943.89
Embraport (DP WORLD)	Santos	20	439.39
Embraport (DP WORLD)	Santos	40	439.39
Sepetiba Tecon	Itaguaí	20	506.00
Sepetiba Tecon	Itaguaí	40	569.00
Libra	Rio de Janeiro	20	682.45
Libra	Rio de Janeiro	40	682.45
MultiRio	Rio de Janeiro	20	521.03
MultiRio	Rio de Janeiro	40	586.17
Convicon	Vila do Conde	20	1,265.98
Convicon	Vila do Conde	40	1,712.28
Itapoá	Itapoá	20	570.00
Itapoá	Itapoá	40	570.00
Tecon	Rio Grande	20	677.00
Tecon	Rio Grande	40	677.00
Tecon	Suape	20	184.40
Tecon	Suape	40	184.40
Tecon	Salvador	20	362.79
Tecon	Salvador	40	362.79
TCP	Paranaguá	20	263.18
TCP	Paranaguá	40	263.18
	Average Price		**621.94**
	Average Price w/ Discount (10%)		**559.75**

Table 24: Average price per service of “Positioning for Fumigation”
Source: Own elaboration, based on price lists of port terminals

In order to estimate the percentage of fumigated containers, consultations were carried out on terminals in operation in Brazil. According to data obtained, fumigation occurs in about 5% of the import containers, at the request of Vigiagro.

Based on the assumptions adopted, we arrive at the estimated average unit revenue for the “Positioning for Fumigation” remuneration, according to the table below.

Composition of Average Unit Revenue of Positioning for Fumigation		
A – Price for Positioning for Fumigation	R$	559.75
B - % of Full Containers		71.82%
C - % of transshipment volume		15.11%
D - % of Imported Containers		37.39%
E - % of Imported Containers stored		50%
F - % of fumigated containers		5.00%
Average Unit Revenue	**R$**	**3.19**
Formula:		
Average Unit Revenue = A*B*(1-C)*D*E*F		

Table 25: Average unit revenue for "Positioning for Fumigation"
Source: Own elaboration, based on price lists of port terminals

4.3.4. Transshipment Handling

The handling of transshipment containers, in general, generates unit revenues lower than the long-haul and cabotage containers. This is because the beneficiary of this operation is the shipping company, which has high negotiation power at the terminals.

The transshipment consists of the landing of cargo not nationalized in a customs terminal for nationalization in another port or CLIA (Logistics and Industrial Customs Center). The loading and unloading operation on another vessel (feeder cargo) is characterized as cargo balancing, according to the transshipment market.

According to market consultations, the handling price for transshipment containers, on average, is around 50% of the price of "Port Handling," but is applied twice (loading and unloading). Thus, it is accepted that, in practice, a transshipment container generates revenue corresponding to the revenue from the "Port Handling."

By adopting the percentage of average transshipment observed in national terminals, from 2013 to 2017, defined as 15.11%, we arrive at the estimated average unit revenue for "Transshipment Handling," as show in the table below.

Composition of Average Unit Revenue of Transshipment Handling		
A - Port Handling Price	R$	615.89
B - % of transshipment volume		15.11%
Average Unit Revenue	**R$**	**93.06**
Formula:		
Average Unit Revenue = A*B		

Table 26: Average unit revenue for "Transshipment Handling" service
Source: Own elaboration, based on price lists of port terminals

4.3.5. Stuffing and stripping activities

The stuffing and stripping services are associated with the need to dispatch the containerized cargo in parts or perform some activity on it within the terminal.

For pricing of stuffing and stripping services, price lists of port terminals in Brazil were consulted. In this case, we have adopted the same assumptions of revenue that were adopted for the "Support for Inspection by Authorities," however, disregarding the positioning service. The following table presents the average values obtained, for which a discount of 10% was applied.

Terminal/Armazenagem	Porto	20" ou 40"	Ova Mecanizada	Desova Mecanizada	Ova Manual	Desova Manual	Média Manual Mecanizada	Total
Tecon (Santos Brasil)	Imbituba	20	478,20	422,55	619,40	562,71	1.041,43	1.041,43
Tecon (Santos Brasil)	Imbituba	40	580,23	529,73	709,05	681,23	1.250,12	1.250,12
Teconvi	Itajaí	20		2.192,00			1.096,00	1.096,00
Teconvi	Itajaí	40		2.192,00			1.096,00	1.096,00
Portonave	Navegantes	20	2.394,00		2.394,00		2.394,00	2.394,00
Portonave	Navegantes	40	2.394,00			2.394,00	2.394,00	2.394,00
Libra	Santos	20		953,66		1.716,59	1.335,13	1.335,13
Libra	Santos	40		1.144,39		2.059,91	1.602,15	1.602,15
Ecoporto	Santos	20	1.481,72	1.020,88	1.851,20	1.139,81	2.746,81	2.746,81
Ecoporto	Santos	40	1.424,73	1.276,07	2.621,56	1.424,73	3.373,55	3.373,55
BTP	Santos	20	574,16	574,16	867,93	867,93	1.442,09	1.442,09
BTP	Santos	40	803,83	803,83	1.215,09	1.215,09	2.018,92	2.018,92
Tecon Santos (Santos Brasil)	Santos	20	1.368,03	675,83	1.508,31	1.024,28	2.288,23	2.288,23
Tecon Santos (Santos Brasil)	Santos	40	1.520,04	826,68	1.744,50	1.089,76	2.590,49	2.590,49
Embraport (DP WORLD)	Santos	20	1.282,35	1.282,35	1.412,98	1.412,98	2.695,33	2.695,33
Embraport (DP WORLD)	Santos	40	1.424,28	1.424,28	1.632,17	1.632,17	3.056,45	3.056,45
Libra	Rio de Janeiro	20	1.467,72	1.119,45	2.297,41	1.949,14	3.416,86	3.416,86
Libra	Rio de Janeiro	40	1.900,29	1.448,79	3.005,49	2.553,99	4.454,28	4.454,28
MultiRio	Rio de Janeiro	20		441,01		1.321,18	881,10	881,10
MultiRio	Rio de Janeiro	40		565,68		1.414,23	989,96	989,96
TVV	Vitória	20	1.104,67	1.104,67	849,29	849,29	1.953,96	1.953,96
TVV	Vitória	40	776,80	776,80	1.531,45	1.531,45	2.308,25	2.308,25
Convicon (Santos Brasil)	Vila do Conde	20	1.239,91	762,83	1.367,05	928,35	2.149,07	2.149,07
Convicon (Santos Brasil)	Vila do Conde	40	1.377,68	835,56	1.581,17	987,71	2.391,06	2.391,06
Itapoá	Itapoa	20	1.365,00	1.365,00	1.610,00	1.610,00	2.975,00	2.975,00
Itapoá	Itapoa	40	1.680,00	1.680,00	1.980,00	1.980,00	3.660,00	3.660,00
Tecon	Rio Grande	20	660,00	660,00	1.112,00	1.112,00	1.772,00	1.772,00
Tecon	Rio Grande	40	863,00	863,00	1.580,00	1.580,00	2.443,00	2.443,00
Tecon	Suape	20	782,81	782,81	782,81	782,81	1.565,62	1.565,62
Tecon	Suape	40	887,19	887,19	887,19	887,19	1.774,38	1.774,38
Tecon	Salvador	20	907,00	907,00	983,00	983,00	1.890,00	1.890,00
Tecon	Salvador	40	975,34	975,00	1.027,92	1.027,92	2.003,09	2.003,09
TCP	Paranaguá	20	1.274,43	1274,43	1.506,67	1.506,67	2.781,10	2.781,10
TCP	Paranaguá	40	1.411,71	1411,71	1.685,44	1.685,44	3.097,15	3.097,15
Super Terminais	Manaus	20	428,00	428,00			428,00	428,00
Super Terminais	Manaus	40	428,00	428,00			428,00	428,00
				Preço Médio			**2.105,07**	**2.105,07**
				Preço Médio c/ Desconto (10%)				**1.894,56**

Table 27: Average service charge for "Stuffing and Stripping Activities"
Source: Own elaboration, based on price lists of port terminals

With regard to the share of stuffing and striping services, it was estimated on the basis of market consultations that about 10% of the retained full import containers are stuffed and stripped.

Composition of Average Unit Revenue of Stuffing and Stripping Activities		
A – Price of Stuffing and Stripping Activities	R$	1,894.56
B - % of Full Containers		71.82%
C - % of transshipment volume		15.11%
D - % of Imported Containers		37.39%
E - % of Imported Containers stored		50.00%
F - % of stuffed and stripped containers		10.00%
Average Unit Revenue	**R$**	**21.59**
Formula:		
Average Unit Revenue = A*B*(1-C)*D*E*F		

Table 28: Average unit revenue for "Stuffing and Stripping" service
Source: Own elaboration, based on price lists of port terminals

4.4. General Average Unit Revenue

After calculating the relevant items individually to evaluate the revenues of the **SUA05** terminal in a weighted way, they were summed up, reaching the general average unit revenue that is adopted in the economic financial modeling, defined as **R$ 731.14** per TEU handled.

COMPOSITION OF THE GENERAL AVERAGE UNIT REVENUE	R$/CONTAINER (unit)	R$/TEU
Average Unit Revenue of Port Handling	615.89	384.93
Average Unit Revenue of Import Storage for the 1st Period	192.49	120.31
Average Unit Revenue of Import Storage for the 2nd Period	123.74	77.34
Average Unit Revenue of Storage Support of Refrigerated Containers	104.13	65.08
Average Unit Revenue of Support for Inspection by Authority	15.73	9.83
Average Unit Revenue of Positioning for Fumigation	3.19	1.99
Average Unit Revenue of Transshipment Handling	93.06	58.16
Average Unit Revenue of Stuffing and Stripping Activities	21.59	13.50
GENERAL AVERAGE UNIT REVENUE	**1,169.82**	**731.14**

Table 29: General Average Unit Revenue
Source: Own elaboration, based on several data.