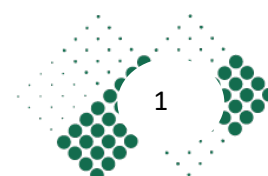


Chapter 2

Territorial report of the Region of Western Macedonia

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2.1 Introduction

Fair transition to the post-lignite era for Western Macedonia aims to create a new productive - consumer model. This new model includes measures such as a series of investments in RES and industrial production, a shift to tourism and the primary sector. The human resources and the dimension of utilisation and upgrading of skills is emerging as a major issue, to ensure and develop jobs and support the transformation of the regional and especially the local development model. Particular reference is made to the cooperation of all stakeholders with clear roles and the development and operation of a flexible and effective governance system (flows and responsibilities). Everyone's contribution should be systematic and supported by a detailed roadmap. An important element in this regard is the correct capture, selection and inclusion of stakeholders in the process of design, implementation and monitoring and the role they can play for the success of the project and the individual support mechanisms. The active involvement of local communities is important and should be strengthened, based on the governance framework.

All the aforementioned objectives are reflected in the strategic documents of the national and regional policy-making, as being described below. The three policy areas, chosen by the region of Western Macedonia, namely Clean energy, Energy markets, Economic transition towards a low-carbon economy, are in line with those documents.

The aim of the present report is to determine whether the strategic planning of the region in the post-lignite era incorporates the perspective of responsible research and innovation, both at national and regional level. To achieve this, various documents were studied, and as a general conclusion it is reflected that the RRI-AIRR approach is applied to a significant degree and at the policy level in most of these documents, however there are specific keys and dimensions that are lacking in implementation, so it is suggested that they be strengthened in both existing and future policies.

The following **national-level documents** are examined:

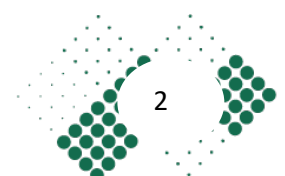
- National Energy and Climate Plan
- Just Transition Development Plan of lignite areas
- PPC Strategic and Business Plan 2018-2022

The following **regional-level documents** are examined:

- Road Map for a Managed Transition of Coal-Dependent Regions in Western Macedonia
- Regional Operational Program for Western Macedonia
- Stakeholder Engagement Plan (SEP) for Western Macedonia
- Just Development Transition Plan

2.2 Documentary Analysis of National Strategic Documents

RRI keys and AIRR dimensions reflected in the National Energy and Climate Plan: open access, public engagement, inclusiveness, participatory governance



The Greek government's strategic plan for climate and energy concerns is the National Energy and Climate Plan (NECP), which lays out a detailed pathway for achieving specified energy and climate goals by 2030. The NECP published in 2019 intends to contribute to the Commission's new green agreement, which is expected to include new procedures and financial priorities for supporting energy and climate transition while simultaneously enhancing the European economy's competitiveness. The NECP's objectives have been quantified and cost-accounted, and intermediate milestones have been established, allowing for tracking of progress toward the goals and linked to the effective adoption and implementation of a combination of policies and measures. These goals and measures will be used to identify and emphasise the need for synergies and complementary activities across all sectors and branches of the Greek economy.

RRI keys reflected in the National Energy and Climate Plan

Open Access: The public has access to the spatial planning authorities' own maps. The purpose is to make data available to users. Certain data and maps are accessible to the general public. The Geoinformation Map of the Energy Regulatory Authority was implemented in the context of the development of the Geospatial Information Infrastructure. The implementation is part of the broader policy of upgrading digital services. It adopts the principles of open access and interoperability in the provision of information. The data, metadata and services are available for free to the public and stakeholders (<https://geo.rae.gr/>).

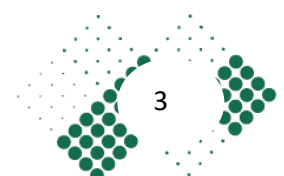
In addition, the NECP's Renewable Energy Sources (RES) Account already being implemented has the monthly record of the detailed and segregated by category and/or technology financial inflows and outflows required for the function performed by the competent body (RES and Guarantees of Origin Operator - DAPEEP), which is posted in the form of a monthly bulletin on a specific publicly accessible webpage that ensures the transparent operation of the Special RES Account.

Public engagement: The National Energy and Climate Plan (NECP) is the most formal expression of the Greek government's **public engagement** in drawing up a roadmap for achieving the climate and energy targets by 2030. Consultation with stakeholders, including the social partners, the civil society and the general public, were carried out at different stages of the process of drawing up the NECP. In fact, in order to activate and involve the local and regional authorities in the consultations, a workshop was held during which a questionnaire was distributed, including questions related to the regional dimension of energy and the climate plan, as well as the challenges and obstacles related to its implementation. Through the Operator DAPEEP public consultations are held for the matters of Renewable Sources and relative aspects and through this process public engagement is also ensured.

AIRR dimensions reflected in the National Energy and Climate Plan

Inclusiveness: The NECP has established policies and measures for promoting its goals of energy efficiency. Promoting research and innovation in the energy sector requires the active involvement of all market players. Synergies influence the strategic decisions made by companies in the sector (power transmission and distribution), as well as the policies pursued by public bodies and authorities and the mechanisms used to finance the activities taken by the enterprises. Horizontal support policies for promoting inclusiveness at the moment include:

1. A monitoring and control mechanism are established to maximise synergies between energy, research, and competitiveness programs, as well as providing the required resources to support it.



- Partnerships between all stakeholders by supporting advisory and networking actions among stakeholders to facilitate the transfer of know-how and the maximisation of synergies are being promoted.

Anticipatory governance: So far from the beginning of the implementation of the National Energy and Climate Plan some examples of anticipatory governance principles reflected in the NECP can be outlined. The Renewable Energy Sources (RES) Account support scheme's long-term viability has now been accomplished by recent legislation aimed at ensuring sufficient and consistent inflows of financial resources as well as streamlining the inclusion of key revenue categories. DEDDIE (which is the Hellenic Electricity Distribution Network Operator) has already completed preliminary studies to determine the distribution network's required enhancements, including the number of high/medium voltage transformers that will be congested and thus require enhancement, as well as the corresponding distribution lines that will exceed the RES feed-in capacity and thus require enhancement. The goal of this study was to develop a methodology for estimating expected investment costs, to identify geographically critical areas of intervention in terms of distribution network enhancement, and to consider the demand for simultaneous inclusion of new RES projects when assessing substation enhancement.

RRI keys and AIRR dimensions reflected in the Just Transition Development Plan of lignite areas (SDAM): public engagement, open access, science education, inclusiveness, participatory governance, responsiveness

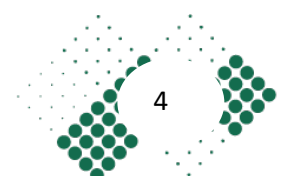
The Just Transition Development Plan of the lignite areas of Greece aims at creating strategic development opportunities for the rebirth of local economies, securing jobs, and creating new ones. It is based on five pillars of development, supported by the improvement of infrastructure and the alternative use of the lands currently occupied by lignite mines. The five pillars are green energy, "smart" agriculture, sustainable tourism, handicrafts and industry and finally digital economy and education. Since March 2020 significant work has been produced in a short period of time as it will be described below RRI-AIRR approach is embedded in the development of the plan.

RRI keys reflected in the Just Transition Development Plan of lignite areas

Public Engagement: Public consultation has been a very important tool in the design of the strategic plan and the intervention measures. In fact, in combination with the open data, an open public consultation took place where all stakeholders could express their views. To ensure the participation of as more as possible stakeholders, there was contact with all stakeholders and information on where they can find the plan online and how they can respond. The institutional public consultation officially kicked off a constructive dialogue with all stakeholders and the public on the proposed master plan, with the goal of enriching and co-forming the final master plan.

Open Access: The consultation website as well as the Steering Committee website were two of the basic online sources of SDAM and all the supporting material.

Science Education: The contribution of the academic community to the progress of the project has been very important so far for the preparation of works related to spatial planning. In addition, there was continuous and close cooperation to co-shape the role that the institution could play, both as a re-skilling body and as a development body of the region. A variety of research from the scientific community and prestigious institutions were used in the development of the master plan. These investigations were utilised for a variety of purposes,



including recording the current situation, doing methodological analysis, and gathering recommendations for the next day.

AIRR dimensions reflected in the Just Transition Development Plan

Inclusiveness: The SDAM has participatory governance model, based on the collaboration and involvement of many stakeholders. Open invitations have been published for the submission of non-binding investment proposals and development plans by non-public sector bodies. During the master plan's development, a constant and open communication with stakeholders in Western Macedonia and Megalopoli was maintained. Proposals and local master plans were gathered and considered by a number of local entities during the development of the master plan.

Anticipatory governance: Support of companies affected by delignification, as well as the reinforcement of current and future investments, is expected to be achieved through the provision of unique institutional incentives (financial, tax, insurance, and licensing), as well as the use of all available resources. In this context, there is a comprehensive package of fifteen individual incentives, categorised into the following three groups:

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

Responsiveness: A number of studies has been carried out addressing the analysis of economic activity, the social conditions and the energy profile of the area. The results of these studies constituted an important source of information for the preparation of SDAM. The National Plan for Just Development Transition has also satisfactorily integrated the responsiveness dimension, as it has introduced new regulations and legislation tailored to the needs of the transition.

RRI keys and AIRR dimensions reflected in the PPC's Strategic and Business Plan 2018-2022¹: science education, anticipatory governance

The Greek energy market is quickly changing across the value chain (lignite plant divestment, retail market opening, and adoption of the new target model), and the Greek electrical grid is likely to be extremely constrained, owing to lignite plant decommissioning. Within this framework PPC has established its Strategic and Business Plan, which will safeguard its resilience and transform it to a modern and cutting-edge utility. Its major strategic priorities are Renewables (RES), Distribution assets, Retail and New Downstream, Mines & conventional generation, Central & Support functions, International Expansion, New Services and Products and

¹<https://www.dei.gr/en/anakoinwseis/xrimatistiriaka-etairikes-prakseis-katavoli-merismatos-ka/xrimatistiriakes-anakoinwseis-2018/i-dei-anakoinwnei-to-stratigiko-kai-epixeirisiako>

a Regulatory Agenda. The Business Plan does not refer to RRI framework but pays attention to the issue of science education as well as to the dimension of anticipatory governance.

RRI keys reflected in the PPC's Strategic and Business Plan 2018-2022

Science education: The plan focuses on excellence and investments; therefore, a basic objective is the increase of qualified researchers. Moreover, it targets to the development of new research projects in international markets.

AIRR dimensions reflected in the PPC's Strategic and Business Plan 2018-2022

Anticipatory governance: New green investments will be made considering renewables' projected attractiveness compared to conventional power generating sources, as well as continued trends in electricity demand growth, energy efficiency measures, new technologies, and decarbonization. Under the strategic and business plan, PPC repositions the go-to-market strategy by focusing on retaining high-priority customer segments, revising its branding and pricing, and expanding its core activities to offer a wider range of energy services and products, including electricity-gas double play and energy efficiency services. In addition, through the plan the increase of the share of RES in PPC's energy mix by approximately 600 MW by 2022 is being addressed, which will come mainly from Wind and Photovoltaic, given their expected attractiveness to other energy sources, through a significant increase in the size, number of projects and RES capabilities, with specific objectives in terms of power and efficiency. Target for participation of RES in the total power of PPC at a rate of 20% - 25% by 2030-2035.

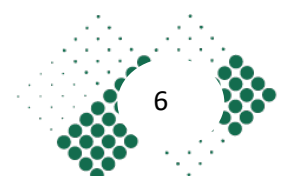
2.3 Documentary Analysis of Regional Strategic Documents

RRI keys and AIRR dimensions reflected in the Road Map for a Managed Transition of Coal-Dependent Regions in Western Macedonia: Science Education, Gender Balance, Open Access, Anticipatory governance

In Western Macedonia, like in any other coal-dependent area, planning and implementing a well-managed transition will be a multi-year and multi-level effort. In the first phase, governance structures should include multi-level participation from local, regional, and national level authorities, as well as other stakeholder organizations, to ensure that those most affected buy-in to plans. The Road Map proposes four pathways going forward with the transition path from coal dependence. These routes highlight the region's current characteristics and strengths. They address the lack of key enabling conditions that allow for the growth of entrepreneurship, innovation, and human capital. All the proposed transition paths are important and interconnected, and they indicate the needed diversification for the local economy to move away from relying solely on energy to generate value across multiple sectors.

RRI keys reflected in the Road Map for a Managed Transition of Coal-Dependent Regions in Western Macedonia

Science Education: On the forefront of developments the Digital Region Transition Pathway aims to hasten the digital transformation of the region's urban and rural regions, which is a critical instrument for keeping young and fostering economic growth. By 2030, this transformation route aims to convert Western Macedonia into



Greece's most e-connected, high-tech, futuristic area. The entire region currently is moving in this direction, and this can be seen from the creation of a wide range of new internet-based businesses to a greater emphasis on STEM and robotics instruction in public schools. Infrastructure and expertise to support STEM-focused activities are included in the investments.

Gender Balance: This strategic plan, prepared by the World Bank, has significantly ensured **gender equality** in the composition of the international research team, since such kind of International Organizations include specific measures for promoting gender equality. Moreover, an action proposed in this document towards gender balance, refers to the organization of at least one competition a year to support projects to narrow the potential negative impacts on women because of the transition.

Open Access: Open Access component is also found, as the findings of all relevant studies with their appendices are available online and free of charge for readers which also improves the transparency and accountability. The establishment of a national platform for dialogue and consultation on post-lignite transition is also proposed in the road map.

AIRR dimensions reflected in the Road Map for a Managed Transition of Coal-Dependent Regions in Western Macedonia

Anticipatory governance: So far from the beginning of the strategic implementation of the Road Map's milestones the Land Use Repurposing Assessment (LURA) methodology that has been developed has been an objective tool used for the determination of post mining land use with a high spatial resolution and a high degree of reproducibility. This established methodology provides guidance on the sorts of post-mining uses to consider for a given parcel of land, but it does not prescribe a specific investment scenario. As a result, it is not a stand-alone application. In a spatial planning endeavour, for example, this is more on a more granular level. Other planning instruments are linked to LURA that are higher-level planning instruments with broader geographic scopes connected to planning instruments of economic development plans of adjacent municipalities. The dimensions of anticipatory governance through the transition's road map can be seen in the present Elefsina pilot, which is being implemented in the towns of Elefsina, Asporpyrgos, and Mandra. Wage subsidies, entrepreneurship, and demand-responsive training were the three primary Active Labour Market Programs (ALMPs) (theoretical training and internship). A demand-responsive training (DRT) component was included to make regionally appropriate professional skills development training available to registered jobless participants on a continual basis. Data from the local labour market is utilised to determine skill shortages and company requirements. The programs developed to meet these demands are modular and based on industry standards recognised by employers and industry groups. Based on the Road Map of the coal transition in Western Macedonia there are four transition pathways. These pathways emphasise existing attributes and assets of the region and are:

- Alternative Energy Transition Pathway
- Start-up Economy Transition Pathway
- Digital Region Transition Pathway
- Green Region Transition Pathway



Underpinning these four pathways, six indicative pilot projects are in progress. Project themes range from building an alternative energy cluster to digital twinning of rural areas to agri-business development to circular economy businesses.

Recommendations

This plan does not reflect to the degree that it should, the element of public engagement from the Greek government's side, as its implementation was funded by the European Commission and drafted by the World Bank as a draft text of a Roadmap for Transition. The document shows the importance of involving all stakeholders from the quadruple helix and proposes public consultation on all relevant documents and studies related to the post-lignite era, as well as the creation of a national platform for dialogue and consultation on post-lignite transition.

RRI keys and AIRR dimensions reflected in the Regional Operational Program for Western Macedonia: **Science education, Open Access, Inclusiveness**

The aim of the program is to contribute to the creation of a sustainable, competitive, regional economy with sustainable jobs, a quality environment and social cohesion. The objectives are to improve the business activity at a competitive level with emphasis on the sectoral and localised specialisation through the smart specialisation strategy of the Region (RIS3); to support the transition to a low carbon economy and promoting adaptation to climate change; to promote sustainable transport and troubleshooting basic network infrastructure; to ensure social cohesion and enhancing sustainable employment.

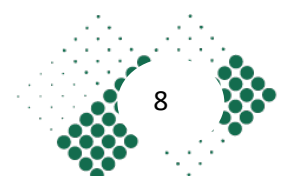
RRI keys reflected in the Regional Operational Program for Western Macedonia

Science Education: Through the Regional Operational Program some worth mentioning indicative actions that have been implemented to strengthen research, technological development and innovation are: The actions to upgrade existing and create new research infrastructure. There has been the creation of a new campus of Western Macedonia for strengthening the research dimension in the region and there has been an upgrade of secondary education infrastructure. In addition, Collaborative and networking actions between research institutions, educational institutions, and companies in priority areas of the Strategic Smart Specialization Plan of the Region has been established along with actions to promote research and innovation in companies in priority areas of the smart specialization strategy plan of the Region.

Open Access: Through the Regional Operational Program there has been an improvement in the access, use and quality of information and communication technologies as well as on publicly accessible information and data to citizens. Four major applications that promote open access has been established in a regional level which are:

- E-government services and applications for citizens and businesses.
- Actions to promote culture and improve tourist traffic.
- E-learning and e-content services and applications.
- Health services and applications - welfare and social inclusion.

AIRR dimensions reflected in the Regional Operational Program for Western Macedonia



Inclusiveness: The ROP has as a separate unit the promotion of social inclusion and the fight against poverty and discrimination, with actions such as enhancing the access of disadvantaged people to the labour market. ROP provided an inclusive model for business support actions for the implementation of innovations and / or research and technology results. This has led to the creation of structures that currently support competitiveness, innovation and business extroversion (incubator, regional structure for business development) networking together various relative stakeholders. Business support actions have led to the creation of collaborative schemes (clusters) and networks with emphasis on priority areas and extroversion-oriented business and cluster support actions with an emphasis on local products and services has been established. Moreover, in the sense of inclusiveness the ROP

Recommendations

There is a need of enhancement of the objectives of Science Education in the context of the actions regarding the Regional Strategies and Action Plans.

RRI keys and AIRR dimensions reflected in the Stakeholder Engagement Plan (SEP) for Western Macedonia: Public Engagement, Open Access, Responsive and accountable governance

The goal of this Stakeholder Engagement Plan (SEP) is to identify, prioritise, and promote consensus and fact-based solutions to the post-lignite transition, including all its consequences for local communities, workers, and the regional economy. It is an important part of the preparations for managing this transition, with the goal of ensuring that informed decisions are made that consider the perspectives of impacted workers and communities, as well as other stakeholders such as industry, government, donors, and non-governmental organisations.

RRI keys reflected in the Stakeholder Engagement Plan (SEP) for Western Macedonia

Public Engagement: Attention has been paid to find approaches and means to ensure outreach and active engagement of particular vulnerable groups such as youth, women and other groups not proportionally represented among existing interest groups. Existing consultative fora and approaches were further mapped and assessed for their utility in the consultation strategy. Institutional public consultations officially initiated a constructive dialogue with all stakeholders and the public on the proposed plan, with the goal of enriching and co-forming the SEP.

Open Access: The government's Action Plan for Open Public Administration comprises commitments structured in three main directions (i) Encouraging public participation; (ii) Open public data; and (iii) Integrity and accountability. Having this in mind, already the national opengov.gr platform can be copied for setting up a similar system by the provincial government, but it would be supplemented by other approaches to disclosure to ensure to ensure broad information sharing across the socially diverse stakeholder group.

AIRR dimensions reflected in the Stakeholder Engagement Plan (SEP) for Western Macedonia

Responsive and accountable governance: So far from the beginning of the implementation of Stakeholder Engagement Plan some examples of AIRR principles reflected in the SEP can be outlined. The first step was made by mapping stakeholders to understand the different stakeholder challenges, positions and roles in the context

of the post-lignite transition and the future regional development strategy. As a next step, stakeholder consultations have been conducted and generally characterised by the following aspects:

- There has been a sustained engagement through the project lifecycle rather than a onetime conversation.
- All the relevant stakeholders have been included in the development process of the transition so far.
- Information sharing and open access of transparent procedures has established a dialogue on how to tackle the given challenges ahead and solutions to those challenges have already started to be in progress that are based on data and research.
- A strong stakeholder communication strategy to sensitise stakeholders has been conducted, and currently there is an ongoing sharing of knowledge and facts between affected parties that increase ownership of agenda by local stakeholders and improve transparency in decision making.

Recommendations

More detailed measures related to RRI keys such as gender equality and science education should be included.

RRI keys and AIRR dimensions reflected in the Just Development Transition Plan: **Public engagement, Anticipatory governance, Inclusiveness**

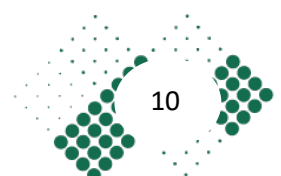
The Just Transition Development Plan for Greece's and especially Region of Western Macedonia's lignite districts intends to create strategic development possibilities for local economies' revival, employment security, and job creation. It is built on five pillars of development, which are bolstered by infrastructural improvements and the repurposing of lignite mine-affected land. Green energy, "smart" agriculture, sustainable tourism, handicrafts and industry, and digital economy and education are the five pillars. Since March 2020, a lot of work has been done in a short amount of time, and the RRI and AIRR dimensions have been included into the design, as stated below.

RRI keys reflected in the Just Development Transition Plan

Public engagement: So far, through the actions of the Just Development Transition Plan there has been a public consultation with the relevant local bodies and local communities, the boards of private institutions and chambers and the provision of directions to them for the planning and implementation of SDAM. The activities supported by the Fund contribute to the implementation of the Territorial Plans for Just Transition and have an eligibility start date of January 1, 2021 which already include actions made for upgrading skills and acquiring new skills by employees; job search assistance to jobseekers and active inclusion of job seekers.

AIRR dimensions reflected in the Just Development Transition Plan

Anticipatory governance: The Renewable Energy Sources (RES) projects that are in one of the stages of the licensing process (June 2020) are 600 MW and 1,210 MW in the lignite areas of the region of Peloponnese and Western Macedonia. Furthermore, there are 9 projects in the Region of Western Macedonia and 2 projects in the Peloponnese that are in the fourth stage of the licensing process, having already started construction work after obtaining an installation permit and are expected to issue an operating license after the completion of the works, with a total capacity of 279 MW and 50 MW, respectively. The spatial planning has been adjusted to meet the area's development goals. The Regional Spatial Framework of Western Macedonia, in particular, has



already been modified to account for delignification demands. This plan is an important development tool since it explains what activities may be done where and how they can be used. In addition, there has been a support scheme in progress for firms affected by de-lignitisation, as well as the reinforcement of existing and future investments, will be achieved through the provision of specific institutional incentives (financial, tax, insurance, and licensing), as well as the utilization of all available resources.

Inclusiveness: The inclusiveness dimension has been significantly integrated, as this project has been initiated because of extensive consultation with local and scientific bodies, workers, and civil society representatives. Moreover, through the Small and Medium Enterprises Support and Aid Program there has been a granted assistance from the Green Fund to small and medium-sized enterprises from Western Macedonia affected by delignification. The purpose of this action is currently to make the operation of these companies more environmentally friendly. Creation of an Innovation Zone in the current energy axis of Kozani, Ptolemaida, Amyntaio and Florina, according to the standards of the international Innovation Zones is currently in progress that is expected to network a significant number of stakeholders. The University of Western Macedonia in partnership with the National Center for Research and Innovation (CERTH) is collaborating for the final result.

Recommendations

Ethics and gender equality could further be addressed.

2.4 Report from the Participatory Workshop in the Region of Western Macedonia

The participatory workshop was held in Kozani on July 19, 2021, with 13 participants representing academia and research institutes, the private sector, civil society organisations and local authorities. The workshop started with an introduction of the participants, followed by a short introduction to the RRI-LEADERS project and the findings from the in-depth mapping of the region of Western Macedonia, from the perspective of Responsible Research and Innovation, as well as from the documentary analysis of national and regional documents and policies linked to the three policy areas, chosen by the Region of Western Macedonia: 1. develop a stakeholder engagement strategy within the course of the post-coal transition road map, 2. strengthen policy-making systems involving different modes of territorial governance of the post-coal transition strategy, 3. develop a methodology aiming to a smooth and innovative transition from the coal value chain towards an alternative development ‘paradigm’. Then, two keynote speakers with knowledge and expertise in the territorial policy focus made their presentations. The keynote speakers had also participated in the first phase of the project (Task 2.1), which involved interviews for the mapping of stakeholders and thus were informed about the focus of the project on the RRI-AIRR approach. In this regard, the presentations prepared for the workshop were asked to focus on the RRI-AIRR approach, so that they could be used for the open discussion that would follow. The themes of the two presentations were: “Responsible Research and Innovation - Fair Transition of Western Macedonia to an Alternative Development Model” and the second “Entrepreneurship and Innovation Support Tools in the post-lignite era”.



An open discussion followed around a pre-defined questionnaire which included questions regarding the opportunities for the embeddedness of RRI-AIRR approach on existing strategies/programmes/ plans in the three mentioned policies, as well as the perception of stakeholders on the connection of RRI principles with three major challenges of fair transition in the region, namely the development of renewable energy resources, tackling of unemployment and the governance of fair energy transition. In what follows the main points of the discussion per policy are summarised.

First keynote speech

The Region of Western Macedonia is rightly characterized as the region of energy, with a very large percentage of participation of the energy sector in the gross added value. At the moment, a program of fair development transition model is being developed in the Region. Starting with de-ligation, given the structural weaknesses of the economy, high unemployment and the lack of alternatives, the region must focus on responsible research and innovation to create a new growth model. First, the plan for a fair development transition was based on an inclusiveness process during its formulation. Numerous consultations took place with participating actors from the quadruple helix. Another element of concern is the governance mechanism of the transition. It was stressed that since the governance mechanism of the whole transition project is essentially launched at the central level, the regional structures and the regional bodies do not participate to the extent that they should participate. Another point we need to focus on is what we call the interconnection of research with industry and ultimately with the modernization of companies. The research produced must be applied, meet the needs of local businesses and vice versa, local businesses must reflect to the new trends, respond to new market needs to survive in the new globalized market model.

Second keynote speech

The support structure was created in the framework of the project of the regional development fund of Western Macedonia with the general purpose of supporting entrepreneurship and innovation, considering the course of the energy transition in the region. The goal is to act as a catalyst in the more effective implementation of the Smart Specialization Strategy of the RWM, supporting the governance mechanism, providing documentation, information, and liaison. All four tools of the structure were designed with the principle of open access, and they constitute a very interesting paradigm towards a smooth and innovative transition from the coal value chain. Regarding the Research and Innovation Portal, businesses will benefit from the portal through gaining information and networking opportunities, while the regional authority will monitor the image of the region through the innovation indicators that will be recorded and will be able to make informed decisions. The Integrated Information System (IIS) of the region is created to provide the software infrastructure in functionality so that multi-criteria data set analyses can be implemented. This is an experimental application of modern IT techniques which have not been applied in another similar structure in Greece. The Employment Enhancement and Monitoring Portal is a tool for conducting primary employment research, helping to monitor employment trends and highlight business needs and available resources. It encourages the coupling of companies with the appropriate staff and the data of ergasiaRWM in combination with the data of the system from Ergani, OAE and the IIS will provide substantial monitoring of the development of employment. It is a substantial development of the oldest successful portal, ergasiakozani, with current purposes on the one hand to serve the whole region and on the other hand to collect and utilize data on the needs of companies in trained staff and



availability. This tool is proposed as of major importance in the development model of the region, given the unemployment that will arise from the period of the energy transition. And the last tool is the Investor Support Network (ISN). The role and services of ISN is to create a friendly environment in which the entrepreneur feels it is worth the risk, to invest his money and to have the RWM support. Moreover, the services include the provision of personalized information, networking opportunities, funding opportunities, bureaucratic summary forms, grievance redressal issues, business discovery data collection, monthly reports of complaints and bureaucratic procedures corrective actions, semi-annual (or annual) progress reports on potential investments, and meetings with qualified staff from the region will be scheduled, depending on the criteria to be determined.

- **Policy Area “Develop a stakeholder engagement strategy within the course of the post-coal transition road map”**

Participants began the discussion with the first policy area, the engagement strategy, commenting on the implementation of the RRI framework and proposing concrete measures for its further integration. As mentioned above the participants in the workshop represented the whole quadruple helix. All of them stressed the presence of public commitment in the process of shaping policies related to energy transition in the Region. More specifically, with respect to public engagement, several consultations were held with all quadruple helix stakeholders. It should be noted that the process was also negatively affected by the pandemic, since all the procedures were done through teleconferencing and remote process. Participants from the academia emphasized that the role of the University and the research bodies was crucial in shaping the program of fair transition. In addition, taking into consideration the importance of the private sector in the post-coal roadmap, the participation and ideas from the companies were also considered of high importance for the next phase of the Region of Western Macedonia. The participation of civil society was considered satisfactory, but many participants felt that the voice of the local community in the participatory process could be greatly strengthened. In this direction they proposed a public information campaign of the local community in general about the energy transition but also about the available tools that exist to activate their participatory action. Taking into consideration that regional strategies developed for the region were planned to follow a participatory process, views differed on the intensity of the participatory process as well as on the evaluation of the consultations on energy transition and the exploitation of results.

On the issue of enhancing stakeholder engagement within the course of the post-coal transition road map, a very important structure, the Support Structure², has been developed in the framework of the project of the regional development fund of Western Macedonia with the general purpose of supporting entrepreneurship and innovation. This structure, as it was presented by the second keynote speaker, has developed several tools, all of which have been designed with the architecture of open access to provide two-way communication between all tools and use by all actors in the Region and to enhance their effectiveness. Moreover, science education will be totally enhanced through the structure by making science more attractive to people who will be unemployed in the region after the transition, as well as promoting innovation and entrepreneurship activities. The tools of the structure are a key means of enhancing communication between all stakeholders, the region, citizens, academia and the business sector in terms of both policy preparation and shaping, as well as

² <https://pta.pdm.gr/domi-ris-dyt-makedonias/>

ongoing business discovery, as it will allow data to be collected, ideas and suggestions, which will determine the next steps to support entrepreneurship in a process of continuous improvement. Therefore, participants consider this structure as a catalyst for the reinforcement of stakeholder engagement in the energy transition roadmap of the region, the open access enhancement to all studies and indicators, as well as to promoting science education.

In this particular policy focus, the importance of gender equality was also mentioned by all participants. It was stated that in all consultations and discussions on the roadmap for the transition, the principle of gender equality was considered necessary and in fact the number of participants always considered the almost equal number of the two sexes.

- **Policy Area “Strengthen policy-making systems involving different modes of territorial governance of the post-coal transition strategy”**

To start the discussion on this policy, the mentimeter tool was used, and participants were asked how they perceive Responsible Research and Innovation in relation to the governance of fair transition. The words that appeared in order of priority were cooperation, quadruple-helix participation, transparency, decisions at the local level, reduction of bureaucracy. Based on these words an open discussion followed.

Regarding the just-transition governance mechanism, participants expressed their concerns. A key component of the governance mechanism of just transition, is the establishment of a partnership, the strengthening of social dialogue and the more efficient absorption of resources on the basis of a multilevel governance structure. In practice, however, it turned out that the proposed structure is very central, reflecting a strong "top-down" model. More specifically, the central coordinating intergovernmental committee has the dominant role in the planning, approval, and implementation of critical interventions. On the contrary, the role of local actors, on the other hand, is mainly suggestive and less decisive. As a result, local actors can hardly take ownership of the transition plan. There is also a requirement of international regulations in regions in a transition that fosters the active and essential role of the local community.

The participants suggested that in matters of governance the Region is called upon to find a combination of efficiency, decentralisation, transparency, networking, monitoring and evaluation mechanisms. This is certainly not at all simple, as what has been proposed is clearly a top-down model and not a model that largely considers regional and local structures. The proposed solution is not a fully regional form of government, but it is proposed to turn to a model that combines local actors with central ones.

The approach of anticipatory governance has been stressed that in general characterises the policy-making process, since the region must take into account the future implications of post-lignite-related policies. It was even emphasized that the energy transition plan is not a current problem. Discussions started several years ago with some plans that had been made earlier. So, the region had begun to make some predictions about possible solutions and measures that would have to be taken to address the challenges of the energy transition. Towards this direction, participants mentioned that the region needs to become even more responsive during this phase, to develop future scenarios to overcome with the post-lignite era challenges, improving thus its anticipatory governance.



Regarding open data, the new tools developed by the Support Structure in the region, provide a mean for a dissemination of information, ideas, data and all the selected indicators regarding innovation and entrepreneurship to the public and to the private sector.

What was stressed that should be greatly strengthened was the key of scientific education. In local government-related policies, the enhancement of science education has been identified as being of major importance for the post-coal transition strategy. The promotion of entrepreneurship from secondary education, the organization of business idea competitions, the development of research and innovation in renewable technologies are some of the proposals made.

- **Policy Area “Develop a methodology aiming to a smooth and innovative transition from the coal value chain towards an alternative development ‘paradigm’”**

Discussions towards this policy revealed that the RRI-AIRR approach has been largely integrated into both regional and national strategies. The Just Development Transition Plan is an operational framework, that expresses the central government's public engagement to the energy, economic and social challenge of de-lignification and the reduction of oil dependence. The communication with all the stakeholders regarding the plan of decarbonization of the domestic power generation is one of its main goals. Therefore, public engagement, mainly through public consultation, was largely implemented to formulate the methodology for the smooth transition. At this point, the active participation of many actors was emphasized, covering the quadruple helix, however, some participants expressed their objections to the active participation of civil society. Moreover, in this plan as well as in most of the studies conducted for energy transition, participants agreed that the dimension of responsiveness is quite evident, since they reflect an effort to meet the needs and expectations of society. In addition, as reflected in the conclusions from the questionnaires and the focus group conducted in May 2021, the dimension of reflexivity is directly linked to that of responsiveness, as the needs of society are constantly changing due to the energy transition and therefore a continuous analysis at social and economic level is needed so that policies meet the real needs. A top priority issue of the plan is, to secure jobs and to utilize the high know-how of human resources in the designated areas. This is one of the main challenges of the energy transition in Western Macedonia, the problem of unemployment. The role of science education is considered crucial towards this challenge. Now, there are a lot of actions taking place, especially towards research and innovation activities in renewable energy sources as has been stressed by the academia participants, but they are not well communicated. This results also to the non-capitalisation of research results. Moreover, the potential of citizen science is something that needs to be which should be studied and exploited, as it can be a key source of new ideas.

Using the mentimeter tool, participants were asked how integrating Responsible Research and Innovation in policy level can help towards unemployment. The words that appeared in order of priority were retraining, business support, start-ups. In the light of the above, participants agreed that science education is the appropriate RRI key to deal with this challenge. Initially they proposed the use of renewable energy sources, increasing thus research and innovation activities, but there is a strong concern as to whether these sources can eventually replace such a labour-intensive productive activity. The role of educational institutions and research institutions in the context of re-skilling of human resources was emphasized here, something that also had emerged from the interviews of the stakeholders in the first phase of the project. In addition, the participants



stressed the importance of strengthening the manufacturing sector, which in combination with the development of the primary sector will form sustainable value chains in the agri-food sector, which is also the dominant sector within the primary sector.

The use of renewable energy sources and generally the creation of an alternative model based on renewable sources was the next topic discussed. Using the mentimeter tool, participants were asked how integrating Responsible Research and Innovation in policy level can help towards the development of renewable energy resources. The words that appeared in order of priority were responsibility, contribution in employment, transparency, open access, consultation. The issue of responsibility is characterized as of major importance in environmental management. The participants emphasized the shift in the development of photovoltaic parks, something for which the appropriate environmental study is deemed necessary. In addition, many of the participants expressed their fears about the viability of the project as well as the next concept that emerged, that of contributing to employment. The unemployment rate projected in the region due to the energy transition is multiple in relation to the jobs that the installation of photovoltaic parks will bring. That is why in these policies, anticipatory governance will play a very important role, to capture future results and thus choose the right decisions. Inclusiveness also plays an important role here, as the integration of perspectives from a wide range of societal actors can determine a better outcome. In addition, open access is very important, both for information issues and for data entry from all actors.

Strengthening and promotion of entrepreneurship, should constitute key steps in the methodology towards a smooth transition, something which was identified in the context of all the consultations that preceded in task 2.1 of the project. To increase entrepreneurship, the participants proposed the strengthening of scientific education. In this direction business opportunity initiatives must be implemented, such as business plan contests, creating information places for start-ups, etc.

The key to open access has also been used in both regional and national policies, but participants stressed that through the tools of the new area support structure, open access can be greatly enhanced. The goal of the region during the energy transition is to develop an alternative growth model with an emphasis on innovation. Western Macedonia in terms of innovation belongs to the category of moderate innovators. So, to lead the Region in a sustainable solution in the context of the energy transition it will essentially have to reverse its weaknesses, find solutions that will transform it from a moderate innovator to a strong innovator. Participants noted that science education is considered crucial also towards this direction.

Towards the development of a methodology for a smooth and innovative energy transition the participants also referred to the fact that there are a lot of similar regions in Europe now which are facing the same challenge with the region of Western Macedonia. There is a process called “regional dialog” which is essentially an action developed by the European Commission to develop partnerships between regions in energy transition. These synergies will help these regions with issues of growth and innovation as well as measures that will lead to a smoother transition. This is a very important action proposed in the region of Western Macedonia to follow it as in this way it will be able to have a more general, European picture, regarding the innovation trends in other regions and to receive ideas and solutions for its development

Regarding the Support Structure that has been developed in the region, as has been mentioned above, its four tools constitute a very interesting paradigm towards a smooth and innovative transition from the coal value chain. With respect to the Research and Innovation Portal, businesses will benefit from the portal through



gaining information and networking opportunities, while the regional authority will have a tracked image and informed decisions. The Integrated Information System (IIS) of the region is created to provide the software infrastructure in functionality so that multi-criteria data set analyses can be implemented. This is an experimental application of modern IT techniques which have not been applied in another similar structure in Greece. The Employment Enhancement and Monitoring Portal is a tool for conducting primary employment research, helping to monitor employment trends and highlight business needs and available resources. It encourages the coupling of companies with the appropriate staff and the data of ergasiaRWM in combination with the data of the system from Ergani, OAED and the IIS will provide substantial monitoring of the development of employment. It is a substantial development of the oldest successful portal, ergasiakozani, with current purposes on the one hand to serve the whole region and on the other hand to collect and utilize data on the needs of companies in trained staff and availability. This tool is proposed as of major importance in the development model of the region, given the unemployment that will arise from the period of the energy transition. And the last tool is the Investor Support Network (ISN). The role and services of ISN is to create a friendly environment in which the entrepreneur feels it is worth the risk, to invest his money and to have the RWM support. Moreover, the services include the provision of personalized information, networking opportunities, funding opportunities, bureaucratic summary forms, grievance redressal issues, business discovery data collection, monthly reports of complaints and bureaucratic procedures corrective actions, semi-annual (or annual) progress reports on potential investments, and meetings with qualified staff from the region will be scheduled, depending on the criteria to be determined.

2.5 Summary remarks

Overall, discussions in the workshop came to some very useful conclusions about how the territorial stakeholders perceive responsibility in research and innovation, as well as the RRI keys and AIRR dimensions and their relevance to the overall development policy of the territory. The workshop participants agreed that the RRI keys and AIRR principles are followed to a significant extent in the policymaking of the region, but also mentioned many new policies and procedures that RRI principles can be applied in the future. The same picture applies to national policies.

Regarding public engagement and inclusion, all participants reported that the consultation tool was mainly applied to a large extent in the design of the energy transition framework of the region, with the participation of all the actors of the quadruple helix. However, it has been stressed that the voice of the local community could be strengthened by actively in the participatory process.

On the issue of open data and open access, different views arose from the participants. Initially, all participants agreed on the fact that policy decisions as well as consultation decisions are all published in an open database. What has been highlighted as a problem is the evaluation process of all public consultations. As a future step to confront with this problem, the tools of the support structure of the region were presented, and more specifically the research and innovation portal and the integrated information system. The first will be an online platform that could be used for gathering information, ideas, etc. from stakeholders, while the second will proceed to a multi-criteria analysis of all the data, as an evaluation tool to generate answers and provide specific solutions at the regional level.



In both level policies, the lack of ethics and gender equality keys was emphasised. Moreover, reflexivity and responsiveness were detected to most policy documents and were described as two connected dimensions, a result that corresponds to the findings from the interviews and the focus group.

Another issue discussed in the participatory workshop was the process of communication and territorial governance. Here, participants see the need for a process that combines efficiency, decentralization, transparency, and evaluation. It was stressed that the model currently applied, the top-down model, is a model that largely ignores regional and local structures. For this reason, the participants proposed the use of a combined model of governance, which will combine local and central actors. It was also proposed as of major importance for future implementation, in the context of responsible research and innovation, the implementation of the integrated information system now developed by the support structure of the Region. This tool will evaluate all actions and future innovative ideas and will propose after analyses the best for implementation in the Region of Western Macedonia.

Given the third policy area for the region of Western Macedonia, participants emphasized the role of integrating science education in the policy level, fostering this way research and innovation activities, through initiatives such as seminars, competitions, business plan contests etc. The area is classified as moderately innovative. Therefore, it was suggested by the participants that in order to move to a sustainable solution in the context of the transition, the region would have to substantially reverse the weaknesses and identify solutions that would transform the RWM from moderate to strong innovative.

Concrete measures proposed for the region of Western Macedonia are the following:

- Strengthening and promoting entrepreneurship as well as re-skilling of human resources to combat the phenomenon of unemployment that will arise from the post-lignite era. The application of scientific education can play an important role at this point, through the development of seminars, educational activities, and the promotion of innovation.
- One point on which the Region should stand is the connection of research and development with the modernisation of companies. The research produced must be applied and should follow the responsiveness of the local markets and vice versa, local businesses must respond to the new trends and the new needs of the markets to survive in the new globalized market model. This concludes with the demand for the Region of Western Macedonia which is the creation of viable value chains in areas of regional smart specialization. One such area, concerns the development of the agri-food sector in the region, which. It was therefore stressed, that there needs to be a connection between the agricultural department's research of the University with the agri-food sector in Western Macedonia.
- The Region should follow a responsive and accountable governance by participating to the "regional dialog". This is an action developed by the European Commission to develop partnerships between regions in energy transition. These synergies will help these regions with issues of growth and innovation as well as measures that will lead to a smoother transition.
- Finally, the promotion of the new Support Structure that has been developed in the region, constitutes a very interesting tool for integrating the RRI-approach towards a smooth and innovative transition from the coal value chain.



2.6 Conclusions

In this analysis, a total of three national level and 4 regional level documents related to the energy transition in Western Macedonia were studied. The overall picture shows that in all studies the RRI-AIRR approach is followed and applied to a significant degree, with public engagement, open data access, inclusiveness and anticipatory governance prevailing in all the studies.

The conclusion in discussions during the participatory workshop showed that in the plan for the fair transition in the region but also in the general policies related to the post-lignite era, the keys and dimensions of responsible research and innovation have a significant application, however, the strengthening of their appliance in both existing and future policies, proposing concrete ways and tools to achieve this, was considered by all participants to be of particular importance.

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