

# Just Transition Development Plan of lignite areas

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## 1 Introduction

The Greek government has set a goal of withdrawing all lignite plants by 2028, with the majority of units - representing over 80% of current installed capacity - being withdrawn by 2023.

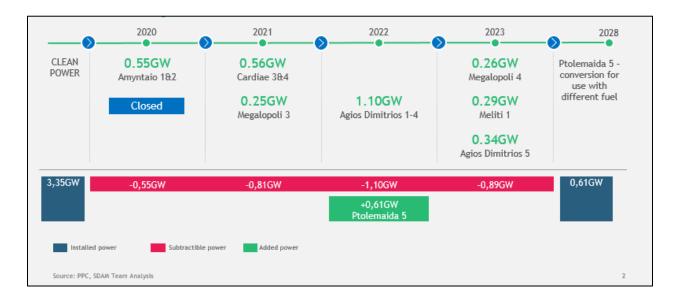
This goal marks the formalization of Greece's transition to a differentiated mixture of electricity production that will not be based on lignite. After all, the process of decarbonization has already started in the early 2010s with the gradual reduction of lignite activity. Specifically, according to data from the Public Power Corporation (PPC), in the period 2011-2019 the costs related to lignite activity have decreased by about 10% per year in the lignite centers of Western Macedonia and Megalopolis respectively.







The following diagram shows the withdrawal schedule of the installed lignite power by 2028.



The goal of complete decarbonization of the country, by 2028, is reflected in the forecasts of the National Energy and Climate Plan (ESEK, Government Gazette B' 4893/31-12-2019), which ensures the stability of the electrical system and the energy security of the country. At the same time, it is in line with the European Climate Neutrality Strategy, which, among other things, provides for the elimination of clean greenhouse gas emissions by 2050 (Green Agreement, COM (2019) 640 of 11-12-2019).

In addition to the current National and Community Strategy, the goal of decarbonization serves priorities related to environmental protection, the promotion of competitive electricity generation methods and the diversification of the production model of lignite areas.

- **Environmental protection:** The levels of basic pollutants in lignite plants in Greece significantly exceed the limits set by the European Union (EU), a fact that burdens the atmosphere and has direct and indirect effects on the environment and society.
- Promotion of competitive electricity generation methods: The average variable cost of electricity production from lignite is ~ €80/MWh (September 2020), when the System Limit Price rose to ~ €45/MWh (average in 2020)
- **Diversifying the production model:** Promoting the goal of decarbonization is an opportunity to restart local economies based on individual ecosystems of strong productive sectors of the economy, such as clean energy, industry, small industry and trade, smart agricultural production, sustainable tourism, technology and education.







Throughout the decarbonization effort, a central priority is to ensure a fair development transition of the lignite areas of Western Macedonia and Megalopolis, which is based on three pillars: employment protection, compensation of the socio-economic impact of the transition and energy self-sufficiency of lignite areas and the country at large.

With these axes, the preparation of a holistic, ambitious but realistic plan of fair development transition (hereinafter master plan) became crucial, the implementation of which will make Greece a pioneer in Europe and an international example of best practice for fair development and fair transition.

The preparation of the plan by the SDAM Steering Committee was supported by the Consortium of international consulting companies Boston Consulting Group (BCG) and Grant Thornton (GT) and the National Technical University of Athens (NTUA). The project was assigned following an open tender conducted on behalf of SDAM by the Hellenic Corporation of Assets and Participations (HCAP).

This text, which is put up for discussion in an institutional public consultation together with its annexes, is the main body and the basic specifications of the master plan for Western Macedonia and Megalopolis, while the relevant details and supporting material can be found at relevant material that has also been posted on the consultation website of <a href="https://www.opengov.gr">www.opengov.gr</a>.

All information about SDAM is posted on the website www.sdam.gr.

# 2 Overview of the master plan preparation process

## 2.1 The Government and Steering Committee SDAM

The Act of the Council of Ministers 52 of 23-12-2019 (Government Gazette 213/A/24-12-2019) determined the establishment, formation and operation of a Government Committee for the Fair Development Transition of the Region of Western Macedonia and the Municipality of Megalopolis.

In this project, the Government Committee has as its main responsibility the approval and monitoring of the implementation of the Fair Development Transition Plan and consists of:

- 1. The Minister of Environment and Energy, as President
- 2. The Minister of Finance
- 3. The Minister of Development and Investments
- 4. The Minister of Interior
- 5. The Minister of Rural Development and Food
- 6. The Deputy Minister of Development and Investments, responsible for public investments and the NSRF

To date, five meetings of the Government Committee have been held.







A Steering Committee was set up as a Working Group to coordinate the activities required for the preparation and implementation of SDAM.

By decision of the Government Committee, Mr. Kostis Moussouroulis was appointed Chairman of the Steering Committee, accompanied by:

- 1. The Secretary General of Economic Policy
- 2. The Secretary General of Public Investments and NSRF
- 3. The Secretary General of Energy and Mineral Raw Materials
- 4. The Regional Governor of Western Macedonia
- 5. The Regional Governor of Peloponnese
- 6. The Chairman of OAED
- 7. The CEO of PPC

The SDAM Steering Committee officially took up its duties in March 2020, having produced significant work in a short period of time. Specifically, the project can be summarized in the following points:

- Eight meetings of the Steering Committee were held
- Specifications were prepared for the announcement and assignment by HCAP of the advisory support project of the Steering Committee. The relevant invitation was published on 26-03-2020<sup>1</sup>
- The Foundation for Economic and Industrial Research and the Institute of Energy of South East Europe completed specialized studies to capture the current situation in the Greek carbon-dependent areas, which were used for the preparation of the master plan.
- Following a systematic collaboration with the World Bank interdisciplinary research team, the European Commission-funded study entitled "A road map for a managed transition of coaldependent regions" was completed and utilized.
- Technical studies and intervention texts were completed in order to support the Greek authorities in the negotiation in the EU institutions of the EU Multiannual Financial Framework for the programming period 2021-2027
- It was substantiated from a substantive, technical and operational point of view and it was decided by the Government Committee to prepare a distinct Fair Transition Operational Program for the programming period 2021-2027

The invitation to submit bids can be found <u>here</u>







- From 21-05-2020 the Technical Committee of SDAM (TESDAM) has been established, with the main task of the preliminary evaluation of investment proposals and the formulation of a scientifically substantiated opinion
- The Technical Secretariat of SDAM, which was established in application of article 104 par. 5 of Law 4685/2020 (Government Gazette A'92), has been staffed and strengthened.
- A website of the SDAM Steering Committee was created (<u>www.sdam.gr</u>), at which the progress
  of the project and the relevant announcements are published.
- From 09-07-2020 an open invitation has been published for the submission of non-binding investment proposals and development plans<sup>2</sup> by non-public sector bodies. The technical sheets can be submitted to TESDAM (te@sdam.gr)
- A Special Transitional Fair Transition Program was approved by the Government Committee and
  is being prepared for the lignite areas, which will be financed mainly by the NSRF 2014-2020,
  the Green Fund and the Recovery Fund.
- From 10-09-2020, an invitation has been published to Public Sector bodies that are based/active in the lignite areas, for the submission of proposals concerning the financing of projects and actions, within the framework of the Special Transitional Fair Transition Program (2020-2023)<sup>3</sup>. Proposals can be submitted with a standard form at the address <a href="mailto:emep20-23@sdam.gr">emep20-23@sdam.gr</a> until 30-09-2020.
- Seven specially targeted programs for lignite areas were designed and approved by the Green Fund (Action Plans for Sustainable Energy and Climate, Action Plans for the Circular Economy, Pilot Program for the Circular Management of urban waste in the regional units of Kozani and Florina, Energy Communities Program, Small and Medium-sized Enterprises Support Program, Development of a Specialized Innovation Zone in Western Macedonia, Megalopoli Business Park). Recently, it has been decided to extend the first two of these programs to the non-lignite Municipalities of Voio, Velvento, Servion of Kozani regional unit, Prespa of Florina regional unit and Gortynia of Arcadia regional unit.
- A provision of the Law was adopted for the assignment of an Intermediate Body responsible for the project of the management of aid schemes of the affected companies that will be financed from the resources of the Green Fund
- The design of sustainable and profitable solutions for the heating of the cities (Kozani, Ptolemaida, Amyntaio, Florina and Megalopoli) has been completed and is being implemented.

2

The invitation and related technical data sheets can be found here

The invitation can be found here







- It has been decided to establish and implement a "fair transition clause", which has already been adopted in the planning and legislative work of the Ministry of Environment and Energy.
- A plan is being prepared for the start of major interventions for the consolidation and restoration of the lands that will be released by PPC SA. in lignite areas

#### 2.2 Policies and measures promoted

As early as February 2020, the Ministry of Environment and Energy presented a long-term plan of 12 (twelve) points for the smooth and fair transition to the post-lignite era for Western Macedonia and Megalopoli, which are summarized as follows:

- 1. Rapid maturation and installation of photovoltaic parks ~2GW in Western Macedonia (e.g. partnership between PPC and RWE)
- 2. Agreement between ELPE and the German company Juwi for the immediate construction of a 204MW photovoltaic park in Kozani
- 3. Planning a fully self-financed voluntary exit/retirement for the regular PPC staff in the lignite areas
- 4. Immediate start of restoration works of PPC mines
- 5. Ensuring alternative heating (district heating) in lignite areas after the withdrawal of lignite units
- 6. Spatial planning for the development perspective of lignite areas with acceleration processes
- 7. Maintaining the PPC discount invoice for lignite areas
- 8. Yield of lignite resource amounting to €130 million.
- 9. Financing of lignite areas with resources of €60 million from carbon dioxide emissions auctions (Green Fund)
- 10. Support of the plans of the local Solid Waste Management Bodies (FODSA)
- 11. Highlighting the development role of the University of Western Macedonia
- 12. Request to the European Commission to declare lignite areas as special tax zones with special tax incentives







Based on the above points, tangible solutions have already been processed and have begun to be promoted in critical areas of decarbonization, such as district heating, spatial planning and incentives.

#### 2.3 District heating

In collaboration with PPC, a sustainable and immediately feasible plan was prepared that will fully ensure the uninterrupted supply of district heating. The plan provides solutions for both the transitional plan and after the cessation of lignite plants.

In the transitional period for Western Macedonia the district heating will be provided through the interconnection of Amyntaio, Ptolemaida and Kozani with a network of hot water pipes, as well as a connection with a SITHYA unit, which will be operating according to the decarbonization plan, and will be supplied with natural gas from a DESFA pipeline and will provide the required thermal energy for the uninterrupted operation of district heating.

After 2023, the plan to ensure district heating envisages the creation of a thermal hub in Western Macedonia which will consist of:

- The modified unit of Ptolemaida 5 (power 140MWh with efficiency 300-400k MWh/year)
- New SITHYA unit in Kardia (power 60MWth, with efficiency 270-350k MWh/year)
- Electric boiler (power 100MWh, with efficiency of 20-125k MWh/year)
- Gas boiler (power 100MWth, with efficiency 10-125k MWh/year)

Regarding Megalopolis, the plan has as its main axis the development of a gas distribution network, as the final solution from 2022 onwards. Regarding the coming winter (2020-21), the construction of a liquefied gas (LPG) boiler is planned, which is able to meet the needs of district heating. The construction cost of the boiler is estimated at &500-600 thousand and will be undertaken by PPC.

In the period 2021-22, the construction of the natural gas network will start and it will be directly connected to the buildings in the area, while the liquefied gas boiler (LPG) will be used in order to ensure the district heating in full during the natural gas infrastructure works.

Regarding Florina, the thermal needs of the city will be met with the development of a gas distribution network, with a construction schedule until the end of 2023, while at the same time the connections of the consumers will be implemented.

#### 2.4 Spatial planning







The completion of the spatial planning and the Special Urban Plans is a basic pre-requisite of the plan and has been made a top priority. For this reason, the Government Committee has decided to accelerate the necessary urban planning interventions, while the Special Urban Plans will start in parallel with the institutional public consultation and will be prepared with acceleration procedures. In Chapter 6 of this, the preparation that has already been done in this direction is analyzed.

## 2.5 Special incentive grid

The master plan aims to highlight lignite areas as beacons of regional development by attracting investment from private and public entities. To this end, a specific incentive package has been designed, which aims to attract new investments of high labor intensity and added value locally.

These incentives will be articulated with incentives provided in the current Greek legislation (e.g. Law 4710/2020 for Electromobility). At the same time, the designed incentive network is taking special care to support the affected established businesses as well as the affected individuals in the lignite areas.

In order to establish the incentives directly, seamlessly and in line with the European Institutional Framework text, it was agreed by the Government Committee to prepare and send the relevant prenotification to the relevant departments of the European Commission for a special aid scheme.

Special mention should be made of the transition clause, which was decided to go through all the development actions of the executive state. The implementation of the transition clause is a key lever for job creation in lignite areas in the short term and in general ensuring a fair transition.

The transition clause has been incorporated into recent legislative initiatives and others concerning the new "Save-Autonomy" program, the law on electromobility and acceleration of RES projects in lignite areas.

- **Program "Save-Autonomy":** The new program "Save-Autonomy" was officially presented on 03-08-2020 and aims at the energy upgrade of the building stock. The program, which will start in the fall of 2020, envisages a 10% increase in the basic grant rate in lignite areas. The program is fully in line with ESEK's objectives for increasing energy efficiency, while at the same time it helps to boost employment for local technical and contract staff.
- Law on Electromobility: On 23-07-2020, the Law 4710/2020 was published, which provides incentives for the development of electromobility in the country with increased rates in lignite areas, laying the foundations for relevant investments locally.
- Acceleration of RES projects: with the decision of the Ministry of Environment and Energy, a special list of priorities is foreseen in the evaluation and the granting of connection offers to IPTO and HEDNO for RES projects in the lignite areas. This includes the start of operation of the HEDNO RES office in Kozani from 01-09-2020





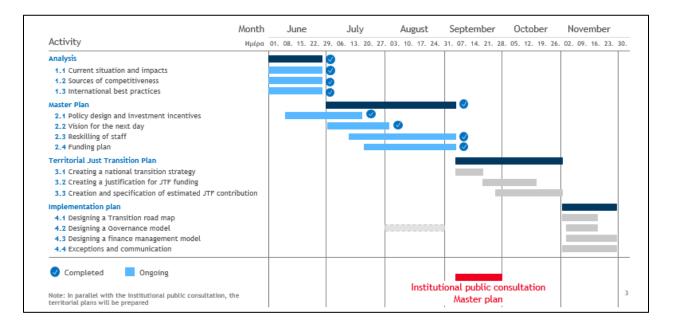


The Ministry of Environment and Energy has sent a relevant proposal-invitation to all Ministries, for the incorporation of the fair transition clause in all legislative-development interventions of the Ministries as a tangible expression of full care and commitment to the fair transition of lignite areas.

#### 2.6 Project progress and key activities

The master plan training project was structured in four sub-steps. According to the schedule, on 04-09-2020 the draft master plan was completed and submitted to the Steering Committee. This was followed by the discussion and approval of the draft by the Government Committee, giving the green light for institutional public consultation. The institutional public consultation will remain open until 31-10-2020, in order for the comments to be examined and incorporated in the final text by the end of this year.

The following diagram shows the complete project schedule, which is followed strictly, noting the activities that have been completed, as well as those that are in progress.



The master plan was prepared on the basis of seven main activities:

- 1. Analysis of the current situation, expected impacts and inherent benefits in the affected areas
- 2. Implementation of our strategic vision, planning of first flagship investments and analysis of development initiatives combined with infrastructure projects related to the most affected regions.
- 3. Initial quantification of the benefit of the considered actions in jobs
- 4. Mapping and quantifying the initial incentive package for existing companies, new ones and individuals
- 5. Initial location of land uses, development of scenarios and preparation for the elaboration of the Special Urban Plans







- 6. Mapping the available sources of funding and drawing up the funding plan
- 7. Human resource reskilling analysis in the affected areas

As part of the master plan, European and international best practices from ten different countries where large or small scale decarbonization has occurred or is in progress were studied. At the same time, a wide and international network of experts on issues of fair transition, economic development and reskilling of human resources was mobilized.

## 2.7 Cooperation with stakeholders

The institutional public consultation officially marks the beginning of a constructive dialogue of all stakeholders on the proposed master plan, in order to enrich it and to co-formulate the final master plan that will be submitted for approval by the Council of Ministers and will be sent to European Commission.

The dialogue with the stakeholders both in Western Macedonia and in Megalopoli, was continuous and open during the drafting of the master plan. During the elaboration of the master plan, the proposals and local master plans were collected and taken into account by a variety of local bodies and were officially submitted to the SDAM Steering Committee.

Respectively, an open channel of communication was created with the Regions of Western Macedonia and the Peloponnese, which through their Regional Governors are members of the SDAM Steering Committee and therefore have had the opportunity to monitor the entire drafting process through its regular meetings. At the same time, the Chairman of the Steering Committee had the opportunity to meet with the administration of the Regions, the affected Municipalities, unions and other local bodies in the context of his visits to the lignite areas.

The SDAM team participated in multiple working meetings with PPC representatives. The preparation of the master plan took into account the contribution of PPC regarding the mapping of the current situation and the planned investment plans of the company itself in the lignite areas within the boundaries of the lignite centers.

The SDAM team collaborated with scientists from the National Technical University of Athens (NTUA), for the preparation of works related to spatial planning. In addition, there was continuous and close cooperation with the rector's authorities of the University of Western Macedonia, in order to co-shape the role that the institution could play, both as a reskilling body and as a development body of the region. Corresponding working meetings were held with the rector's authorities of the University of Peloponnese.

The preparation of the master plan took into account a number of studies of the scientific community and institutions of recognized prestige, such as, for example, the European Commission, the World Bank, the Academy of Athens, the Foundation for Economic and Industrial Research, the Institute of Energy of South East Europe etc. These studies were used - among other things - in the context of capturing the current situation, methodological analysis and collection of proposals for the next day.







Finally, working meetings were organized with the OAED team, in order to capture the human resources and the level of employment in the lignite areas, to analyze the current level of training and to examine the available programs and the role that OAED could play in this direction, as the operational arm of the state to promote employment.

## 3 The vision for the next day

## 3.1 Basic principles, pillars and specialization of vision

The vision for the "next day" is governed by five basic principles:

- Emphasis on labor-intensive areas to create employment opportunities in local communities
- Utilization of the inherent advantages of the affected areas
- Ensuring a quick transition with an emphasis on quick-wins
- Promoting social and environmental sustainability with an emphasis on sustainable development
- Integration of modern technology and promotion of innovation

These principles are in line with the EU 'policy target groups' for a smarter, greener, more connected, a more social Europe and closer to the citizen.

Based on the above principles, the vision for the "next day" is based on five pillars of development, as follows:

- Clean energy
- Industry, small industry and trade
- Smart agricultural production
- Sustainable tourism
- Technology and education

These five pillars highlight the need to move to an economic model that highlights modern and clean energy, but at the same time is diversified in favor of prosperity and of unleashing the prospect of more sectors of the economy.

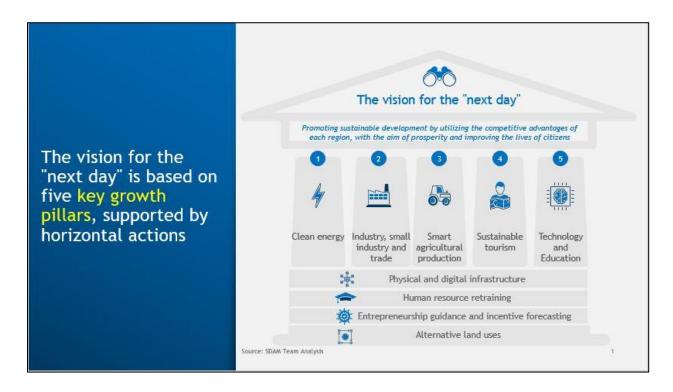
Finally, technology and education play an important role in the vision for the "next day". Given the rapid penetration of technology, a wider industry must by definition be an independent pillar of growth in local economies as well. At the same time, however, it should permeate the other sectors of the economy (including the latest generation industry or the primary sector that utilizes technologically advanced production techniques).

Growth pillars need to be built on solid foundations and supported by bold horizontal actions, which are nothing more than the development of physical and digital infrastructure, reskilling of human resources, entrepreneurship guidance, incentive forecasting and the institutionalization of alternative land uses.









In this context, the vision for the "next day" was specified for each of the two lignite areas. The specialization of the vision followed the analysis of the inherent advantages of the lignite areas, that is based on true competitive advantages of the areas in combination with the already expressed investment interest.

Western Macedonia, with its main advantages of education and natural wealth, is becoming an innovative center for the production and research of clean energy with a diversified economic model.

Megalopoli, with its main advantages of natural wealth and infrastructure, modernizes its energy and industrial profile, with a shift to clean production and the resumption of heavy industry in the Peloponnese.

## 3.2 Investments under consideration and benefit to local communities

For the implementation of the program, a primary step is to attract and promote an investment ecosystem around the pillars of the vision for each region. These investments will be promoted not only by both private and public entities, but also through a public-private partnership (PPP).

The master plan has mainly taken into account and analyzed private sector investments based on the expressed interest and is expected to compile an indicative list of public investments within October 2020.







Flagship actions, which will absorb a large proportion of the affected workforce, are a key factor in building and developing an investment ecosystem, regardless of size and implementing body.

The vision, therefore, is promoted by emblematic actions.

Specifically, the indicative flagship actions per sector of activity totaling > €3B which are promoted in both affected areas and utilize the inherent advantages are recorded as follows:

#### Western Macedonia

## Clean energy

Emphasis is placed on the construction of photovoltaic parks, with expressed interest in the construction of  $\sim 2 \, \text{GW}$ , of which  $\sim 0.4 \, \text{GW}$  are under construction. Specifically:

- PPC already has 230MW under construction, with an investment of ~ € 133M
- ELPE has under construction 204MW, in an investment of ~ € 130M
- PPC is interested in an additional 1.7GW that are under development

The installation of this power will contribute to the replacement of lignite power and the transition to "green energy", in accordance with the objectives of the National Energy and Climate Plan (ESEK, Government Gazette B '4893 / 31-12-2019). At the same time, the goal of emblematic investments, in addition to the inflow of capital and the restart of the local economy, is to be a center (beacon) of attracting related investments.

For example, the construction of Photovoltaic Parks provides the possibility of setting up a spare parts plant or the research and development of hydrogen units that will be connected to renewable energy sources and for which investment interest has been expressed:

- Since April 2020 Solaris Bus & Coach has expressed interest in investing ~ € 1B in a green hydrogen production unit through RES
- The White Dragon project that undertakes investments of €2.5B in 1.5GW electrolytes and estimates 5K direct jobs. This project is designed by 4 countries, one of which is Greece. It competes for funding for another 7 projects under Hydrogen Europe

In addition and in connection with the increase of the generated power, Eunice is reportedly interested in investing  $\in$  280M for a 250MW energy storage unit.







The second emblematic investment in clean energy concerns the field of energy research and technology in collaboration with the University of Western Macedonia, with indicative areas of specialization in electric propulsion, hydrogen and alternative fuels. The field of energy research and technology contributes to the research and development of new technologies in an area conducive to investment and will contribute to the thorough training of the new workforce.

## Industry, small industry and trade

It is planned to create an Industrial Electromobility Park, as the central pillar of industry in the region, aiming at the competitive position of Greece in the development of electric mobility. Currently, there is interest from a nationwide group for the construction of a battery plant with a total investment of  $\sim 600$  total positions during operation.

At the same time, the industrial electromobility park could attract raw material or charger manufacturing units for highways. There is already expressed investment interest in related investments, such as for example a factory for the production of car parts or spare parts with interest from an international company in the automotive sector for an investment of  $\in 5.3M$ .

## **Smart agricultural production**

There has been a development of intelligent agricultural production units of the latest technology with emphasis on alternative forms of cultivation (eg hydroponics) and multiple expressed investment interest. For example, there is interest from an international company in the food industry for hydroponics. The investment is estimated at  $\sim 6\,$  100M and could create up to  $\sim 400\,$  direct positions during operation.

#### Sustainable tourism

Creation of a wine tourism ecosystem in the standards of Northern Italy. At the moment there is interest from a leading company in the winemaking area for an investment of  $\sim \in 3M$  and  $\sim 20$  jobs in accommodation and restaurants.

The interest combines investments in a waste recycling unit and an aging unit for an additional  $\sim 6$  3.6M and  $\sim 20$  jobs. This interest can be a springboard for other companies involved in winemaking in the region, so as to expand their activities.

## 3.3 Other investments

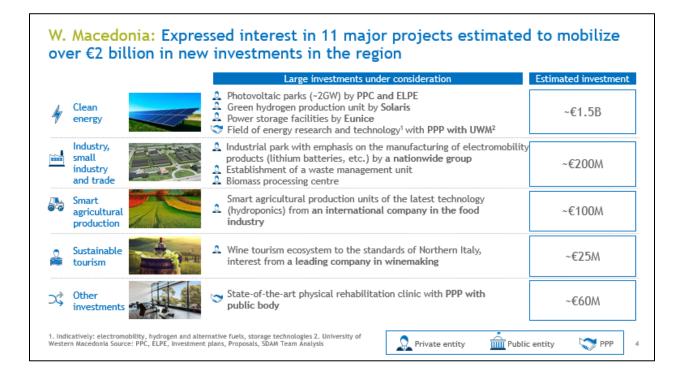
Creation of a state-of-the-art rehabilitation clinic, aiming at the development of medical tourism in Macedonia.

The investment is expected to trigger an upgrade of neighboring medical facilities and be a cradle for clinical trials in collaboration with the University of Western Macedonia. At the same time, it can upgrade the wider area leaving a significant tourist footprint.









## **Megalopolis**

#### Clean energy

Emphasis is placed on the construction of photovoltaic parks, with expressed interest in the construction of  $\sim 0.5$ GW, of which 50MW are under construction. Specifically:

 PPC is already under construction of 50MW and is interested in ~ 0.5GW extra that are under development

Respectively with Western Macedonia, the installation of this power will contribute to the replacement of lignite power and the transition to "green energy" in accordance with the objectives of ESEK (National Plan for Energy and Climate, as well as attract related investments, such as energy storage facilities and spare parts plant.

## Industry, handicrafts and trade

A model pharmaceutical industry, is planned with the aim of restarting the heavy industry in the Peloponnese. There is advanced interest from the pharmaceutical industry for an investment of  $\sim 690$ M that could create up to  $\sim 400$  direct positions during operation.







At the same time, it is possible to cooperate with the University of Peloponnese for the development of relevant research programs.

## **Smart agricultural production**

Development of intelligent livestock and animal feed units, aiming at the further development of the livestock capacity of the area.

Smart agricultural units for the production of exportable products, with emphasis on alternative forms of cultivation (eg hydroponics), as in Western Macedonia, with multiple expressed investment interest.

#### Sustainable tourism

Original theme park of adventure, entertainment and education with interest from an international entertainment company.

#### Other investments

Public investment, Business Park, etc.



# 3.4 Public works investments in Western Macedonia and Megalopolis

Along with private sector investment, proposals and plans are being drawn up for the implementation of an extensive public works program, with emphasis on infrastructure, which will reshape the affected areas. These projects include the completion of road interconnections, the strengthening and reactivation







of the railway network, the introduction of natural gas and the development of networks, the strengthening of district heating infrastructure, the installation of a high-speed broadband network and a mobile telephone network. 5G) etc.

The specific projects will offer multiple jobs during the construction period of the emblematic investment projects, as they are an important prerequisite for their implementation. The first step, however, is the implementation of a soil remediation program in the decarbonization zones, which will employ a significant part of human resources. Funds of  $\sim 60.3$ B will be mobilized for the financing of this program from the new Recovery Fund.

## 3.5 Job Placements

Large investments are estimated to create around ~ 8,000 total jobs by 2028. The new jobs are expected to absorb the temporary staff and staff of PPC contractors, as well as the short-term unemployed in the affected areas (~ 11,000 in total today), while lay the foundations for the inflow of new potential, especially to specialized scientists and executives.

The jobs were calculated to have as their first priority the existing investment interest and the recorded proposals through the available business plans, while corresponding examples were taken into account mainly from Greece, as well as from European countries that have successfully promoted detoxification policies and programs from fossil fuels.

In these cases, a fairly conservative calculation of jobs was made. For example, up to  $\sim 2,200$  direct and indirect jobs are estimated during the operation of PENET. In projects of similar scope in Greece, the estimated jobs are multiple and specifically, in the Alexandria Innovation Zone they are estimated at  $\sim 7,000$ , while in the State of Innovation in CHRO.PEI. to  $\sim 2,500$  direct jobs only.

For the calculation of the indirect work, relevant studies were taken into account and mainly the updated study for the "Estimation of the cost of transition of Western Macedonia to a regime of low lignite production" by the TEE of Western Macedonia. Specifically, the economic sectors with the corresponding employment rate are:

- A1: Agriculture, forestry & fisheries, with a factor of 1.8
- A3: Processing, with a factor of 2.8
- A4: Constructions, with a factor of 2.2
- A5: Wholesale & retail, vehicle & motorcycle repairs, transportation & storage, accommodation & catering services, at a rate of 2.5







- A9: Professional, scientific & technical activities, administrative & support activities, with a factor of 2.2
- A10: Public administration & defense, compulsory social security, education, activities related to human health & social care, with a rate of 5.0
- A11: Arts, entertainment & leisure, household repair & other services, with a factor of 3.0

The above rates and cases were qualitatively controlled by technical offices and companies that are active in the respective financial sectors. This figure refers to the operating period of the investment, which ensures the long-term employment of the affected population. The construction period creates equal short-term employment needs.

In any case, this number is a first estimate, which will be renewed and finalized when the investment interest matures and the relevant business plans are submitted.

## 3.6 Basic prerequisites

The rapid implementation of the Fair Development Plan includes basic prerequisites. Specifically:

- Strategic plan for reskilling of human resources
- Finalization and institutionalization of incentive packages with emphasis on the affected areas
- Commencement of siting works and elaboration of Special Urban Plans (ESPs) with acceleration procedures
- Arrangement of a land restoration body and immediate start of works
- Securing funding and finalizing the distribution of funds from the Recovery Fund
- Finalization of submission of public investment proposals directed to the affected areas
- Simplification and acceleration of licensing process

# 4 Workforce redeployment

The main concern of the SDAM committee is the creation of new jobs in combination with the absorption of the affected human resources, as well as the local unemployed in the affected areas.

In order to evaluate the employment potential of the human resources of the affected areas, the committee processed data on unemployment and professional skills by PPC and OAED. The analysis showed that there is a large number of unemployed and potentially affected employees by PPC, with many years of







experience and skills related to electricity generation and lignite mining, earthworks, machinery handling and office work.

The presence of a large number of human resources with technical skills is a legacy of the regions and an important competitive advantage, which could be exploited immediately.

As part of the evolution of the economic model of the region in a new diversified economy based on the 5 pillars of the masterplan, about 6,000 jobs are created in Western Macedonia and 2,000 in Megalopolis, mainly in the construction sector. Especially in the case of Megalopolis, it is estimated that the local human resources can cover ~ 67% of the positions, while to cover the remaining ones it is foreseen that an influx of employees from the neighboring municipalities will be needed.

These positions concern the restoration of the mine lands as well as the construction of the emblematic and other planned investments that are expected to accompany them.

These positions will begin to be absorbed by employees from 2020 until at least 2024 in Megalopolis and in 2026 in Western Macedonia, where the construction phase of the emblematic investments is expected to be completed.

As the professional skills required in the construction phase are similar to the existing skills of the local human resources, the need for reskilling to cover them is characterized as very low.

# 4.1 Estimated redeployment needs

With the gradual completion of the construction of investments, the demand for professional skills is also expected to be transformed.

The study of the SDAM committee predicts that in the phase of their operation the new companies will increase the demand for specialized personnel (researchers / scientists, business executives).

At the same time, they create a significant number of jobs for the skills of horticulturists, agronomists, winemakers, farmers, stockbreeders, catering and tourism professionals as well as employees for other administrative tasks.

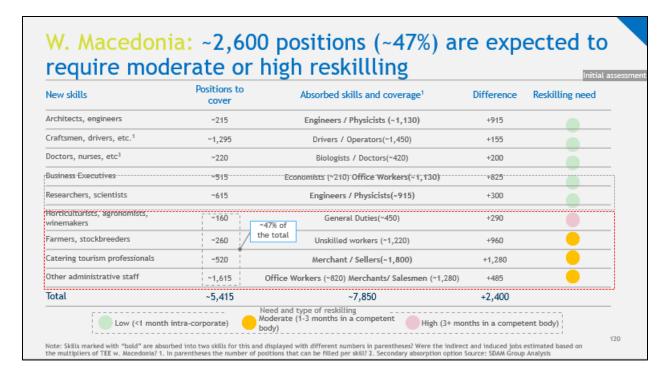
Given the existing skills that determine the potential for absorption of existing capacity, it is estimated that 47% of all affected PPC employees and the short-term local unemployed in Western Macedonia may need some form of reskilling in order to increase their level of employment especially in lower-skilled occupations.

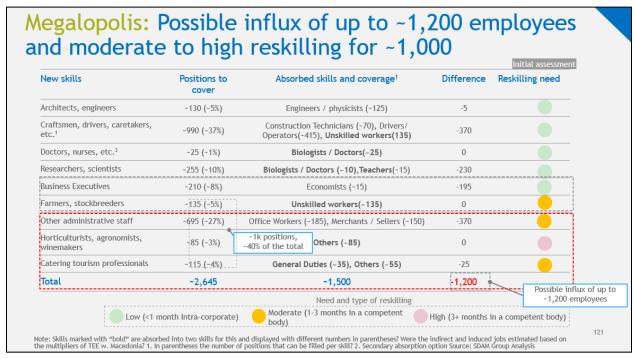
In Megalopolis the corresponding percentage is 40% of the total.











More specifically, based on the indicative differentiated model of development of the affected areas developed for the needs of the master plan, reskilling is intended to cover 3,600 jobs in three areas of specialization:

Agricultural production (~ 640 places)



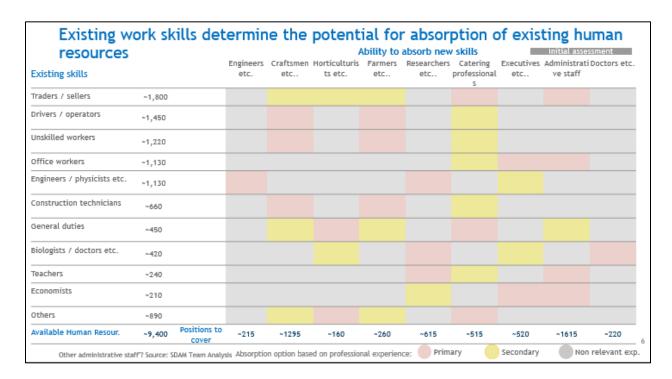




- Catering and tourism (~ 635 places)
- Administrative services (~ 2,325 positions)

Through reskilling programs, those interested are given the opportunity to improve their existing skills, increase their knowledge and gain practical experience in new tasks. At the same time, within the specific programs, there will be the possibility of training in wider but necessary skills, such as, for example, PC operation for professional use, introduction to new teleworking technologies, etc.

This possibility is of particular interest, especially in the case of local unemployed people who also need initial training, having worked in positions that did not require special technical / vertical skills (hard skills), but also in need of training in mild / horizontal skills soft skills).



Integrated interventions that combine training with work subsidy (employment programs) are crucial to a fair transition. Employment programs in combination with reskilling will give the opportunity to those interested to be absorbed faster in the labor market, while they are expected to significantly contribute to attracting investment in the affected areas.

## 4.2 Indicative redeployment bodies

The existence of human resources trained in the new required skills, will be a key factor in the success of the fair transition and a catalyst for attracting additional emblematic and regional investments.







To ensure the quality of reskilling, the providers of the relevant services should have extensive experience in the implementation of relevant programs, appropriate training staff and logistical infrastructure.

From the analysis of the SDAM committee, the following possible bodies for the undertaking of reskilling projects emerge:

- Local Higher Education Institutions (HEI) such as the University of Western Macedonia (UWM) and the University of Peloponnese (UoP)
- The Greek Manpower Employment Organization (OAED)
- Private independent bodies that meet the above characteristics
- SDAM also promotes in-house training and reskilling (in-company seminars).
- Local HEI: The case of local HEIs is of particular interest, due to their many years of presence in the affected areas and their acceptance in the local community, in combination with the existence of a staffed and active Training and Lifelong Learning Center (KEDIVIM). At KEDIVIM there are already reskilling departments in multiple scientific disciplines and they have first class material and technical infrastructure, with the possibility of quickly creating new courses depending on the existing needs.
- Greek Manpower Employment Organization (OAED): Respectively, OAED, which is an institution with unquestionable experience in matters of reskilling and reintegration of the unemployed, could be a pillar for the development of skills of local human resources, either independently or in collaboration with local universities and other agencies. It is common and legitimate for OAED to finance courses organized and implemented by KEDIVIM. In addition to reskilling, OAED can, through its existing structures (6 Employment Promotion Centers (KPA2), 5 Vocational Schools (EPAS), 1 Vocational Training Institute (IEK), 1 Vocational Training Center (KEK)) make a decisive contribution with a holistic approach and concern for reskilling issues. Examples include psychological support counseling, interview preparation assistance, CV writing, and the possibility of paying a relocation allowance for the unemployed to be hired through organized employment programs, among others. Also, OAED could contribute to the reskilling of the local human resources through the Vocational Training Institutes (IEK) and the Vocational Training Centers (KEK) that it already has in the affected areas.
- In-company seminars: In case the need for reskilling is characterized as low due to the previous professional experience of the prospective employees, their in-company training is preferred. In this case, the companies that will choose this strategy, could use the contributions of LAEK (Account for Employment and Vocational Training) paid to OAED to reduce the cost of education.







• **Independent private entities:** In the context of the free market, the high demand for reskilling and lifelong learning services is expected to increase entrepreneurship in these sectors. Attracting new entrepreneurs is expected to create fair competition, which will increase the quality of services provided, combined with the possible creation of additional jobs.

The above bodies could undertake the task of reskilling independently, but also of seeking partnerships between them. The presence of many different actors in the lignite areas could create a parallel educational ecosystem, with the development of collaborations including the field of lifelong learning. Following the development of the local economy (the professional skills that will be needed in the future may evolve depending on the development of the local economy).

Undoubtedly, reskilling and the culture of lifelong learning are very important drivers of development, as areas with capable and trained human resources will have a competitive advantage in attracting investment.

Organizing an effective reskilling program is not a simple process. It is essential to focus on the internship especially of programs which will not be provided in person but only online. The involvement of interested companies in their design could be crucial to ensure effective interconnection with labor market needs.

In the context of the preparation of the master plan, the SDAM committee studied and presented best practices of respective programs from 5 different countries and recorded specific success factors:

- Co-financing by public bodies: Part of the program budget is usually covered by the central government, the regions or the European Union. Indicatively, we mention the Just Transition Fund (JTF), the European Social Fund (ESF and ESF +) as well as the Recovery Fund.
- Collaborations with experienced private bodies (through PPP: Public & Private Sector Partnerships): Enhancing the quality of studies and reducing organizational complexity due to the accumulated experience of institutions.
- **Scalability:** Ability to staff small departments, with the prospect of creating multiple courses, often repeated in order to be able to cover tens of thousands of participants over time
- Holistic work reintegration care: In combination with technical training, they provide psychological support services, vocational guidance, preparation of a CV.
- **Reimbursed tuition costs:** Participants either pay the cost of training and are reimbursed for finding work, or attend for free (voucher).







# 5 Incentives and funding plan

# 5.1 Incentive mapping

The mapping of existing business policies, incentives and funding sources and investment projects highlight some key points that need special reference. At a first level, it is pointed out that the incentives have specific parameters, possibilities for reform and conditions for implementation, while the way in which they are established and provided, for specific advantages and limitations are highlighted.

In this context - after analyzing these advantages and limitations - and taking into account the framework and competition policies of the European Union, two main groups can be distinguished: The first group concerns the incentives that can be used to strengthen companies already operating in affected areas, while the second group includes incentives to attract new investment.

In order to clearly identify the incentives required, the workforce and existing businesses in the affected areas, the potential new investments that can be made and, finally, the European experience and the institutional framework of the European Union, which includes de-ligation, are taken into account.

Initially, emphasis is placed on the workforce of the lignite areas and a detailed examination of the profile and its characteristics is sought. In addition, the main branches of activity of the existing companies are analyzed and the needs that will be created due to the decarbonization are estimated. At the same time, a new economic model is designed and all the investments or business activities under investigation that will be aimed at attracting are analyzed. Finally, in order to correctly identify the incentives, the corresponding European experience and the corresponding practices that have been applied are examined, while at the same time research is carried out to identify limitations and other parameters of the Community and national institutional framework (state aid rules).

In addition, the types of incentives can be divided into four categories: investment / financial, fiscal, operational and licensing.

In particular, investment / financial incentives include grants, expected financial aid / facilities, guarantees, microcredit and co-investment funds.

In terms of tax incentives, tax exemptions, tax breaks, tax incentives and exemptions from fees and other charges can be a springboard for attracting a variety of investments that will contribute to the economic and business development of those affected by the area.

Operational incentives include insurance / retirement, employment and incentives for employment, research and development, and energy efficiency.

## **5.2** Proposed incentives

The support of companies affected by deliginization as well as the strengthening of investments, existing and new, is called to be achieved both through the provision of special institutional incentives (financial,







tax, insurance and licensing), and through the utilization of all available resources. funding from national, Community and international organizations.

Investment incentives will be essentially a single grid, which will specialize and support three different groups of beneficiaries: investments with specific and operational needs, companies that are directly affected by demilitarization and need support, those that have the potential to grow in from appropriate aid and finally to those employed in affected companies and the workforce that new investment players need to attract.

More specifically, for those employed in the affected areas, there needs to be support through reskilling programs, by covering part of their loan obligations and by strengthening the projected benefits. As for the workforce that new investors need to attract, they will be given incentives to relocate in the affected areas (eg housing subsidy and reduced income tax rates). Each incentive will have a distinct budget, membership requirements and a relevant source of resources.

In this context, a comprehensive package of fifteen individual incentives is planned, categorized into the following three groups:

- **Incentives to attract a new production process:** These include: the provision of a grant for new investment, tax exemption, tax relief, subsidy of insurance contributions, exemption of fees, loans on favorable terms and guarantees
- **Incentives to maintain the existing operation:** These incentives include: the provision of a grant to reform / modernize the production operation, the subsidy of loan obligations, the subsidy of wage costs, the participation in equity and the loans on favorable terms
- **Incentives to support individuals:** These incentives relate to income tax deduction, mortgage subsidy and support for projected benefits and training programs.

Further demarcation of incentives requires specific additional steps on how to set the final terms, finalize the duration, grant conditions and integration procedures, and plan actions to declare such aid compatible with the internal market.

As for the level of incentives, it should be noted first that, based on the existing **Regional Aid Charter** (**RAC**) in force until the end of 2021, the following aid limits apply:

- 25% for large enterprises, 35% for medium enterprises 45% for large enterprises in Western Macedonia,
- 35% for large enterprises, 45% for medium enterprises 55% for large enterprises in Peloponnese







In addition, the "de minimis" rule applies, which provides for a maximum aid limit of  $\in$  200 thous. Also, according to Law 4399/2016 (as in force), the maximum amount of aid for each investment project is  $\in$  5 mil., for each company the  $\in$  10 mil and for each group of companies  $\in$  20 mil.

Taking into account the conclusions of the analysis, it is estimated that the limits of the RAC do not meet the requirements of the strategy for the restructuring of the production model of lignite areas.

In particular, the proposal that is being prepared for approval by the competent institutions (at national level and at the level of the European Commission) is as follows:

- For the regional units of Kozani, Florina and Tripoli, it is estimated that in terms of incentives for the implementation of new investment the total amount of aid needs to increase to 60% for large enterprises, 70% for medium enterprises and 80% for small enterprises
- For the other regions of the Region of Western Macedonia and Peloponnese, the proposal is to provide a maximum reinforcement of 40% for large enterprises, 50% for medium enterprises and 60% for small enterprises

The cumulation rule up to these proposed limits will apply to these incentives. The intensity of the investment aid (ie the absolute size) will depend on the amount of the financial gap, while in any case it will not exceed the above limits.

Regarding the compatibility of any kind of incentive with the state aid rules, it is stated that: there are incentives that are compatible with the current state aid legislation and it is not estimated that any special handling will be needed.

There are incentives that are compatible but it is estimated that relevant disclosure will be required.

Finally, there are incentives that are incompatible and require approval through notification and the creation of a special regime.

Finally, it is pointed out that the determination of the incentives took into account all the communication that has preceded with local bodies, potential investors, executives of the involved services, etc.

The proposed incentives will make it possible to make the most of all available sources of funding, including the three pillars of the Fair Transition Facility as well as other sources (domestic and European).

In essence, the incentives will mobilize and activate specific investment projects (see section 3.2), which in turn will allow the mobilization and leverage of additional financial resources, which otherwise would remain dormant.









## 5.3 Funding plan

The financing plan for the transition to the metallignant era needs to take into account specific parameters, such as the available sources from which the required resources can be drawn, as well as the plans of the emblematic and other investments, their characteristics and needs. In this context, an optimal financing scheme is prepared through the preparation of relevant financial models, which will analyze all relevant estimates of critical parameters (budget, investment cost timing, cash flows, etc.).

For the proper transition of lignite areas to an era of clean energy, growth and operational prosperity, funding is required for projects related to various sectors. More specifically, the aim is to financially support projects in infrastructure and supporting emblematic investments, in Renewable Energy Sources (RES), projects to improve energy efficiency and implementation of electrification, projects to support and strengthen the primary sector, as well as innovation and competitiveness.

In order to achieve the above objectives, the full and efficient utilization of all available means and sources of funding for the transition to the post-colonial era is sought. In particular, the investments in question enable the full utilization of the resources of the three pillars of the Fair Transition Facility (TDM, Special InvestEU Scheme, Public Sector Loan Facility), while at the same time promote the financing of investments through other private sources, mobile (leverage).

In this context, initiatives are planned and developed to utilize all available financial instruments and tools.

At this point, it is worth mentioning the goal of forward-looking investments with a significant percentage to be utilized in the years 2022 and 2023. The overall time distribution of capital investment costs will







depend on various parameters, such as the approval of engines by the European Commission, land rehabilitation, public investment and other support programs and projects, simplification of licensing procedures, etc.

The immediate finalization of the incentives will significantly affect the smooth and timely implementation of investment plans. At the same time, land reclamation works have a direct impact on the timing of investments, both because of the financial costs they incur and because they are a prerequisite for the planning and implementation of certain investments.

In addition, the implementation of public investments, especially at the level of infrastructure, will significantly increase the attractiveness of the areas and the possibility of hosting new investment plans, while the design maturity of the projects in combination with the completion of Special Urban Plans and the acceleration of licensing procedures will contribute catalytically to the forward implementation of the financial plan.

Finally, it should be noted that taking into account the investment plan that has been recorded so far (see section 3.2), which will obviously be enriched in due course with new investments, the total capital cost of the investments (which is initially estimated to exceed  $\in$  5 billion.), the parameters of each source of funding as well as the need to adopt the best possible financing scheme, **the initial outline of the financing plan is** as follows:

- 10% subsidies, through the utilization of the first pillar of the Mechanism (Fair Transition Fund)
- 30% loans on favorable terms, through the use of the other two pillars (Special InvestEU Scheme, Public Sector Loan Facility) and other financial instruments
- 40% commercial loans, through raising funding from domestic and international financial institutions
- 20% equity, through the mobilization and attraction of private funds of potential investors.

This financing scheme reflects the fact that a significant part of the investments will be made through leverage of commercial (bank) loans and equity, as significant investments that are already mature do not need any further support.

At the same time, the utilization of the Fair Transition Mechanism, aiming not at the immediate exhaustion of subsidies (Fair Transition Fund) but at the full use / utilization of all its 3 pillars, enables the integration and implementation of an increasing number of investments.

## 6 Spatial planning

The inclusion of the "space" dimension in the master plan was recognized from the beginning as one of the basic conditions for ensuring the applicability of the overall plan for the transition to the post-lignite era.







Therefore, a variety of data related to the existing and institutionalized land uses, geological, hydrological, soil data, the concentration of facilities / infrastructure, etc. for the areas affected by depoliticization but also the existing institutional framework and spatial policies were analyzed, as well as development capabilities, the possibilities of activating spatial mechanisms and tools.

More specifically, the spatial units identified along and on both sides of the Kozani - Ptolemaida - Amyntaio - Florina axis and in the area of Megalopolis, which include the lands of the wide zones of lignite extraction and operation of PPC NPPs, were defined as Decarbonization Zones (D.Z) and at this stage their institutionalization is underway.

In the above Decarbonization Zones (D.Z) a spatial and socio-economic Framework of Fair Transition is created with the main objectives:

- The restructuring of the productive energy activity and the "reconstruction" and redesign of the business development prospects of the three production sectors (primary, secondary and tertiary)
- Addressing the environmental degradation of the area from the effects of lignite mining and the operation of HPPs, both in its natural and man-made systems and in the landscape
- Align with the EU and the country 's overall energy and climate change policy, as set out in the 2050 Energy Roadmap and the National Energy Planning, in conjunction with the Strategic Framework for a Sustainable Energy Union
- The effective management and treatment of the socio-economic consequences that the decarbonisation will have in the affected areas.

The appropriate spatial interventions, regulations and the financial, administrative or other means, measures and action programs, in phases and funding bodies, that are necessary for the development, strengthening, restoration and upgrading of the above Decarbonization Zones (D.Z) were determined in the first phase of the master plan, while they will be further determined at the stage of development of the Special Urban Plans (EPS) in each of the Municipalities that are administratively involved or in wider areas which are affected by the de-ligation program.

The EPS will define in a set of texts, maps and diagrams:

- Permitted land uses,
- The general building conditions and restrictions as well
- Any other measure, term or restriction required to serve the actions and interventions of the master plan.







In this way, these areas become suitable, either for the creation of organized activity receptors and the establishment of businesses, or for the implementation of other programs of remediation, regeneration and interventions of landscape / environment restoration.

A specialized project team has been set up to further promote and accelerate the procedures required for the announcement and development of the EPCs.

## 7 Conclusion

The fair transition to a new sustainable production model for lignite areas is based on the country's need to keep up with new development and environmental standards and free lignite areas from a deadly economic activity, covering the deficit of their production model by creating values in different sectors and industries.

It is therefore not an exclusive matter of a sectoral policy or a horizontal policy, but a concern for almost all public policies. This is, after all, the basis of the planning of any transition strategy around the world, the organization of which is a complex, multi-level and multi-annual process, which should have started in our country once the European Union began to actively promote the turning to green energy and the discouraging of coal-fired power generation.

As part of the preparation of the master plan, European and international best practices from ten different countries were studied, where depigmentation on a larger or smaller scale has occurred or is in progress. At the same time, a wide and international network of experts on issues of fair transition, economic development and reskilling of human resources was mobilized. At the same time, studies and proposals developed by all stakeholders were taken into account

Annex A of this public consultation presents the studies that were carried out following specifications prepared by the Coordinating Committee SDAM and commissioned by PPC SA. at the South East European Energy Institute and the Institute for Economic and Industrial Research, with the aim of helping a better reflection of current situation of the affected areas, as well as the quantifying of economic and social impact, as key preconditions for developing a multi-pronged strategy.

It is clear that the term "strategic planning" is much broader than the drawing up an open list of projects and investments. In this sense, the large investments presented in the master plan are only indicative and in no case do they incorporate all the investments and projects that are expected to be approved and implemented in the affected areas.

Following the completion of the public consultation, the final SDAM will be the basis for the preparation of the Territorial Fair Transition Plans, in application of the requirements of the draft Regulation of the new Fair Transition Fund, which will be incorporated in the new Operational Plan for Fair Transition







2021- 2027 will be submitted for approval by the European Commission in the framework of the approval process of the Partnership Agreement 2021-2027 (NSRF).

The Fair Transition Operational Program 2021-2027 will specialize not only in the sectors but also in the governance mechanisms - with a multi-level participation of local, regional, national authorities and the social and economic partners - as well as the implementation mechanisms through which the transition areas will build a diversified and strong economy for the post-colonial era.

In this context, a draft law is being prepared which will enact any relevant regulations, including provisions to ensure the effective involvement of local communities, but also their assumption of responsibilities for planning, planning, management and implementation of Integrated Spatial Investments and other interventions.

The Operational Program will also specify the public investments / infrastructure that are necessary for the development of new economic activities in the affected areas and will present the incentives that the country will introduce after the approval by the services of the European Commission of the special aid scheme.

Finally, it is noted that the strategy of the Program will operate in addition to the other programs of the NSRF 2021-2027 and the national development mechanisms.

# **Appendices**

- 1. Master Plan\_Public Consultation, 18.09.2020
- 2. Master Plan Public Consultation, Best Practices, 18.09.2020

## Support studies

- 3. Master Plan: Current situation and prospects for the regions in energy transition in Greece
- 4. Master Plan\_ Degeneration of electricity generation: Socio-economic implications and compensatory actions





