



Ministry of Environment and Energy



Region of Western Macedonia



**Coal Regions in Transition Platform
Working Group Meetings and High-Level Dialogue on
Financing and Investments**

Brussels, Belgium – 26 February 2018



**Coal Regions
in Transition
Platform**

Eco-innovation and advanced coal technologies

Project Lab : Western Macedonia case

Working Team for Coal Platform of Western Macedonia



Requirements for Regional transition to low lignite dependency economy

The Western Macedonia regional strategy for the transition should fulfil the following specified three main axes:

- Strengthening of business activities and enrichment of the region's productive baseline with innovative and competitive activities.
- Capacity building and human resource skills development in areas directly linked to the region's potentially productive environment.
- Protection, promotion and enhancement of the natural and human environment and development of favourable living conditions.

Requirements for Regional transition to low lignite dependency economy

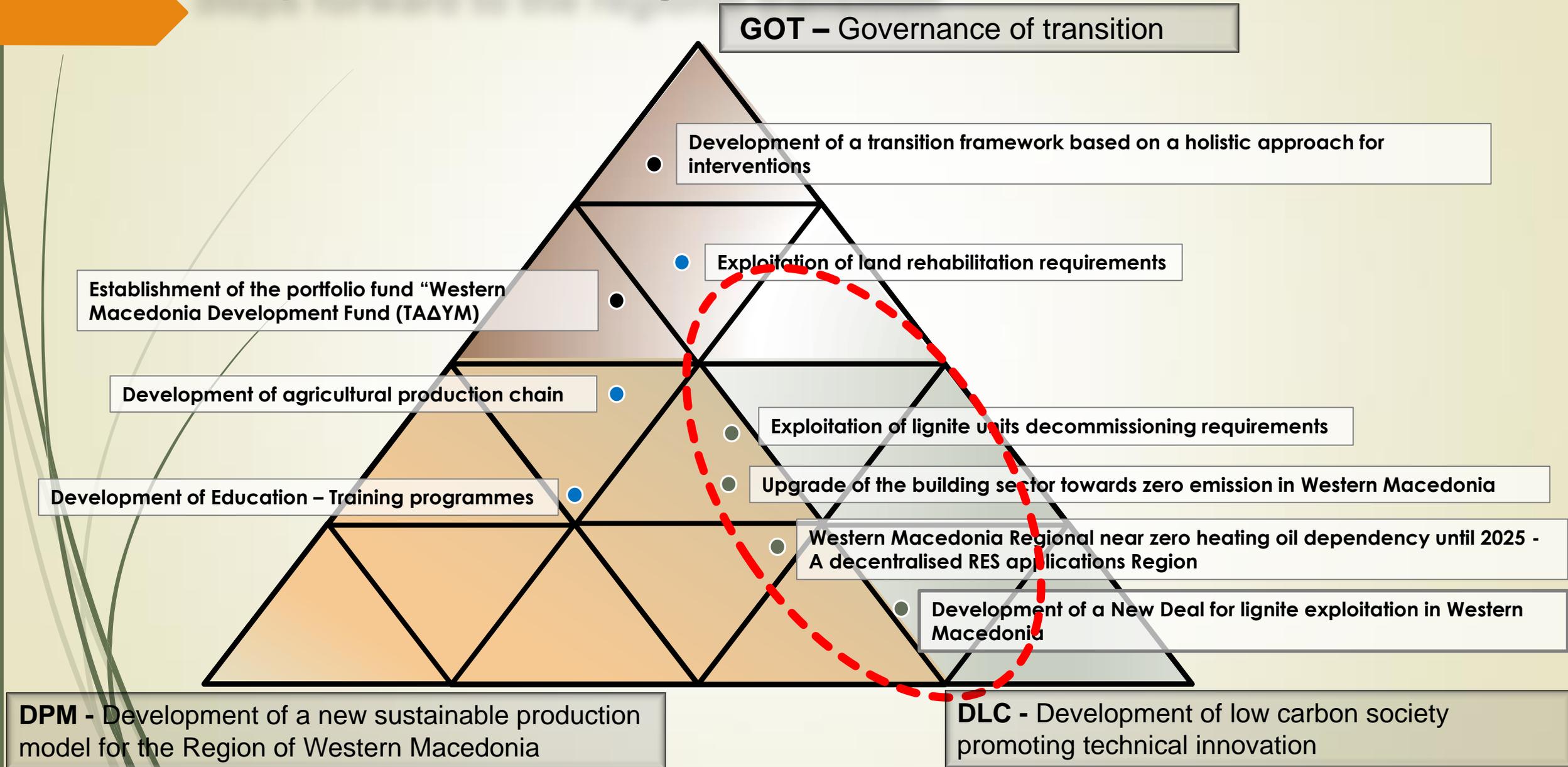
Design and implementation of targets / actions answering the following critical question

“How we will proceed with the lignite utilization and how after the lignite era ?”

Identification of synergies and actions additionality with respect to EC policies and their implementation schemes towards to :

- Support of employment through new skills development by the establishment of education – training programs
- Support of the development of new competitiveness sectors' entrepreneurship
- Support - upgrade of existing know how transfer to other sectors or abroad
- Support of research – innovation on alternative uses of domestic solid fuels
- Increased RES and smart energy systems in the local economy

Steps forward to the regional transition



Pilot Projects:

DLC - 1. Exploitation of lignite units decommissioning requirements

Specific challenge:

Although decommissioning of coal/lignite power plants requirements and implementation are treated as commercial applications, the magnitude of interventions as well as the involvement of circular economy and enhanced environmental impact issues, could introduce new demanding aspects towards optimised processes to be carried out.

Scope:

Taking into account that a **300 MW lignite unit decommissioning** process including environmental remediation and decontamination, lasts about eight (8) years, a **significant amount of interdisciplinary works** have to be planned and implemented, including both unit's owner and third party services.

Having in mind that several decommission projects is expected to be scheduled in the next years, a **Best Practice approach** is proposed to be developed focusing on cost and environmental impact optimization.

The whole project could provide **directions for unemployment abatement**, to the creation of **multiple businesses opportunities** in regional level, in fields with **specialization prospects**, **knowledge and know-how** development. The implementation of the whole concept is proposed to be held as pilot project in Western Macedonia.

Pilot Projects:

DLC - 1. Exploitation of lignite units decommissioning requirements

Expected Impact:

The development of a decommissioning Best Practice process to be implemented in Western Macedonia will contribute to:

- The identification of optimized processes in terms of cost, environmental impact and employment.
- The development of a Best Practice documentation.
- The gain of experience and knowhow transfer through its implementation.

Current status:

The project deals with Preparation of Regional transition phase

Expected Partners of the project are the Public Power Corporation, Regional stakeholders and local SMEs and academic / research institutions

With the support of the Coal Platform the project could reach wide implementation opportunities

Pilot Projects:

DLC - 2. Western Macedonia Regional near zero heating oil dependency until 2025 - A decentralised RES applications Region

Specific challenge:

Western Macedonia presents

- high heating requirements being in the coldest zone according to national technical specifications,
- having a significant number of isolated urban areas due to its terrain.

Due to the Greek economic conditions, energy poverty is a rising issue in the heating sector and the potentials of alternative fuels utilization are increasing.

Despite that, alternative fuels and RES potentials and new heating system concepts are not thorough exploited in the region with extended knowhow on district heating design – construction and operation.

Scope:

The project is targeted on the **supply - demand sides** by covering the heating needs of the entire region with centralized or decentralized district heating systems using natural gas, biomass, hybrid RES systems and, if necessary, dry pulverized lignite, which would require around 250 MWth.

The project will focused on energy / heating needs identification, fuel supply chains and RES utilisation design management and implementation while novel technologies such as hydrogen will be discussed. Further to that, the Region's significant knowhow on District Heating systems will be upgraded increasing the replication potentials. It would give a strong emblematic character to the region being almost zero dependence on heating oil.

Pilot Projects:

DLC - 2. Western Macedonia Regional near zero heating oil dependency until 2025 - A decentralised RES applications Region

Expected Impact:

The proposed project will contribute to:

- The abatement of energy poverty.
- The creation of sufficient number of jobs.
- The launching of regional supply chain systems, to promote low-cost local fuels as well as the cultivation of energy crops.
- The design and implementation of high efficiency and RES decentralized energy systems.

Current status:

The project deals with the development of low carbon society promoting technical innovation and the project is supported by Region's ROP and RIS3 priorities, the Region's study on post lignite era (ANKO) and Technical Chamber of Greece / dpt WM study

Expected Partners of the project are the Regional Government and Municipalities, the Greek State, as well as Regional organisations, energy companies and SMEs, Public Power Corporation, chambers and academic / research institutions

Mature Projects

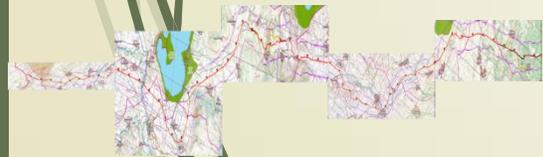
- 30 MW Biomass Thermal Power Plant for District Heating of Amindeo
- Aminteo Biomass CHP plant of 25 MWe and 45 MWth

Pilot Projects:

DLC - 2. Western Macedonia Regional near zero heating oil dependency until 2025 - A decentralised RES applications Region

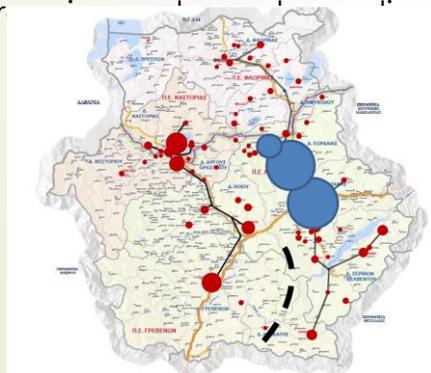
Energy Supply

Identification of Renewable sources potential
 Integration of Natural Gas options, as a new entrance to the Region's energy mix
 Evaluation of dry lignite potential as a new product of lignite industry



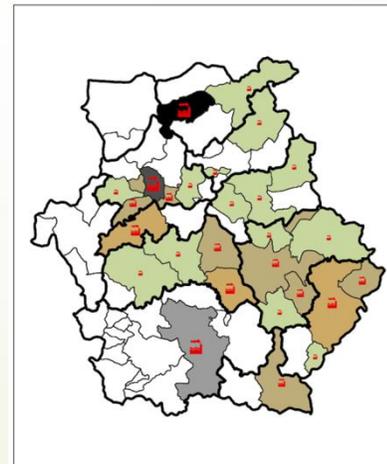
Local Energy Systems

Determination of potential local energy systems in relation to heating / cooling and electricity needs
 Mapping of optimised scenarios for RES advanced utilisation
 Planning interventions in the existing district heating systems
 Model developed based on regional Energy Maps



A new Energy Market

Development of decentralised systems (heating – electricity)
 Upgrade RES market
 Upgrade of existing district heating systems with RES



Development of new tools for decentralised systems evaluation in regional basis
 Develop high efficiency energy concepts
 Integrate RES into existing district heating systems reducing carbon footprint

Pilot Projects:

DLC - 3. Upgrade of the building sector towards zero emission in Western Macedonia

Specific challenge:

Significant aspect of Western Macedonia characteristics deals with the increased heating needs, presenting a 7 to 8 months per year heating season with double heating requirements compared to Athens and 1.4 times more than Thessaloniki for same building and heating conditions. Upgrade of the building sector deals with consumers awareness, technical expertise on advance system design and application and financial supporting schemes

Scope:

The project aims at launching a wide program of technical interventions for heating / cooling needs reduction with respect the local architectural heritage and requirements as well as RES and innovative technologies involvement. The project is focused on demand - consumption sides promoting efficient use of energy. Within this program business re-orientation of available technical staff is foreseen.

Pilot Projects:

DLC -3. Upgrade of the building sector towards zero emission in Western Macedonia

Expected Impact:

The proposed project will contribute to:

- The abatement of energy poverty.
- The establishment of sustainable energy future for Western Macedonia.
- The development of new financial schemes / ESCOs
- The job creation and available technical staff new business orientation.

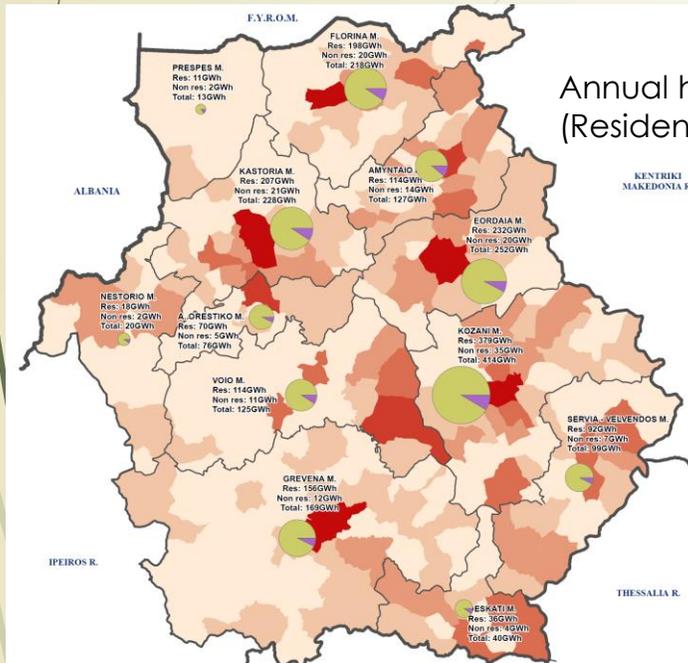
Current status:

The project deals with the development of low carbon society promoting technical innovation

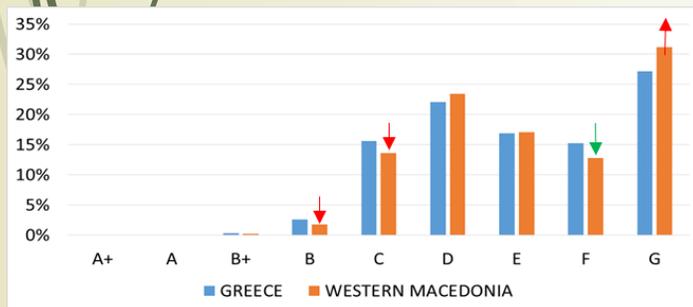
Expected Partners of the project are the Regional Government and Municipalities, the Greek State, as well as Regional organisations, technical companies and SMEs, chambers and academic / research institutions

Pilot Projects:

DLC -3. Upgrade of the building sector towards zero emission in Western Macedonia



- Survey on buildings energy performance
 - Identification of building renovation concepts
 - Selection of energy systems renovation options
 - Formulation of financial means / ESCOs for necessary investments.
 - Training – Education
-
- Establishment of a regional renovation programme
 - Establishment of indicators with measurable results of carbon footprint upgrade



Percentage of building energy performance (Audits 2011-2016 Ministry of Environment and Energy)

Pilot Projects:

DLC -4. Development of a New Deal for lignite exploitation in Western Macedonia

Specific challenge:

The utilization of lignite in Western Macedonia is based on a conventional and one-dimensional way. However, lignite can be used as a raw material in the production of a range of products and energy carriers with high added value. R&D worldwide focus on technologies at pilot or semi-industrial levels, where business ventures and research centres are involved.

Scope:

Western Macedonia has declared his strategic view on maintaining it significant energy position in national level, while is supporting technological innovation towards the advanced use of its energy sources (both RES and conventional). The lignite utilisation, according to carried out studies, is linked with technological upgrade and innovation involving co-combustion, production of dry lignite, lignite-to-liquid as well as combined use of natural gas for power production and integrated management and energy recovery of agricultural residues.

Through the Coal Platform, a regional strategic choice deals with the establishment of a Cooperation with the European Joint Research Centre to create a research structure in Western Macedonia developing links through out the Balkan area.

Pilot Projects:

DLC -4. Development of a New Deal for lignite exploitation in Western Macedonia

Expected Impact:

The proposed project will contribute to:

- The improvement European energy security.
- The improvement of energy supply in terms of effective tackling of climate change aspects.
- The capacity building on R&D and novel technologies evolution.
- The new business creation with added value and specialization.

Current status:

The project deals with development of low carbon society promoting technical innovation

Development of low carbon society promoting technical innovation and the project is supported by Region's ROP and RIS3 priorities, the Region's study on post lignite era (ANKO) and Technical Chamber of Greece / dpt WM study.

Expected Partners of the project are the lignite industry and technology providers utilities, Balkan and European stakeholders and academic / research institutions

Coal Platform of Western Macedonia Leadership



Theodoros KARYPIDIS, Governor of Western Macedonia

Eleftherios IOANNIDIS, Mayor of Kozani

Savvas ZAMANIDIS, Mayor of Eordaia – President of the Network of Energy Production Municipalities

Konstantinos THEODORIDIS, Mayor of Amyntaio

Ioannis VOSKOPOULOS, Mayor of Florina - President of Municipalities of Western Macedonia

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Building our common future upon Coal Platform Networking...



Thank for your attention!

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