

## 2021 TJTP Territorial Just Transition Plan

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# **Territorial just transition plan - TJTP\_WM.TJTP Western Macedonia (2.0)**

1. Outline of the transition process and the identification of most negatively affected territories within the Member State

Reference: point (a)(b) of Article 11(2), Article 6

## **1.1. Transition process and timetable**

### **Commitments in force**

Greece ratified the Kyoto Protocol in 2002 & the Paris Agreement in 2016. The NECP, the main tool for national policy-making over the next 10 years, was ratified in 12nd/2019 by decision of Government Council [(Government Gazette, Series II, No 4893)] & reflects the increased climate ambition & the national target set at the UN Climate Conference of 9th/2019: complete de-lignitisation of Greece by 2028 with a drastic reduction and complete removal of lignite from the electricity mix, on the basis of an organised plan for the withdrawal of lignite-fired power plants, decarbonising the islands by 2029. This objective was identified as “good practice” in the EU Staff Working Document on “Assessment of Greece’s final national energy & climate plan[1]”.

In parallel, Greece has developed the 2050 long-term strategy[2], with decarbonisation scenarios. In the 2 scenarios compatible with keeping global temperature increase below 1.5 °C, the country achieves a 95 % reduction in its net emissions compared to 1990.

### **New developments**

Since the ratification of the NECP, energy & climate change developments have been rapid, with the following main developments: a) the “Fit for 55” package introducing a more ambitious climate target than the 40 % target in force when the NECP was drafted & b) the REPowerEU Joint European Action.

Greece remains committed to its commitments & is consistently implementing a targeted network of relevant actions: penetration of RES, licensing/regulatory framework for energy storage & H2, energy upgrading, incentives for electrification, district heating, the installation of HPS, etc. The TJTPs are aligned with this grid as they provide for interventions promoting zero pollutant emissions from energy production and assist the other areas of interest of the NECP.

Greece monitors current developments in the energy sector & will make appropriate adjustments to its national planning if necessary.

### **Withdrawal of lignite plants/lignite mines**

Many lignite-fired plants have already been withdrawn. In 2011, the production of PPC’s plants was 27.4 TWh & in 2019 10.417 TWh, reduced by 62 %. In 2020, lignite-fired energy production was 5.7 TWh compared to 8.1 TWh foreseen in the NECP for the same year, reduced by 30 %.

The transition process towards the EU’s 2030 targets in the TJTP of WM & Megalopolis follows the following timetable for the cessation of lignite mining & electricity generation: all lignite plants will be withdrawn by 2023, with the exception of one (Ptolemaida V) which will be withdrawn by 2028 (Annex-

tab.1.1).

### **Transition to islands**

In the North Aegean, South Aegean and Crete, the transition by 2029, based on national policy, is implemented twice: (a) gradually increasing the penetration of RES into consumption, based on the approved plan of interconnections with the mainland electrical system and/or with the installation of HPS, and (b) phasing out the 32 autonomous thermal electrical systems, each supplying one or more non-interconnected islands (NII). The ultimate objective is to cover the islands' energy needs from clean energy and the 'export' of excess clean energy to the mainland (Annex 1.2/Table.1-4).

Starting in 2020, the existing **installed capacity (RES)** per cluster of islands is:

- 296 MW — Crete,
- 54 MW — Cyclades,
- 105 MW — Dodecanese,
- 64 MW — North Aegean,

while the total share of RES in consumption is 24 %, 30 %, 16 % & 18 %.

At the end of the PDB 2021-2027, **additional capacity (RES) is planned to be installed:**

- 398 MW — Crete,
- 66 MW — Cyclades,
- 163 MW — Dodecanese,
- 118 MW — North Aegean,

which, on the basis of data from the NECP and assumptions under the TJTP, can lead to an overall share of RES in consumption of 76 %, taking into account the mix of interconnections, of 72 %, 71 % and 75 %, respectively (Annex of Islands, Unit 1.2/Methodology).

In the interim (2025-2026) the objective is to **install additional capacity:** 155-182 MW in Crete, 50-6.5 MW in Dodecanese, 42-50 MW in the Northern Aegean Sea, 14 MW in Cyclades.

The area available per cluster of islands for the development of the above RES capacity will be determined upon approval of the special RES spatial planning framework under preparation.

The installation of RES power in the island area depends on the available margins (electrical space) of the network. The electrical interconnections of the NIIs increase the 'electrical space' & the energy produced by thermal plants is replaced by clean forms. At the end of the interconnections, some thermal plants will be placed in cold reserve to ensure security of supply.

The uptake of new technological solutions & business models can remove the “electrical space” barrier regardless of interconnections. The plan for the installation of HPS[3] on the islands without a clear interconnection plan can lead to more than 50 % penetration of RES in consumption, depending on the local conditions per island. If necessary, a specific study will be carried out to determine the appropriate % of RES penetration per category of islands.

On the **basis of the interconnection** plan, three NII networks have already been connected to the mainland network[4] and the timetable for completion of the remaining interconnections, based on the recent TYDP of HEDNO (2023-2032) and NDP OF HEDNO (2021-2025), is as follows:

- 2023: Crete (2nd phase — ongoing)
- 2024: Cyclades (phase 4 — ongoing)
- 2028: Dodecanese
- 2028: B. Aegean Sea

All the reference islands of the TJTP (individually or as part of an autonomous NDP) will be interconnected with the continental system by 2028, except for 8 NIIs covering 9 islands (Gavods/Crete, Agios Efstratios/V. Aegean Sea, Symi, Patmos, Memaxis, Astypalaia, Arkis, Marathi, Agathonisi/N. Aegean Sea)[5].

For these — and those which have an interconnection forecast after 2025 — the transition starts as a matter of priority with the development of EPG HPS of electricity combined with wind-solar energy with storage systems. The RAE (Regularity Authority for Energy) estimates that the 50-60 % RES penetration target is achievable on all islands where HPS will be installed. In particular in Agios Efstratios & Astypalaia, a pilot penetration of 80-90 % will be implemented to explore the feasibility of similar projects and on other islands at a later stage.

### **Transition steps & actions**

Greece follows the individual steps/pillars & supporting actions proposed in the World Bank roadmap for the WM[6], for the entire JDT process adapted to the specificities & other regions. 2 steps (design/implementation) are recognised & 3 pillars for JDT:

1. Rehabilitation & re-use of degraded areas/facilities
2. Social Cohesion & Economic Transformation (Transition to the New Product Model)
3. Governance

**Pillar 1:** The planning started with Law 4759/20 on the JDT Plan, including the approval of two programme contracts (paragraphs 2 and 3 of Article 155) for the spatial planning (SUP) and the transfer of the land from PPC to the State, respectively, and will be completed with the approval of the new land uses in 2023. Implementation starts with the restoration of lignite-fired land and finishes with the first organised receptors in 2025.

**Pillar 2:** The planning started in 2020 with the preparation of the JDT Plan [7] & will be completed with

the approval of the TJTPs & the JDT Programme in 2022. Implementation will start with the activation of the actions of JDT Programme (2022) and will be completed at the end of the PP. It also includes the activation of the actions of the 2nd and 3rd Pillars of JTM.

**Pillar 3:** The planning started with the establishment of a Governmental & Coordination Committee of JDT Plan as in force[8], the establishment of a Technical Secretariat of the Steering Committee (Law 4685/20) and ends with the establishment/establishment/operation (a) of the Special Authority of JDT under Law 4872/21 & (b) of the ‘Metavasi S.A.’, a SPV (special purpose vehicle) to support beneficiaries and investment projects.

Table 1.2 of the Annex shows the timing of the most important actions per stage & pillar.

Milestones of the migration process:

- 07.2020: Open call[9] for non-binding investment proposals and development projects by entities outside the public sector, in cooperation with Enterprise Greece.
- 2020-2021: Launching actions to pilot holistic interventions in Agios Efstratios & Astypalaia, with a focus on clean energy, saving & electro-mobility.
- 04.2021: Adoption by the EU of revised regional aid guidelines[10].
- 06.2021: Open call[11] to public bodies for interventions to strengthen social cohesion, reorient employment, diversify the local economy, attract direct investment & prepare for hosting new activities & larger scale investments in the Regional Units of Kozani, Florina & Municipality of Megalopolis.
- 09.2021: MEO design and launch of employment support programmes.

## 1.2 Identification of affected areas

In the Region of WM, the process of de-lignitisation, i.e. the complete withdrawal of lignite plants and the closure of lignite mines, is in line with the EU & national target for the transition to a climate-neutral economy. However, this transition entails the cessation and/or limitation of activities and related industries and, due to the importance of lignite extraction and the generation of energy from its incineration for the Region of WM, it has adverse social & economic consequences for the whole region.

- The EU mandated the World Bank to create a roadmap for the transition to the post-lignite era. The Hellenic Corporation of Participations & Assets commissioned a consortium of designers to prepare the Just Development Transition Plan, the Institute for Economic & Industrial Research (IOBE) carried out a study on the socio-economic impact and compensatory actions, due to the de-lignitisation, and the South East European Energy Institute (IENE) carried out a study on the current situation and prospects for the regions in transition in Greece. An important source of data was also the OECD study on regional policy in Greece after 2020 & the conclusions of the study on the country's industrial transition, the EU Joint Research Centre.
- The region consists of 4 Regional Units. The main place in its production system have the Regional Units of Kozani & Florina, where 71 % of the 266.16 thousand inhabitants of WM live, the 80 % of regional GDP is generated and is found the largest share of employment (67.7 % of the 87.10 thousand employees). Therefore, any impact on the production system of these two Regional Units affects the overall economy of WM.
- Unemployment in the Region of WM has already been the largest in 2017 (29.1 %) among the

remaining regions of Greece & NUTS2 of the Coal Regions in Transition. In fact, the unemployment rate has remained higher over time than in the country (World Bank Group, 2020). This is an indication of the structural weaknesses of the region's economy.

- According to the IENE, over the last 10 years, the population of the region has been steadily declining (from 287 000), cumulatively close to 7 %. Maintaining the production structure in the crisis undoubtedly maintained this relatively small % of depopulation.
- According to the IENE, with regard to the educational level of the residents of the Regional Unit, there is a significant change, as we have a 50 % decline in the population reporting a-level to lower-secondary education and at the same time 16.200 people who have completed a post-secondary course & 9 500 have graduated from a c-level educational establishment. This change may reflect a strong potential capacity of the existing workforce, which should be exploited in the sectoral restructuring & transition phase of the region.
- According to the OECD[12], WM has (strong) specialisation (Location Quotient=6.36) in lignite mining & power generation, supplying energy for 10 years throughout the country. Specialisation in the remaining areas is weak to moderate. The region therefore has monoculture, making its economy highly dependent on lignite. De-lignitisation will directly, indirectly and indirectly affect the region as a whole.
- In addition, wages in the mining & electricity sector are high, although they have decreased significantly in recent years. The average annual income of someone involved in mining is EUR 18 652 in 2018 from EUR 31 149 in 2008. In the electricity sector, the average annual wage is EUR 30 758 out of EUR 41 603 (Eurostat Labour Cost Surveys, 2008-2012-2016). These wages are significantly higher than wages in the rest of the economy & maintain a large part of the region's consumption and jobs.
- The Regional Units of Kozani & Florina account for 76 % & 24 % of the region's installed electricity capacity, respectively[11].
- As a result of the de-lignitisation for the 2019 base year, it is estimated that a total of around 12 000 workers (directly, indirectly & induced) will be affected throughout the region, the majority of whom are in the Regional Units of Kozani & Florina and the rest in Kastoria & Grevena Regional Units (Annex, Table 1.3).
- The Regional Units of Kastoria & Grevena will be affected mainly by the indirect effects on the lignite value chain, but also by the effect on consumption of reduced employment and income in the region as a whole (Annex, Table 1.3).

Therefore, de-lignitisation will primarily affect the Regional Units of Kozani and Florina and, secondarily, the Regional Units of Kastoria & Grevena. In terms of implementation of the JDT Programme, the notions 'primarily' and 'secondarily' shall be interpreted as follows: Measures to adapt territories, circular economy measures and integrated actions under proposal 5 relate exclusively to the 'primarily' affected areas.

## 2. Assessment of transition challenges, for each of the identified territories

Reference: point (c) of Article 11(2)

Territory: Δυτική Μακεδονία

### 2.1. Assessment of the economic, social and territorial impact of the transition to a climate-neutral economy of the Union by 2050

Reference: point (c) of Article 11(2)

The transition process has started in the region of Western Macedonia for several years, given that the

peak in lignite production took place in 2004 and that the first lignite plant (Ptolemaida I) was withdrawn in 2011. The recession that hit the whole of Greece over the past decade has made the situation more difficult.

Accelerating the transition process means that the economic, social and environmental impacts observed in the previous period will intensify. With regard to the affected economic activities and industrial sectors and the economic, social and environmental impact of de-lignification, please note the following:

The region has (strong) specialisation in the extraction and production of energy from the combustion of lignite. Lignite activity has not generated significant industrial spillovers capable of further enhancing industrial development and compensating for losses resulting from de-lignification. There are also no other major alternative production activities in the region that can be switched to by lignite workers. Therefore, declining and transforming activities are categorised as follows:

- **Category I — declining activities:** Affected economic activities in Western Macedonia that rely on fossil fuel production and are expected to cease or significantly reduce activities due to the transition towards climate neutrality (deepening sectors) directly include the lignite mining and lignite-fired power generation sectors and indirectly the extractive waste collection, treatment and management and remediation sectors.
- **Category II — transforming activities:** This category includes undertakings included in the value chain of lignite mining and conventional electricity generation, such as wholesale and retail trade in raw materials and vehicles and spare parts relating to lignite activity and electricity generation in lignite plants, specialised construction work, manufacturing and marketing of metal products, machinery and equipment, manufacture of tyres and plastic products, provision of transport services, repair services of machinery and heavy trucks and provision of professional, scientific and consultancy services.

In addition, reference should be made to the activity of actors with a particular role in the region, who will be affected by de-lignitisation and will have to redefine their services. These bodies include, but are not limited to: local government, University of Western Macedonia, National Centre for Research and Technological Development (EKETA), Waste Management of Western Macedonia S.A. (DIADYMA), Cluster Bioeconomy and Environment of Western Macedonia (Clube), etc.

- According to a survey by the World Bank (Christiaensen & Ferré, October 2020), enterprises dependent on lignite mining and lignite-based electricity production in Western Macedonia are mainly active in manufacturing (24 %) and wholesale and retail (20 %) and to a lesser extent in professional, scientific and advisory services (14 %), construction (13 %), services (12 %) and mining (10 %).
- These undertakings are PPC's contractors and depend to a large extent on cooperation with PPC, in particular the largest as well as those active in the mining sector. Of the PPC contractors employing more than 50 people, around 7 out of 10 depend on more than 80 % of their revenues on contracts with PPC. 41 % of companies active in the mining sector depend at least 50 % of their revenues on contracts with PPC. These percentages are lower in other sectors. 26 % of enterprises in the construction and professional, scientific and advisory services sectors depend more than 50 % of their revenues on contracts with PPC, 21 % in the manufacturing and services sectors and 10 % in the retail sector.
- According to the IOBE study, the **direct impact** of de-lignitisation on employment in Western



Macedonia is estimated **at 5.7 thousand jobs** by 2029 (the direct impact relates only to the generation and extraction of lignite taking place in Western Macedonia and in particular to the Regional Units of Kozani and Florina). Given the multiplier effects of lignite activity, the impact of lignite-making will be much more significant. The IOBE study estimates the **total loss of jobs** in Western Macedonia from de-lignification at around **10.6 thousand by 2029** (directly, indirectly and induced). Estimates are made in relation to 2019. **Taking into account that de-lignitisation has started much earlier, the overall impact is estimated to be greater.** Almost half of the jobs that will be lost in Western Macedonia as a result of de-lignitisation are indirect and induced. This is because lignite activity is monoculture, with very good wages, and therefore supports consumption and jobs throughout the local economy. In the absence of another strong sector, de-lignitisation will have very adverse effects on the employment as a whole and on the incomes of local residents.

- In relation to the professional profiles, PPC has stopped recruiting permanent employees already in 2008, substituting part of the workforce with temporary staff and subcontractors. Its regular staff (around 3,100 employees) are 50 years old on average. It consists mainly (around 80 %) of technicians (technicians, drivers, drivers and operators) and has completed secondary or compulsory education (87.5 %), while 10 % have technological or university education and the remaining 10 % are administrative and support staff. 86 % of temporary staff are between 26 and 55 years old and consist mainly (84 %) of technicians with secondary or compulsory education (96 %). Only 4 % of temporary staff are employed by engineers and other workers with technological or university education, while the remaining 12 % are support staff. The majority of the employees of PPC contractors are (84 %) technicians and have completed secondary or compulsory education (96 %).
- In relation to the impact on the economy, the IOBE estimates the total loss of gross value added (GVA) at country level from the changeover to EUR 1.580 million by 2029. In Western Macedonia the total GVA loss is estimated at more than EUR 1 billion by 2029 (compared to 2019), or **26 % of Western Macedonia's GDP in 2019 (~ EUR 4 billion)**. Therefore, in terms of GDP, there will also be a major direct impact on Western Macedonia.

Some qualitative and quantitative estimates of population data (which have been summarised in Chapter 1.2) are also important in relation to the expected economic, social and environmental impacts:

- The region has depopulated over time in all its individual regional units (Annex, Table 2.1). The observed decrease is mainly due to the emigration of younger adults, who are more likely to have children under the age of 15, leading to an ageing population in the region, which was already among the oldest on Greek territory — the elderly (65+) represented 21.5 % of the region's population in 2008, compared to 23.6 % in 2018 (national average: 21.8 %) (Christiaensen & Ferré, October 2020). In the absence of appropriate measures, the current trend of decline and ageing of the region's population over time will intensify, following the acceleration of the transition process. It will remain a key feature of youth migration, depriving the region of the human capital necessary for its development.
- People aged 15-24 experience an unprecedented unemployment rate above 60 %, which is double the regional unemployment rate and almost 10 percentage points higher than the national average for this age group. 34 % of women in Western Macedonia are unemployed, above the regional average. Long-term unemployment is also particularly high, with 19 % of the active population being unemployed for more than 12 months, i.e. two out of three unemployed have been unemployed for more than 12 months, underlining the difficulty of finding a job in the region (Christiaensen & Ferré, October 2020). As a result, unemployment will hit the most vulnerable groups of the population, i.e. young people aged 15-24, women and those who are already long-term unemployed (Figure 2.1, annex).
- The poverty rate in Western Macedonia is among the highest at national level and poverty is directly linked to unemployment: 75 % of the population lives in an unemployed household[1]. As

a result, rising unemployment will lead to further household impoverishment and the already high number of households below the poverty line. It should be noted that, on the basis of the data available for the region, poverty affects younger generations, those with a low level of education and female households, i.e. those most at risk of becoming unemployed.

The impact of de-lignitisation is not limited to employment and income. It is true that de-lignitisation will, in general, have a positive impact on the health and safety of workers and citizens, provided that the necessary land restoration works in the lignite fields are carried out.

However, one of the important benefits of the lignite era has been the use of the excess heat of lignite plants to operate **district heating systems** in 3 cities (Ptolemaida, Kozani and Amyntaio). On the basis of the climate characteristics, the Region of WM is characterised over time by the highest need for heating between the other regions of Greece (2.22 thousand heating degree days in 2019 as against 1.45 in the Greek territory) and was the first region in Greece where the systems were studied and installed for the needs of citizens. In particular, around **42 thousand** households and businesses use district heating with a total demand of **~600 GWh** (IENE, 2020).

In addition, aid was granted within the administrative limits of the Region of WM to all household electricity consumers in respect of a surcharge from lignite activity.

If for all household consumers it can be said that de-lignitisation will eliminate the reason why they paid reduced electricity prices, we cannot claim the same for the 42 thousand households and businesses, for which a solution compatible with the eligible actions of the JTF should be found. It should also be borne in mind that the support for private electricity consumers and the systems in these areas have led to a reduced interest in energy efficiency actions in buildings. **Therefore, the JTF should fill a significant gap in saving, self-generation and energy upgrading of buildings in order to address the problem of energy poverty.**

Transition regions will lead to job losses in lignite-linked activities, but at the same time create needs for the retraining and skills development of human resources in order to be used in the new activities that need to be developed, as will be explained in Section 2.2. According to the JDT Plan, the immediate reskilling needs relate primarily to the temporary staff of PPC (~800 persons), the employees of PPC contractors (~1 850 persons), other employees in sectors related to lignite activity and part of the regular PPC staff (57 % of the 3,300 people) who will not have acquired a pension entitlement by 2028. Specialised in new activities will also require a large proportion of the unemployed in Western Macedonia.

According to the OECD[2], the region has extremely low R & D spending compared to the national average in all subcategories of the private, public and educational sectors. Even PPC makes low investments in R&D and innovation (Annex, Figure 2.2) when compared to leading European utilities in the energy sector, resulting in a slow differentiation from conventional generation methods (World Bank Group, 2020). These figures show the very limited capacity of the local research and production base to innovate and the limited capacity of the public and private sectors to support innovation, structural adjustments and competitiveness. De-lignitisation will exacerbate the problem of low investment/disinvestment in innovation, with further adverse effects on the transformation of the

economy, the competitiveness and attractiveness of the region as a place of residence and work.

## 2.2. Development needs and objectives by 2030 in view of reaching a climate-neutral economy of the Union by 2050

Reference: point (d) of Article 11(2)

### Restructuring of the region's production system

Lignite-fired activity created monoculture in the production system of the Region of WM & limited positive spillover effects, leading the rest of the economy to be unable to absorb excess labour at this stage and to create sufficient jobs in the future.

The restructuring of the production model of the Region of WM is considered to be crucial, in line with: (a) the World Bank (WB) study on the possibility of exploiting the region's energy identity, the favourable global situation in the RES & energy storage sector, to make it an **alternative energy hub**, (b) the JRC's approach[1] on the advantages of expanding the region's energy value chain.

The skilled labour force of the Region of WM, the key position in the country's energy network, the significant unstructured areas (e.g. lignite fields), the rich water potential confirm the potential for RES, storage & production of green H<sub>2</sub>. In lignite-fired plants, e.g. 'Ptolemaida V', modernisation & lignite-free operation will help save a significant number of jobs[2]. Part of the workforce will be employed in land remediation, RES & storage activities, complementary activities in the energy sector value chain & actions: (i) energy efficiency/self-generation (ii) district heating & (iii) green transformation of enterprises. In energy investments, the EU's final "REPowerEU" plan for affordable, secure and sustainable energy will be adopted.

EU regional aid decisions adopt a network of incentives for modernisation, diversification, strengthening the competitiveness of enterprises & attracting new investments. Existing businesses will be supported in modernising or diversifying them. Support will be given to the creation of new businesses **in dynamic sectors of national importance** of the new National RIS3 (e.g. industrial processes for energy, battery materials, etc.), targeted by the Regional RIS under preparation, in the areas of: energy, R & D, environment & circular economy, agri-food, health, tourism, culture & creative industry. Culture projects are key to attracting domestic & incoming tourism & linking to a wide range of economic activities to produce goods/services to visitors in an area. Finally, attracting innovative productive investments to companies other than SMEs will be supported.

The local economy's lag in innovation & digital entrepreneurship is evident. The role of RTDI & connecting the local university & research centres to businesses is crucial. Supporting RTDI activities for the development of businesses, products & services with high added value, job creation above average wage levels, the promotion of digital entrepreneurship to enhance the openness of enterprises & their integration into international high value chains in the post-COVID 19 era is of great importance. The World Bank study highlights the importance of creating an innovation ecosystem in the Region of WM, with a focus on green energy, IT and agri-food. The Innovation Zone (ZZ), which will be developed on the Kozani-Ptolemaida-Amynta-Florina axis, will be an umbrella body for the development of

infrastructure and actions for innovative entrepreneurship & will be a key driver for changing the economic and production model in the post-lignite period. The guidelines of the JTD Digital Transformation Strategy are being implemented, to improve the attractiveness of cities as places of residence, work & business by attracting investment & highly qualified workers (smart communities).

### **Support for human resources & communities affected by de-lignification**

The very high % of unemployment in the Region of WM makes it necessary to take immediate action to train and retrain the unemployed & the existing workforce in sectors with absorption capacity and prospects in the region, which are relevant to the existing skills of workers affected by de-lignification. They concern the renovation and energy efficiency of buildings & infrastructure, the installation and maintenance of RES, the installation of energy storage systems, in the light of the new projects planned in the area[3], the environmental restoration of land and other “green professions”.

It is crucial to upgrade employment services, which will lead to a reduction in the time spent by an unemployed person, as it will contribute to improved mobility between sectors and diversification of the local economy.

The aim is to strengthen women’s participation in the labour market and female entrepreneurship, through targeted training programmes in dynamic sectors of economic activity (R&D, agri-food, tourism/culture, creative industries, etc.) but also support social infrastructure for childcare and elderly care.

Particular emphasis will be placed on recording and monitoring the specific conditions and parameters that shape/affect the professional and social integration of local residents, contributing to more targeted actions for social cohesion.

The JTF will target & improve the attractiveness of neighbouring lignite mines & community power plants as places for business development in new sectors (e.g. tourism), labour & housing as they face the twin problems of socio-economic and environmental degradation more acutely.

### **Mitigation of negative effects on the environment, health & safety from lignite mining/combustion & prevention of the creation of new pollution factors**

It is crucial to restore lignite-fired land and implement projects that ensure a shift towards a new production model, which will not give rise to other environmental problems (recycling of RES by-products, storage, etc.). The adaptation of land also seeks to promote the area’s diverse natural environment (e.g. the development of green spaces, lakes, forests) and to create suitable infrastructure for attracting and developing new economic activities.

The Table 2.2 of the Annex presents the intervention logic developed above (**needs, objectives, results**) & link to the priorities of chapter 2.4.

Based on the initial estimates of the IOBE, the JTF will have created and supported directly, indirectly & induced ~10 150 jobs, one year after the completion of the PP (2030).

### 2.3. Consistency with other relevant national, regional or territorial strategies and plans

Reference: point (e) of Article 11(2)

The development needs, the economic and business prospects — potential and the expected objectives set for the TTF, are aligned with the following established national and regional strategies and plans:

**National Research and Innovation Strategy for Smart Specialisation 2014-2020:** The strengthening of the contribution of RES to the energy mix and the development and upgrading of energy infrastructure, the promotion of information and communication technologies, environmental research and innovation, the strengthening of the agri-food sector, the development of cultural and tourism products are reflected in the national targets set by the strategy, as well as in the objectives of a just transition of the Region of WM. Note that the conclusions and proposals of the **National Research and Innovation Strategy 2021-2027** and the **Smart Specialisation Strategy 2021-2027** are taken into account, both as regards the areas of specialisation and the proposed actions. In cooperation with the SGEK, a programme of actions has been drawn up and included in the TJTP and the JDT Programme.

**Draft Smart Specialisation Strategy for 2014-2020:** It is in line with the Region of WM as regards the transformation of the energy mix, the further development of district heating and the decontamination of the land currently located by lignite-fired plants, and the strengthening of the diversified production model (information and communication technologies, agri-food). Note that the conclusions and proposals of the **Regional Strategy** will be taken into account.

**Smart Specialisation 2021-2027**, following its adoption/finalisation.

**National Circular Economy Strategy:** The development of the circular economy and the transfer of new knowledge and innovative methods and technologies, particularly in the energy sector, are key points of convergence of this national strategy with the strategy and development objectives of the transition of the regions concerned.

**National Energy and Climate Plan (NECP) 2030:** The focus on the clean energy sector and the transformation of the energy mix is reflected in both the NECP and the development needs for the just transition of the Region of WM. A key point of convergence is to ensure the development of RTDI in the energy sector.

**Long-term strategy for 2050:** The common objectives of the WM's strategic and just development transition are to reduce pollutant emissions, enhance the contribution of RES to the energy mix and the circular economy, stimulate entrepreneurship, industrial production and business competitiveness.

**National Air Pollution Control Programme 2020-2029:** Policies and measures are key development priorities of the just transition of the Region of WM and aim mainly at the transition to an era of clean energy and less pollutant emissions.

**National Development Programme 2021-2025:** The policies set out by the Programme shall be aligned with the needs and objectives of the just transition of the Region of WM in the areas of, inter alia, green growth, enhancing employment and quality training of human capital, developing entrepreneurship and innovation as well as integrating new knowledge and digital transformation.

**National Biodiversity Strategy 2014-2029:** It aims to ensure the protection of ecosystems and natural wealth and a more efficient use of resources, priorities directly linked to the just development transition of regions affected by de-lignification. It also seeks to develop sectors such as agri-food and tourism.

**Development plan for the Greek economy:** A key objective is to systematically increase incomes by implementing economic policy actions to enhance productivity, labour and investment (Development Plan for the Greek Economy, 2020). These objectives are also reflected in the context of the just development transition of the region of Western Macedonia.

**National Recovery and Resilience Plan:** Its priority axes of green growth, digital and economic transformation and boosting employment are in line with the development objectives set in the context of the just transition of the region of Western Macedonia.

**National Waste Management Plan (ESDA):** It sets out the management perspectives until 2020 in line with the EU strategy reflected, inter alia, in the Europe 2020 Strategy (Greek Republic — National Waste Management Plan, 2020). The decontamination of the land currently located by lignite-fired plants is a key objective for the protection of the environment and natural wealth.

**The Regional Waste Management Plan (PESDA) for Western Macedonia** for the transition areas under consideration, the specialisation of the National Plan, which reflects the need to protect natural wealth and to decontaminate land through a more rational use of resources and waste.

**Regional Social Integration Strategy (PEESKE) of Western Macedonia:** The common development objectives of this strategy and the just development transition of the Region of WM include ensuring social welfare and ensuring social cohesion by reducing unemployment and social and labour integration.

**Digital Transformation Paper 2020-2025:** It concerns the country's strategy for the transition to Digital Greece. The TIM requires a digital transformation in all sectors of the economy, administration, but also education and social services.

**Western Macedonia Sustainable Urban Development Strategy Operational Plan:** The joint development policies of the project with the IFR are the stimulation of entrepreneurship and the creation of new jobs, the development of social and economic protection structures, green and sustainable development, the enhancement of cultural heritage, the upgrading of existing ones, but also the creation of new infrastructure.

**Integrated Spatial Investment (IPI) for the development of the lakes in Western Macedonia:** The priorities set under this territorial investment concern the protection of the environment and the proper use of environmental resources, while at the same time strengthening local economies.

**National Action Plan on the Rights of Persons with Disabilities** (which was the responsibility of the Minister of State). Individual targeted actions, actions and interventions will be carried out, in line with its content, and the Management Authority of JTD Programme, will participate in the Thematic Network on Disability Issues foreseen to operate the 2021-2027 PP.

## 2.4. Types of operations engaged

Reference: point (g-k) of Article 11(2) and Article 11(5)

### 2.4.1 Categories of indicative operations

The most important interventions in the following 5 priorities:

#### 1. Strengthening & promoting entrepreneurship

##### Research — innovation — advanced technologies

This includes: support for start-ups/existing innovative businesses, creation of incubators/business accelerators, measures to contain/attract scientists.

**Flagship projects** for productive transformation & the region's transition to RTDI & the energy sector: (a) Innovation Zone, (b) Green Data Centre & WM supercomputer, (c) Innovation Hub for Green H2 & Energy Storage in WM.

##### Competitiveness of SMEs and vSMEs — Digital transformation of businesses

Establishing & supporting the competitiveness of VSEs & SMEs in all territorial sectors (Chap. 2.1, 2.2),

including the green & digital transformation of businesses.

#### Entrepreneurship infrastructure & mechanisms

Upgrading existing ones, supporting the creation of new organised spatial receptors of productive activities on rehabilitated land & facilities. **Flagship project:** creation of an eco-industrial area.

#### Significant scale investments

Support their implementation to strengthen the energy pillar & vertically integrate the value chain, as well as & create other productive pillars & value chains beyond energy, to increase job creation.

## **2. Energy transition — climate neutrality**

#### Energy efficiency

Support to households, public/municipal buildings & infrastructure, office & production unit buildings either through energy communities or individually.

#### Clean & Smart Energy

Increasing self-generation from RES (Green Cities) — Smart Energy Network (SEN) — Energy Communities.

Installation of heat pumps for heating/cooling and/or RES electricity generation systems, in line with the “REPowerEU” standards, provided that there is no overlap between the actions.

Development of long-term (in particular) clean energy storage infrastructure.

Support the upgrading of electricity grids to increase installed RES capacity.

Actions to create charging/refuelling points for electro-mobility/clean fuel mobility.

Support for construction: a) small biogas plants using livestock, poultry and agricultural residues; (bi) biomass plants for energy & district heating & bii) biomass management centres, in full compliance with RED II, the ‘cascading principle’ in its revision proposal, the LULUCF Regulation, the NECP, the Circular Economy Strategy, the 2050 climate neutrality objectives. Biomass is residual from forests or agricultural residues. The dispersal of biomass management centres achieves the decarbonisation of imported biomass, increases its economic viability, reduces distances from the collection sites and reduces the energy & carbon footprint. Creating new jobs, as the sector is labour intensive.

## **3. Land use repurposing — circular economy**



#### Adaptation of land & installations in lignite fields

Support for actions for the repurposing and re-use of degraded land and facilities in the Kozani & Florina Regional Units. The actions relate to the development of rehabilitated land that will become the property of the State & the restoration works will have been carried out by Tama. Recovery. They mainly concern (a) green infrastructure, such as: flood protection projects, terraces for cultivation, restoration, management & monitoring of biodiversity (except PAF), natural resource efficiency infrastructure, in particular water & b) repurposing civil works such as: access facilitation infrastructure, networks & infrastructure of a public nature deemed necessary for the proper functioning of business parks & other investments/activities within the perimeter of the former lignite mines, etc.

Water management investments shall be eligible for support from the RSPM only where they are linked to land repurposing.

#### Circular economy & rational use of natural resources

Support investments for reuse, repair & recycling of waste, in relation to emerging value chains and new productive investments.

### **4. Just labour transition and empowering human capital**

#### Immediate response to the effects of de-lignitisation on the labour market/promotion & strengthening of employment

Support & promote employment for people affected by de-lignitisation, at the risk of losing jobs or in unemployment.

#### Skilling & re skilling of human resources/adaptation of workers & enterprises

Cultivating new & upgrading existing skills of human resources, in areas of: RES, environmental restoration, waste management, industrial specialisations depending on new investments.

#### Socio-economic inclusion/Social care & welfare infrastructure

For vulnerable population groups: implement specialised advisory support and empowerment programmes at local level, strengthen the relevant infrastructures for their socio-economic integration.

#### Infrastructure for vocational education & training

Upgrading & modernising infrastructure for vocational education and training. **Flagship project:** ‘Green School’ of the OAED.

Lifelong learning programmes for the environment, the green economy, digital skills & entrepreneurship

## **5. Small-scale integrated interventions**

### Quality of life & integrated development interventions in urban & rural areas

Financing of interventions in the Regional Units of Kozani and Florina identified through integrated territorial strategies and concerning the implementation of complementary interventions in the Lakes & River ITI. Focusing on measures promoting two-pack tourism-culture & improving the quality of life of residents (restoration of archaeological or cultural sites within lignite mines to develop alternative economic activities, digital applications, promotion of sustainable mobility through soft traffic zones & roads, cycle paths, etc.).

**Area of application of a set of interventions:** Total WM, with the exception of priorities 3 & 5 relating to the Kozani & Florina Regional Units.

### **2.4.2 Productive investments in enterprises other than SMEs**

These investments are essential for the implementation of the Territorial Plan as they contribute to the vertical integration of the energy value chain & the productive diversification of the area, which has hitherto been based on monoculture.

In WM it is estimated that 10 638 jobs will be lost by 2029 (directly, indirectly & induced). Initial estimates suggest that the JTF resources directed towards operations to support entrepreneurship and productive investments in the WM will be generated and supported by around 8 500 jobs as long as productive investments by large enterprises are not supported. Large productive investments by large enterprises, where the aid intensity due to higher capital expenditure will be considerably lower (~35 % compared to 60-65 % in SMEs), will lead to a higher leverage of private capital and are expected to be created and supported in the PP of approximately 10 150 jobs. For example, on the basis of data from the proposals submitted (i) to the open call of the JDT Technical Committee to private individuals and (ii) under the JDT plan, four significant productive investments in enterprises other than SMEs, which have submitted a proposal, create, if implemented, 1 020 jobs during **construction** and 1 350 during **operation**. The figures do not include the indirect and induced jobs created by the operation of these investments.

Three of the companies concern the green industry/clean energy sector. The 4th is not directly relevant to the energy sector, but one of the dynamic sectors of national importance (Chap. 2.2), contributes to diversifying the development model in the agri-food sector & creating new jobs.

All enterprises contributing to the transition to a climate-neutral economy by 2050 and not related to

relocation.

In detail, the companies (section 2.4) concern:

- i) production of new generation lithium batteries: CAPEX EUR 900M, 650 during **operation**, 500 during **construction**, benefits: potential for export, integration of Industry 4.0 technologies, potential for further development of electro-mobility, as batteries will be dedicated to specialised electro-mobility sectors (overloaded vehicles, robotic engines, shipping, etc.), strengthening of energy storage sector, possibility to work with WM University to develop research programmes on energy storage
- ii) energy storage in the WM: CAPEX EUR 280M, 100 during **operation**, 300 during **construction**, benefits: improving energy efficiency in final energy consumption, developing smart energy systems, grids and storage equipment at local level, promoting energy efficiency measures, supporting the development of innovative clean technologies.
- iii) production of green H2: CAPEX EUR 1 000M, 300 during **operation**, 150 during **construction**, benefits: improving energy efficiency in final energy consumption, developing smart energy systems, grids and storage equipment at local level, promoting energy efficiency measures, supporting the development of innovative clean technologies.
- iv) development of a smart hydroponic unit: CAPEX 100 MEUR, 300 during **operation**, 70 during **construction**, expected benefits: sustainable development, efficient management of natural resources, attracting young farmers & facilitating business development in rural areas.

#### **2.4.3 Investments in undertakings to achieve the reduction of greenhouse gas emissions from the activities listed in Annex I to Directive 2003/87/EC;**

No relevant investments in this category of enterprises have been recorded so far.

#### **2.4.4 Synergies & complementarity with JTM pillars**

Pillar 2 will be used in all forms of credit enhancement for (i) microfinance of vSMEs & (ii) enhancing investments in key areas to achieve the objectives of the transition.

Pillar 3 will be used for public investments that do not generate a sufficient revenue stream (e.g. energy and transport infrastructure, networks, green mobility, energy efficiency, RES investments, etc.) & in projects enhancing the economic diversification of territories affected by the transition & are complementary to the JTF (e.g. new road and rail projects or/and reconstruction & improvements of existing ones, water supply infrastructure/networks, irrigation etc.). A Memorandum of Cooperation has been signed between the Greek State and the EIB for support through a loan facility by the EIB & EU grant (representing 25 % of the loan). 2025 is the deadline for the submission of a proposal for the national share reserved for Greece.

Finally, technical assistance and advisory services provided by the JTM will be used, primarily through JASPERS/JTF assignments, for projects: (a) Pillar 1 (b) in JTD territories supported by other programmes/financial instruments other than JTF, ESIF and supporting the achievement of the JTF objectives.

#### **2.4.5 Synergies & complementarity with other programmes**

Synergy and complementarity with the ROP WM and the related sectoral programmes have been thoroughly discussed with the competent MAs.

##### **Synergies with the Recovery Fund (RF)**

Ensure the existence of synergies and complementarities of the JTF with the RF, on restoration & repurposing of land transferred from PPC & establish separation rules/criteria to avoid overlaps as follows:

(a) The RF finances only land **restoration** works (i.e. the proper preparation of soils as a basis for receiving new land uses & the resulting economic activities). The most important general categories of works/remediation works are: soil stabilisation and formation work, development of new (artificial) lakes, geotechnical & hydraulic work, mapping, inspections, maintenance, decontamination/decontamination of soil, management of waste related to lignite mining, demolition of existing infrastructure, specialised dismantling/removal of equipment, costs related to the management of the restoration works/works.

The final National RRP describes the categories of rehabilitation works/projects that will be carried out.

(b) The JTF typically finances projects necessary for the **repurposing** of these territories as receptors of new economic activities. For this category of projects, see section 2.4.1, pt. 3.

##### **Land Transfer & Principle “Polluter Pays”**

The procedure for the transfer of lignite-fired land from PPC to the Greek State is the subject of the programme. Contract, Article 155/paragraph 3 of Law 4759/2020.

One of the key parameters in this process is compliance with the polluter pays principle by ensuring that the value of the land to be transferred — carried out by an independent valuator — is at least equal to the cost of the required restoration works. (Annex Chapter.2.4)

**Synergy with the Strategic Plan for the Common Agricultural Policy 2023-2027 (CAP SP 2023-2027)**

A national option is to use the CAP SP 2023-2027 & encourage green investments and rural development practices to serve the objective of diversifying the economy of the affected areas in areas of common interest with the JTM.

### 3. Governance mechanisms

Reference: point (f) of Article 11(2)

#### 3.1 Partnership

The JDT Plan Steering Committee, in cooperation with the regional authorities, organised the partnership under Article 8 of the CPR in order to set up an appropriate format involving local government bodies, economic and social partners, representatives of scientific and academic bodies, research centres, chambers, labour centres/employees' associations, etc.

Two consultation cycles with a specific structured agenda — a questionnaire to facilitate the bodies from 8 February 2021 to 19 March 2021 and from 8 June 2021 to 25 June 2021 — were carried out for the preliminary draft of the WM TJTP.

There has been a large response from the stakeholders, both with replies to the questionnaires and by means of letters presenting relevant proposals. The main changes made to the TJTP concern the enrichment of data on the basis of the studies carried out, the mapping of the timetable for transition, the strengthening of statistical processing and the methodology for identifying the affected soils, clarifications on new land uses and land restoration, the strengthening of intervention logic by highlighting the strategic options for mitigating the impact of the transition, a better reflection of the indicative interventions, the introduction of flagship projects and the involvement of large enterprises, and the reform of governance to reflect the involvement of local actors in the preparation and implementation of the TJTP.

The involvement of the local actors of the partnership in the **implementation of the JDT shall** be ensured as follows:

**Establishment of a branch/office of Metavasi SA** in the area of the WM in order to provide technical support to local beneficiaries during the maturity of their projects and the organised reception, information and support of investors in the JDT areas.

**Establishment of JDT Evaluation Committees**, in application of the provisions of the Law 4872/2021, Article 14, the Committee is responsible for evaluating projects, investments and development projects of interest to the public purse and in which one representative from each affected region must participate.

A **Regional/Territorial Committee** shall be set up, in accordance with the models laid down in Article 64 of Law 4914/2022, headed by the local authorities, **with an advisory role** for the JDT governance structures and the Committee of the Regions and the Monitoring Committee of the Just Development Transition Programme. The Regional/Territorial Committee will also promote **dialogue and exchange of views** between stakeholders at local level.

An authorised officer for Just Transition will be designated **in the** MA of the WM ROP.

**Establishment of an office to the JDT Observatory** in the Region of the WM.

### **3.2 Monitoring and evaluation**

The control of the transition procedure is carried out by the Special Authority JDT under the Ministry of Development and Investments (Law 4872/2021) and is common to all affected areas. The Managing Authority will carry out the systematic monitoring of the objectives set and will provide reliable information, assessment and analysis on the type and extent of socio-economic changes in the affected areas, with a view to taking corrective measures and/or adjusting policies.

### **3.3 Coordination and monitoring body/bodies**

The organisational structure of the domestic transition process shall include:

**Government Committee JDT Plan:** GC is the supreme political body of the national JDT Plan whose main purpose is the approval and monitoring of the JDT.

**Coordinating Committee:** CC supports GC in the specification of the JDT policy for the preparation and implementation of the national JDT Plan.

**Special Authority for JDT:** Its main responsibility is the central planning and programming of JDT policies, the monitoring and evaluation of the procedures for the implementation of projects, investments and development plans, and the management and coordination of the use of all available national or European sources of funding. The Special Authority comprises 4 distinct structures: the Managing Authority for the JDT Programme - ESPA, the Directorate for Strategic Planning and Coordination of Financing, the Directorate for Administrative Support and the Legal Support Department

**JDT Observatory:** A stand-alone section of the JDT under the command to monitor the achievement of the objectives and the timetable for the implementation of the forecasts of the JDT plan. The Observatory mainly collects and processes quantitative and qualitative data on local/regional actions in transition areas;

**Metavasi S.A.** A legal entity established by Law 4872/2021 is owned by the broader public sector and will be owned by the land that PPC will transfer to the Greek State. Metavasi SA will take over all the processes for the implementation of investment projects/projects within Delignification Zone and the role of the beneficiary of the JDT Programme with regard to the repurposing and re-use of the land allocated.

**Monitoring Committee JDT Programme** : The leading body for the involvement of partners in the implementation, monitoring and evaluation of the JDT Programme is the Monitoring Committee to be set up in accordance with the requirements of the CPR and Law 4914/2022.



#### 4. Programme-specific output or result indicators

Reference: Article 12(1) JTF Regulation

Justification for the necessity of programme-specific output or result indicators based on the types of operations envisaged

Based on the mix of indicative actions/operations per priority, as reflected in Chapter 2.4 of the Territorial Just Development Transition Plans, there is a need to create a small number of specific output and result indicators in addition to the common indicators of Regulation 1056/2021.

In detail, the justification for the specific indicators shown in Section 4 of the Territorial Just Development Transition Plans is reflected in the Methodological Document of the Performance Framework for the JDT Programme by indicator.

Reference: point (g-k) of Article 11(2) and Article 11(5)