

Part 1 – Investment opportunities in Sines

This section analyses and identifies the main alternative scenarios for Sines' short- and medium-term development following the closing of EDP's Thermoelectric Power Plant. The current technological, environmental, and economic situation in Sines, is characterized through the following 5 investment clusters:

- Energy – related to the energy transformation and the existing demand for the investment in solar and wind farms which are set to power the production of green hydrogen.
- Digital – associated with the setup and deployment of a submarine fibre optic cable by EllaLink enterprises.
- Port – connected to the need to expand the Port of Sines with new infrastructures, already in construction (Terminal XXI) and being assessed (Terminal Vasco da Gama)
- Tourism – linked to the significant touristic potential in Sines, which is expected to attract further investment, being materialized in the construction of 3 hotels with the capacity to reach around 800 beds.
- Accessibilities – proposed and scheduled interventions to expand transportation networks, supporting the attractiveness and viability of all the above.

This section followed a twofold methodology with the first step being the analysis of the current situation and the strategic objectives proposed for the Region, and the second the identification and interview of the relevant stakeholders in the Region.

Territorial objectives and strategic studies for the Region and associated aims and limitations

This section collects and systematises Sines' goals and limitations concerning land use, which are included in Portugal's Territorial Management Instruments (IGTs) and other documents of strategic importance, that plan and propose solutions for the economic and social development of the Region. Given the territorial scope of the study, the municipalities of Sines and Santiago do Cacém are included in this analysis.

The main goals for the Energy cluster are to (1) incentivise the production of clean electricity without CO₂ emissions, relying mostly on microgeneration of electric and thermic energy based on renewable sources and (2) pursue Portugal's National Hydrogen Strategy (EN-H₂). Further investments and actions are needed to promote the construction of infrastructure that enables the production and transport of hydrogen making use of renewable energy sources.

Regarding the Digital cluster, the aim is to take full advantage of the submarine fibre optic cable between Brazil and Sines which will grant the Region exceptional conditions for the establishment of telecommunication platforms, especially in e-commerce and e-business. Furthermore, it will enable the construction of new Data Centres and the optimisation of the existing ones.

More investment is called for when it comes to expanding the Port of Sines and its logistic and maritime platforms as well as increasing its capacity and demand, which is essential to the continued expansion of the Region's economy.

Further investment must be made in tourism, benefitting from the coastal location and activities associated with cultural and nature tourism since there are several protected areas with relevant cultural heritage. Furthermore, other touristic sectors should be highlighted and advertised such as wine and gastronomy, hunting and sports.

There is an increasing need to reinforce the capacity of road and rail infrastructures, as well as their adaptation to the added traffic that will be coming from the Port of Sines. Examples provided in the analysed documents are the completion of the train line between Lisbon and Madrid and the freight line Sines-Évora-Elvas/Caia-Badajoz-Madrid. These actions are intended to enable sustainable mobility practices for the transport of passengers and goods.

Territorial characteristics: demography, income, economic activity

This section highlights the main population and economic characteristics of the municipality of Sines, the municipality that was the first to be impacted by the closure of the Sines Thermoelectric Power Station (CTS).

The population of Sines, marked by aging, has remained stable in the last 3 decades, around 13,000 inhabitants. The education levels of the population are relatively low, with most of them not going beyond the 3rd cycle of basic education. In the first decade of the 2000s, migratory movements were significant, with the municipality attracting a male population of working age (30-50 years), mobilized by job opportunities. This is a municipality with a high proportion of active population, with low levels of unemployment and where this phenomenon mainly affects the population with lower levels of education.

Residents' income and the structure of economic activity in Sines are different from both the surrounding territory and the country as a whole: purchasing power (2017) is around 30% above the country's average purchasing power and 40% above the Alentejo; the average monthly salary in the municipality of Sines is, on average, €500 above that of its neighbouring municipalities due, in particular, to the salaries practiced in the industrial sector.

The business structure and sectoral distribution of economic activity in Sines, in recent decades, have been marked and conditioned by the presence of few large companies, which gives rise to a high degree of concentration of turnover, gross value added and job. These companies are heavily capital intensive and have a predominantly exporting nature. Non-financial companies located in the municipality of Sines (2018), represented 12.5% of the total registered in the Alentejo Litoral, employed 19.8% of workers in these sub-regions and generated 42% of NUTS III GVA.

In Sines, the concentration of productive activity takes place in the Manufacturing Industry (mainly manufacturing of refined petroleum products) and Transport and Storage (especially container and bulk handling). In the case of employment (2018) the predominant sectors are the Manufacturing Industry, Administrative Activities and Support Services, Transport and Warehousing and Wholesale and Retail. The characteristics of the activities carried out place this municipality among the group of regions in which the predominant economic activities, in terms of value creation and exports, produce more greenhouse gas (GHG) emissions.

Population affected by the closure of the Sines Thermoelectric Power Plant

The characterization of the population directly affected by the closure of the Sines Thermoelectric Power Plant (CTS) was methodologically based on surveys, aimed, at first, at employers (EDP and service providers at CTS) and, at a second moment, to the workers involved.

It is estimated that around 330 workers assigned to CTS, employed directly by EDP or by companies providing external services, have been affected by the closure of the plant. All EDP workers went to retirement options or internal mobility. Relatively to workers employed by companies providing external services, given their individual and professional characteristics, namely in terms of sex, age, residence, training and specialization, this population has been affected differently regarding requalification alternatives as well as stay and/or return to the job market.

This is a population where men are overrepresented. Many of the workers who worked at CTS reside in the region, mainly in Sines, but also in Santiago do Cacém, particularly in the city of Santo André. In the case of EDP direct workers at CTS, the vast majority do not have a level of education that has gone beyond secondary education (74.1%), with 30% not having gone beyond basic education. On the other hand, the profile of workers in companies providing external services at CTS is substantially different. As far as training is concerned, 58% have only a basic level, which added to the percentage of those who have reached secondary level, makes a total of 90%. The professional profile is also different between these two groups of workers assigned to the CTS. At EDP, 73% of the workers were technical staff with a very specialized profile, while the workers of companies providing external services had, for the most part, a more undifferentiated profile. The age profile of these workers is also different. The age of workers at service providers is lower, on average, than that of EDP workers. In Sines, at CTS, EDP had relatively older employees in the process of leaving (more than 80% are at least 50 years old). In service providers, the number of workers close to retirement age is less significant (19.2%). In this case, 58% of

these people are not 50 years old. However, the same difficulties in obtaining a new job, resulting from age, will occur. Contrary to what happens with some workers directly linked to EDP in Sines, this age profile will raise more difficulties for early retirement to be a solution.

The fundamental link between EDP's CTS and the municipality of Sines (as well as the adjacent municipalities) stemmed, fundamentally, from the employment created and the income (salaries) which, therefore, was destined to stimulate the local economy directly and through the multiplier effect on income and employment. Also relevant are the municipal taxes and contributions paid by EDP to the municipality. The cessation of activity implies, therefore, the loss of both jobs and direct income (considering here the PRS workers whose employees worked at CTS) and the consequent multiplier effects, causing an increase in unemployment and a decrease expression of income, demand, and local quality of life. In addition to these losses, the effects on the activity of companies with activities strongly correlated with EDP's CTS, such as CleanCarbon and PORTSINES, should also be noted.

Stakeholder interviews

The second stage of the methodology included the collection of information on the main investments happening in each cluster as well as the potential opportunities for direct or indirect employment opportunities. The approach was to interview several relevant stakeholders that hold potential interests and responsibilities in the Region. The interviews followed a semi-structured protocol where the participants were asked about future projects/activities capable of generating employment. During this process the following stakeholders were interviewed online for about 20-90 minutes:

- AICEP Global Parques, as manager and main owner of the Sines' Industrial and Logistics Area (ZILS).
- Sines and Algarve Port Administration (APS), as operation and development manager of the Sines' Port.
- Energy production companies such as GALP.
- Local public entities and authorities from the City Council of Sines.
- Regional administration entities, such as ICNF, which manages the national ecological reserve and protected areas.
- Public entity for the Coordination for Regional Development (CCDR) in Alentejo, as the planner of the regional territorial strategies.
- Infrastructures of Portugal (IP), as manager and planner of existing and proposed rail and road infrastructures.
- Portuguese Association of Renewable Energies, due to the role renewable energy has in hydrogen production.
- Intermunicipal Commission of Alentejo (CIMAL), for the knowledge of the current investments being made in the Region.
- European Representative Pedro Marques, for his previous experience in infrastructure planning for the Portuguese Government (2015-2019) as well as for his current work at the European Parliament.

The information gathered from the interviews confirmed that it is part of Portugal's strategy (incorporated in the European objectives) to invest in hydrogen production based on renewable energy sources such as solar and wind. Furthermore, there is already a great demand for investment in, and licencing of, solar and wind farms in the Industrial and Logistics Zone of Sines (ZILS) and the municipality of Santiago do Cacém. However, there are limitations to the installation of wind farms in Sines, give the large portion of the Municipality's territory covered by nature reserves and protected areas.

There are two major accessible investment funds to incentivise the decarbonisation of the economy: the European Green Deal and the Portuguese Fund for Energy Transition (Fundo para a Transição Energética), however, access to these funds is only possible when 80% of the region's energy is generated from renewable sources. Since the Thermoelectric Power Plant of Sines was one of the largest greenhouse gas (GHG) emitters, its shutdown qualifies the municipality for receiving around 204 million euros of European funding destined to decarbonise the economy.

Although a lot of monetary and technological investment is being put into the Energy sector, the potential for job creation and, especially, reintegration of the existing workforce is more limited, since all these investments have

limited demand for short-term employment opportunities and, in the long-term, the required labour force will need education and retraining.

As mentioned in the interviews, the optic fibre cable from EllaLink establishes the first direct connection between South America and Europe, and the municipality of Sines expects that it will contribute greatly to the economy of the region, affirming it as a new national hub for technology and telecommunications. However, this cluster has limited potential to respond to the employment demand resulting from the shutdown of the Power Plant since the need is for IT engineers and technicians.

The Port of Sines is a deep-water port which has been reaffirming itself as the main entrance for Portugal's energy supply (oil, coal, and natural gas) and as an important logistics and goods platform, which could serve as a reference for Europe and the World. However, to accommodate the current investments it needs to be expanded and adapted to store and transport hydrogen. Additionally, the Port is currently being electrified to accommodate the transport of food.

The shutdown of Sines' Power Plant led to the restructuring of the Port since 20% of business was related to coal transport. IP and APS are partnering to manage the expansion of Terminal XXI, which will enable it to double its capacity, leading to a potential increase in employment opportunities.

The interviewed stakeholders corroborate the emerging diversified tourism opportunities in Sines, ranging from seasonal to cultural and gastronomic tourism. Although barely explored, there is also an increase in business tourism since the municipality has good conference venues such as the Arts Centre and the APS Auditorium. Although these investments include the duplication of the accommodation offered to 800 beds, it is expected that resulting job creation could stand at about 1 person per 10 beds, therefore generating limited employment opportunities.

There are investments predicted for the planned (and needed) infrastructures in the National Investment Plan 2030 (Plano the Investimento Nacional 2030 – PNI 2030) which will service Sines in terms of mobility and energy:

- The connection of the A26 to the A2 highways and the rail connections to the South of Portugal (Sines-Grândola).
- The expansion of the Port of Sines by adding Terminal XXI and Terminal Vasco da Gama.
- The adaptation of the gas pipeline for high pressure and hydrogen transport.

The empowerment of territory and human capital

The territory of Sines is at the forefront of experimenting with the impact of the Energy Transition and what the implementation of the European Ecological Pact means on the ground. This transition process, a pioneer on a national scale, is a demonstration experience of the “wave”, which it is believed, will travel across Europe in the near future, based on the design of decarbonization and digitization. Thus, in the case under study, on the one hand, we are witnessing the loss of traditional employment, but on the other hand, a range of opportunities for generating employment in the future are opened, associated with new technologies and the deepening of globalization processes. The main challenges are related to the management of two gaps – one temporal and the other, in terms of skills. The profile of workers associated with CTS shows difficulty in finding immediate absorption in the local economic fabric, especially associated with their specific skills profile, so the creation of training models lacks a two-stage strategic vision - tailor-made training and in immediately for workers who lost their jobs due to the closure of the CTS, but inserted in a broader training plan that enables the descendant generation to take on new job opportunities, and thus contributes to a strengthening of the local community through the appreciation of its roots identity.

Crossing the demographic and socio-economic profile of the surveyed population with the characterization of the present and future reality of the territory, as far as its business dimension and its people, it is perceived that there are some ways that prove to be adequate to promote the meeting between the needs of the individuals and

organizations. The starting scenario points to the existence of three situations: population with low educational qualifications, population with low educational and professional qualifications and population with low professional qualifications. In the first case, and on the assumption that we are dealing with individuals with a defined professional path, the referral to the Qualifica Centers in the region for a process of Recognition, Validation and Certification of Competencies (RVCC) will be a way to reconvert, as it will allow for an increase in at school level, important for integration into the labour market or for valuing at work. In the second case, we are dealing with individuals with low educational and professional qualifications, in which a dual certification qualification, conferring educational and professional certification, will constitute an adequate response. Finally, and in the case of individuals with educational qualifications, but without professional qualifications, a professional qualification will give them the necessary skills for their integration into the labour market.

It will be necessary to develop a set of transversal, scientific and technical skills, so that human capital does not appear as a constraining factor to the socioeconomic development and quality of life of these communities and to, at the same time, integrate the unemployed active population following the closure of the Thermoelectric Power Plant, but also the restructuring of other companies in this ecosystem and the impacts of the pandemic crisis. In the group of transversal skills, digital skills stand out (ability to use current and emerging technologies); communication skills (oral and written skills, particularly in foreign languages); and socio-behavioural skills, among which the following stand out: the ability to solve problems (logical application of resources to solve everyday problems); adaptability (ability to quickly integrate new skills); and the ability to work in a team (ability to work in different environments, namely in virtual environments, and in multidisciplinary teams). In terms of scientific and technical skills and considering the target ecosystem of the study, future needs will focus mainly on those related to sectors in affirmation through the planned investments and the needs arising from the evolution of the demographic profile of the population.

2nd part - Observatory

The road to carbon neutrality by 2050 imposes deep economic and societal changes. The decarbonization of the energy sector will create short-term negative impacts in the energy sector by shutting down the production of fossil fuels in oil refineries or thermoelectric power plants. Furthermore, this transition requires a mass readaptation of the labour force connected to energy production which will have to assume different roles in the technical, employment and institutional environments.

As identified in the first section, new investment sectors (clusters) are emerging in Sines which are expected to bring significant investment to the region as well as potentially generate employment opportunities. These should, for the most part, require retraining of the existing workforce and/or the hiring of specialized workers outside the Region. Given the uncertainty of the process, it is essential to collect and monitor information related to new investments in the region and the required skills. Therefore, this report proposes the development of an Observatory for an Equitable Transition (Observatório para a Transição Justa).

The proposed Observatory should assist with monitoring the entire energy transition process in Sines, through the introduction of a flexible system for acquiring and analysing information that could inform public and private stakeholders and support decision-making when it comes to training workers and promoting the resilience of the community and the territory.

This Observatory aims to:

- Frame the territory within the global and national employment opportunities.
- Promote an ecosystem of innovation and knowledge linked to academic and investigation institutions.
- Elevate people's competency levels, promoting a match between the employment market and training offer available through a collaborative and digital platform.
- Create conditions to elevate the level of skills and competencies and reduce the unemployment rate.
- Monitor emerging private and public investment opportunities.
- Promote the dialogue for an intersectoral articulation.

- Provide a framework for mitigating and negotiating conflicts.
- Identify the processes for reinforcing the identity and territorial image of Sines aiming at strengthening the local community and attracting more people.
- Identify and share successful experiences of territories that went through similar experiences.
- Increase transparency and trust in a just transition through collaborative dialogue and processes.
- Publish a periodic barometer assessing the citizen's quality of life (territorial wellbeing).

The Observatory for an Equitable Transition is based on the Living Lab concept: it presupposes the inclusion of the local community, public and private actors involved in economic and social activities and academia, in the process of reinforcing the Region's attractivity. Therefore, it is a fundamental follow-up for the present study since it could help (1) respond to the level of uncertainty associated with the coming investments in the region and (2) articulate and develop synergies to qualify and prepare the population for them.

Thus, in the context of the Just Transition Observatory, it is proposed:

1 – The creation of a collaborative platform that integrates employers (present and future) and training entities, constituting itself as an interaction forum where themes related to the human capital of the territory are periodically debated, namely with: i) the needs competences, in a simultaneously quantitative and qualitative approach, with a prospective character; ii) the construction of these skills, in an integrated logic guided by the principles of strategic planning. This platform should also encourage the articulation between the offer of training institutions, avoiding redundancies in certain training areas and shortages in other areas that prove to be, or will prove to be, fundamental for the competitiveness of the territory, organizations and, above all, individuals.

2 – The development of a digital platform that supports the activity of the collaborative platform, fed by each of the entities, and that allows efficient communication between entities and between them and the community.

3 – The creation of a continuous monitoring process, adequate and focused on factors to be observed that are relevant to the theme/reason for which the observatory was set up. This same process should involve several partners, public and private, from different areas of activity and whose interests lie within the scope of the observatory.

The Observatory should contribute to reflection and support in the energy transition process in order to support the active population that will be impacted in this transition. In this way, the indicators to be monitored through it will be framed in the themes referring to the requalification of the population, alerting to the fact that some of these indicators may be endogenous or exogenous to the Sines region.