

MAY 2021

ACTION PLAN FOR THE TRANSITION TO A LOW- CARBON ECONOMY IN THE ÉSZAK-ALFÖLD REGION

PREPARED IN THE FRAMEWORK OF THE INTERREG
EUROPE PROJECT 'DECARB' BY ÉSZAK-ALFÖLD
REGIONAL ENERGY AGENCY NONPROFIT LTD.
(ENEREA)



DeCarb - Supporting the clean energy transition of
coal-intensive EU regions



DeCarb
Interreg Europe



European Union
European Regional
Development Fund

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1 ABOUT THE ACTION PLAN

This Action Plan is prepared by ENEREA (Észak-Alföld Regional Energy Agency Nonprofit Ltd.) in the context of the Interreg Europe project “DeCarb - Supporting the clean energy transition of coal-intensive EU regions” (Index number PGI05587). The Plan aims to provide details on how the lessons learnt from the exchange of experience and cooperation, that took place during the Phase 1 of the DeCarb project, will be implemented in the Észak-Alföld region in order to improve the policy instrument addressed (“Environmental and Energy-Efficiency Operational Programme (KEHOP) 2014 – 2020”).

The Plan includes the elaboration of two actions, to be implemented during the Phase 2 of the DeCarb project, and follows the respective guidelines provided in the latest Interreg Europe Programme Manual, Annex 1¹, as well as the guidelines of the Common Methodology of DeCarb activity 5.1. For each action, the following information is provided:

- The way the action is linked to the exchange of experience and knowledge sharing that took place in the context of DeCarb
- The nature of the activities to be implemented
- The timeframe of the activities
- The stakeholders involved
- The costs and funding sources, if applicable

The following table presents an identification of the Action Plan, based on the Interreg Europe instructions:

¹ <https://www.interregeurope.eu/about-us/programme-manual/>

TABLE 1: ENEREA ACTION PLAN FOR THE DeCARB PROJECT

DeCarb Action plan - ID

Project	DeCarb “Supporting the clean energy transition of coal-intensive EU regions”
Partner organisation concerned	ENEREA Észak-Alföldi Regionális Energia Ügynökség Nonprofit Kft.
Country	Hungary
NUTS2 region	Észak-Alföld
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2 THE DECARB PROJECT

2.1 BACKGROUND

Over the past 3 decades EU has consistently sought to curtail its Greenhouse Gas (GHG) emissions and encourage the development and implementation of renewable energy technologies, the overarching aim being the gradual transition to a more environmentally friendly and sustainable economic model. The salient advantages of this direction include increased energy autarky, economic benefits derived from obtaining a dominant position in the renewable energy market and the considerable environmental benefits related to the transition from fossil fuels to green energy alternatives. Since 1990, the year typically used as a reference, EU has been the only major economic area that has exhibited a significant reduction of its GHG emissions, achieving an almost 25% reduction by 2019.

In this context and following the Paris agreement, which set ambitious targets regarding the GHG emissions, and the Clean Energy for All Europeans package, the DeCarb Project was proposed with the aim of facilitating the transition of the participating coal regions, which have economies with a high degree of dependence on coal extraction or coal-based energy production, to a low-carbon economy. As a result of this dependence on coal, these regions are particularly vulnerable to the above-mentioned changes in the economic model, since the reduction of GHG emissions and the decarbonization of the economy are inextricably linked to the phase-out of coal from the energy mix and the gradual decommission of the existing coal-fired power plants. The subsequent adoption of the European Green Deal, which sets even more ambitious targets with regards to the reduction of GHG emissions, and the acceleration of the decommission of coal-fired power plants in many European countries has further increased the importance of ensuring a fair transition for the coal regions in EU.

2.2 OBJECTIVES

DeCarb aims to bring together partners from the 9 participating regions e.g. Yugoiztochen (BG), Łódzkie (PL), Észak-Alföld (HU), Sud-Vest Oltenia (RO), Brandenburg (DE), Nordjylland (DK), Western Macedonia (GR), Vzhodna Slovenija (SI), Extremadura (ES) with the aim of exchanging experiences and sharing their knowledge in successfully effecting a transition to a low-carbon economy with emphasis on growth and job creation.

In particular, DeCarb intends to support the participating regions in i) facilitating the clean energy transition and alleviating its adverse impact on the societal and economic stability of the participating transition regions ii) identifying regional specificities and proposing development and innovation policies to stimulate growth iii) meeting the CO₂ targets and securing a role in the 2030 energy mix.

To this end, DeCarb aims to:

- Increase the capacities and knowledge of public authorities in growth pathways beyond coal, and ensure energy security and stability.
- Support the development of job-creating plans, with the aim of alleviating the adverse impact of the coal industry contraction on the job market, and evaluate the territorial impact of the transition in order to specify workforce re-skilling and post-mining land use needs.
- Promote public dialogue to resolve conflicts and build consensus on decarbonization and the clean energy transition, involving the energy sector, social partners and the citizens.
- Raise awareness on the importance of forward planning and implementation of measures related to the new, coal-free, energy mix.

3 POLICY CONTEXT

3.1 REGIONAL CONTEXT OF DECARBONISATION IN THE HUNGARIAN NORTHERN GREAT PLAIN

3.1.1 REGIONAL SOCIOECONOMIC AND ENERGY BACKGROUND

In the region of Észak-Alföld (Northern Great Plain – NGP) resides 14.84% of the total population of Hungary. It is the region with the lowest GDP per capita in purchasing power standards (PPS) in Hungary, approximately 64.4% of the national average and 45.5% of the EU-27 average. The unemployment rate has been decreasing since 2013 (when it was 14.2%), reaching 6.3% in 2019 (Eurostat, 2020). nevertheless, despite the fact that this is equal to the EU-27 average (6.3% in 2019, Eurostat, 2020), it is still almost double the national average (3.4%), making Észak-Alföld the region with the highest unemployment rate in the country²

As late as 2018, approximately 38.5% of Hungary's energy output came from lignite and coal³. In the past decades, domestic lignite had held a strong position in the Hungarian energy mix, due to supply security, low extraction costs and stable prices. Local economies and communities have been linked to lignite for approximately 70 years and this is particularly true for the neighboring to Mátra mine and power-plant municipalities of Debrecen, Eger, Miskolc, Nyíregyháza, Salgótarján and Szolnok, all part of or neighboring to the Northern Great Plain. These areas are facing increased environmental challenges due to lignite-related economic activities including a) land degradation, b) increased water pressure and aquifer threats, and c) air pollution. From 2000 to 2014 Hungary lowered its CO₂ emissions by 24% while growing its GDP by 29%.⁴ Márkushegy, the most important Hungarian mine, along with the Vértes Power Plant were closed in 2014, having a dramatic impact on brown-coal production in the country, which dropped by 35.4%.⁵

² European Commission/Internal Market, Industry, Entrepreneurship and SMEs/Regional Innovation Monitor Plus: <https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/base-profile/north-great-plain>

³ The International Energy Agency <https://www.iea.org/countries/hungary>

⁴ Ministry of Innovation and Technology - The National Energy and Climate Plan https://ec.europa.eu/energy/sites/ener/files/documents/hu_final_necp_main_en.pdf

⁵ <https://euracoal.eu/home/>

3.1.2 THE MÁTRA THERMAL POWER PLANT PROMINENCE IN THE NATIONAL ENERGY MIX

Mátra Power Plant is Hungary's last remaining lignite-fired power plant. It is supplied by the Bükkábrány and Visonta open lignite mines and is owned and operated by MVM Group (Magyar Villamos Művek Zártkörűen Működő Részvénytársaság), which is the largest Hungarian power company responsible for the production, distribution, and sale of electricity.

The Mátra Power Plant plays an important role not only in the energy production of the country but also in the regional labour market: it is the only dispatchable large power plant in the eastern half of Hungary and it is also a major employer, since most of the inhabitants of the districts concerned (Gyöngyös and Mezőkövesd) are employed at the power plant or at jobs related to it (10 000 jobs are directly or indirectly related to the power plant, with 27 000 affected family members)⁶.

Mátra produces 14% of Hungary's electricity but accounts for nearly 50% of the country's energy sector CO₂ emissions⁷. In addition, the power plant, along with the roughly 100 000 households in the region that use lignite for home heating, significantly contribute to other air pollutants in Hungary, namely 36.2 % of SO₂, 13.71% of Hg, and 4.48 % of NO₂. The goal of the National Energy and Climate Plan is to decommission the plant earlier than planned (2030), by 2025⁸, also closing two associated open-cast lignite mines by the same date, and replacing it with a mix of renewable energy and natural gas based production. The site of the Mátra Power Plant and its location near the North Hungarian region offers a good opportunity for implementing low-carbon energy production and storage projects that could provide relief for other territories.

3.1.3 MÁTRA POWER PLANT – CURRENT REFORM

Currently, Mátra Power Plant has been gradually transitioning into an industrial park and an industrial innovation cluster in which renewable energies play an increasingly important role. It is, thus, expected that it will retain its electricity generation capacity and remain a major employer in the region. This transition began in 2004 when the Mátra power plant initiated an innovative strategy to gradually phase out the coal power plant and lignite mines. Along with biomass co-firing, the plan involved redeveloping

⁶ <https://publications.jrc.ec.europa.eu/repository/handle/JRC112593>

⁷ The national power company Hungarian Electrical Works - Magyar Villamos Művek (MVM)
<http://mvm.hu/?lang=en>

⁸ <https://www.euractiv.com/section/climate-environment/news/hungary-brings-coal-exit-forward-by-five-years-to-2025/>

the site to add solar PV, plant an energy forest to produce biomass, and create a green industrial park, which was initiated in 2007. All these new developments could employ the miners and power plant workers who were not eligible for early retirement, preventing both direct and indirect job losses in the region.

A key strategy for transitioning to an industrial park was leveraging existing assets and harnessing synergies between industries in the region. For example, the biomass used by the power plant is mainly agricultural and forestry waste, or a by-product of on-site industrial activities. The solar PV installations and the 20-hectare (49-acre) pilot energy forest used decommissioned mine sites, which entailed lower conversion costs than if the sites had been converted for tourism or agriculture. Local firms benefit from access to the power plant's energy supply and surplus heat, as well as from participating in one another's supply chains. As an example, the local company Zöldolaj BB Zrt. produces biodiesel with a by-product of rapeseed oil residue, which is in turn burned as biomass in the power plant. As of June 2018, the Mátra industrial park was home to a diverse mix of 23 firms on 300 hectares (741 acres), employing 1,674 people and generating a total revenue of HUF 23 billion (\$83 million)⁹. Currently, the focus is on replacing the household heating energy with clean energy and reducing the energy consumption of 10 000 households dependent on coal.

Due to its size, the Mátra Power Plant may also be suitable for multi-purpose utilisation, going beyond energy production and related activities. Such uses could include an expansion of the industrial park and a diversification of economic activities, for example in the form of agricultural or other storage, logistic support services, conservation and presentation of the cultural heritage of mining, habitat reconstruction that facilitates tourism and nature conservation purposes and natural water conservation measures. In the course of such a land repurposing and in order to achieve a just transition for the region, particular attention should be paid to diversifying the region's economy and emphasizing sustainable economic activities. To this end, encouraging a diversification of the economic activities in the power plant's area and taking advantage of the power plant's role within the value-added chain should be seen as of considerable importance in achieving that goal.

⁹ <https://www.wri.org/just-transitions/hungary>

3.1.4 REGIONAL CHALLENGES

Nevertheless, the region still faces certain challenges, as the industrial sector has declined, the unemployment rate remains twice as high as the national average and the GDP/ capita is lower than the national average. In particular, the following challenges require further attention:

- Insufficient domestic investment: EU subsidies cover a large part of the cost of restructuring the Mátra power plant, allowing it to retain its role as a major electricity production unit and an important employer in the region.
- Shifting timeframes for coal phase-out: The Mátra power plant recently received a preliminary permit to continue operating its third lignite-fired unit until 2029, instead of the initial decommission date of 2025.
- Uncertainties over the dialogue with the coal workers and their reskilling: The dialogue with coal workers seems to lag compared to other developments and there is also a lack of information about potential re-training plans that would enable coal workers to seek employment in different sectors.
- Need for a long-term transition away from biomass: Biomass should be produced and processed sustainably to optimize emissions reductions and maintain ecosystem services.

4 POLICY INSTRUMENT ADDRESSED: THE ENVIRONMENTAL AND ENERGY-EFFICIENCY OPERATIONAL PROGRAMME (KEHOP) 2014-2020

4.1 NATIONAL FACTS

4.1.1 RELEVANT NATIONAL POLICIES

The Hungarian Government aims to ensure that most of the power generated in Hungary originates from two sources: nuclear energy and renewable energy – the latter produced mainly by solar power stations. These technologies are mutually supportive. Carbon neutral nuclear energy provides roughly half of the power generation in Hungary. Refined measures (see ANNEX II) are envisaged in the recent National Energy and Climate Plan (NECP), in order to ensure the compliance to the Energy Transition priorities, set by the respective Ministry of Innovation and Technology and funded by the Cohesion Fund (CF) and the EU Regional Development Fund (ERDF).¹⁰

4.1.2 STATE OF PLAY

In 2015, national electricity generation amounted to 30.2 TWh, with an installed capacity totalling around 8.6 GW of which 7.3 GW are constantly available; a net 13.7 TWh of electricity was imported. In 2015, Hungary's domestic electricity production mix was as follows: nuclear energy had a share of 52.5%, electricity produced from coal and lignite 19.5%, gas-fired generation 16.8%, and renewable energy about 9.9%. As concerns renewables, biomass and wind energy are the main contributors, followed by hydropower, biogas and municipal waste-based energy; solar energy, on the other hand, plays a more minor role.

4.1.3 NEED FOR IMPROVEMENT

Hungary is among the select few 21 countries in the world where the GDP increase was accompanied by a significant (approximately 32%) decline in the carbon dioxide emissions and energy consumption (15%) since 1990. Thus, Hungary not only ranks high among European countries in terms of economic performance, surpassing the average rate of GDP growth in the Eurozone by 2-3 percentage points, but

¹⁰ The Ministry of Innovation and Technology: The National Energy and Climate Plan
https://ec.europa.eu/energy/sites/ener/files/documents/hu_final_necp_main_en.pdf

has also made significant strides in reducing its GHG emissions and improving the energy efficiency of the economy.

A major issue that Hungary faces currently is its dependence on importing both electricity and raw materials needed for power production; the latter also applies in the case of nuclear power (imported uranium). At the same time, the share of renewable energy, which would provide a way for the country to increase its energy autarky, in the energy mix is still low, lagging behind CO₂-intensive power production processes (coal and gas). As a result, the following areas for improvement were initially identified as important in the context of the DeCarb project:

- a) Promote the large-scale introduction of renewables (especially wind and solar), and invest on energy storage facilities on and offline a corresponding distribution grid, and
- b) Phase out fossil-fuels and reconvert former mining sites to other productive uses.

KEHOP acknowledges the need to address the issue of Hungary's energy vulnerability by decreasing the dependency on fossil fuel imports and increasing the energy efficiency of the economy, while further reducing the CO₂ emissions. Therefore, the policy instrument can be improved in the following areas, to better achieve these targets:

- Better pursue the phasing out of lignite and brown coal power production, to increase energy efficiency and reduce climate change emissions
- Focus on the large-scale introduction of renewables rather than smaller initiatives
- Harmonise targets for the renewables' share in the energy mix with the Clean Energy for All Europeans package.

4.2 THE ROLE OF ENEREA

ENEREA's core activity is to support local, regional, and national authorities through consultation processes and the preparation of studies and action plans. ENEREA also consults with agencies responsible for regional development, universities, and experts of the energy sector. ENEREA, as the first energy agency of Hungary operating at the regional level in the Northern Great Plain Region, is entitled to facilitate the increase of the utilization of renewable energy sources, but also improve the energy efficiency and diversification in order to contribute to achieving the National and European energy goals and facilitate sustainable regional development.

ENEREA monitors the contribution of the Northern Great Plain region to achieving the targets of KEHOP's. On this basis, ENEREA is responsible for setting the regional energy strategy, which both influences and is influenced by the implementation of KEHOP. ENEREA reports on the results of regional and local actions back to the Managing Authority, in direct relation to the measures and actions put in place by KEHOP (this process covers exclusively Priority Axis 5). Based on this feedback, ENEREA has identified certain priorities and made suggestions regarding the management of KEHOP, especially on how to attract regional beneficiaries (businesses) to projects related to investments on renewables:

- Reduce carbon emissions by promoting clean energy production, the exploitation of modern technological applications and the use of carbon capture and storage technologies.
- Promote energy efficiency and the use of renewable energy sources in public infrastructures, residences, and businesses.
- Reduce the primary energy requirements and dependence on solid fuels.
- Disseminate information and conduct awareness-raising actions for the rational use of energy resources and renewable energy sources.

4.3 THE ROLE OF STAKEHOLDERS IN THE ACTION PLAN

Stakeholders had an integral role in identifying the salient issues and challenges that the region of Észak-Alföld faces as a result of the ongoing decarbonisation and transition to a sustainable economic model. Their experience and input was extensively discussed in the bi-annual stakeholder meetings.

These regular meetings provided an excellent opportunity for the regional stakeholders to voice their opinions on the various DeCarb activities and on topics related to the DeCarb objectives, in a bottom-up process that contributed considerably to the overall goals of the project and provided additional points of view from each region. The conclusions of these stakeholder meetings were subsequently shared with the DeCarb project partners enhancing the experience and knowledge sharing between regions.

As regards the present action plan, the discussions that took place during the stakeholder meetings played a decisive role in selecting suitable actions that facilitate a just transition for the region and alleviate its adverse socio-economic impact on the local communities. The specific role that stakeholders played in the development of the two actions proposed in this document is outlined in more detailed within each



action. In general, stakeholders have proven to be an indispensable part of the DeCarb project and their participation enriched the project to a considerable degree.

5 IMPROVING THE KEHOP 2014-2020 THROUGH THE DECARB PROJECT

The “Environmental and Energy-Efficiency Operational Programme (KEHOP) 2014 – 2020” for Hungary aims to increase energy and resource efficiency, by directly strengthening the environmental dimension of sustainability, while substantially contributing to the promotion of economic growth. KEHOP foresees measures to support the transition to a low-carbon economy, under its Priority Axis 5, which focuses on renewable energy production and distribution:

- Priority Axis 5: Increasing energy efficiency, using renewable energy sources
Investment Priority 5.1: Promotion of green electricity generation for network, not related to buildings and based on renewable energy sources

The policy instrument can be improved in the following areas, to better achieve these targets:

- Better pursue the phasing out of lignite and brown coal power production, to increase energy efficiency and reduce GHG emissions
- Focus on the large-scale introduction of renewables rather than smaller-scale initiatives
- Harmonize the targets for the share of renewables in the energy mix with the Clean Energy for All Europeans package.

Currently, the KEHOP, despite its overall focus on employment and social cohesion, does not link the low-carbon transition to sustainable growth through a diversified economy nor to the need for workforce reskilling. The impact on local and regional value-chains is not specifically addressed either and this is also the case with the challenges associated with the economic diversification, which is required due to the phasing out of lignite mining. In addition, the KEHOP has been drafted before the Clean Energy for All Europeans EC package, and sets lower requirements for CO₂ emissions and low-carbon technologies; in addition, it does not take into account the increased rate by which coal needs to be phased out, and the need to further promote renewables.

6 ACTIONS

6.1 ESTABLISHING A COORDINATION NETWORK TO ENHANCE COAL WORKERS' EMPLOYABILITY

Action 1	Coordination network for coal workers' employability
Relevance to the project	<p>Economic structural changes resulting in lower carbon intensive energy production and consumption may also bring about significant changes in employment needs and opportunities outside of the energy sector. To improve the labour market in the energy sector, it is necessary to raise the standard of specialized education and to better exploit opportunities offered by the dual education system.</p> <p>The action aims to:</p> <ul style="list-style-type: none"> - Ensure that coal workers and professionals linked to intensive coal mining and energy-producing activities in the region will be able to increase their re-employment opportunities, especially in the emerging renewables energy sector. - Provide support and equal opportunities for the continuing training and retraining of vulnerable workers, affected by the decarbonization of the region <p>The action especially focuses on providing opportunities that will enable coal industry workers to apply existing knowledge and skills in the renewables energy sector. To that end, ENEREA will coordinate local and regional joint efforts between communities, academic and innovation institutions, adult training centers, and business key energy producers and providers for the establishment of an Educational Network for Coal Workers' Employability, for the retraining of coal professionals and workers.</p>

The role of the Network will be to coordinate regional efforts from educational institutions and businesses that offer career reorientation services for coal workers (especially if they want to transition to renewable energy jobs within the region).

The Network will reach out to: a) coal workers interested in switching to the RES industry, b) public and sectoral authorities involved in the employment of coal workers, c) current coal employers and innovative businesses active in the RES energy sector, to enhance the employability of coal workers in the region.

Interregional inspiration

Action 1 was the result of discussions that took place between the regional stakeholders and the example of a relevant good practice that was mentioned by the Romanian partner. In particular, an issue which various stakeholders brought up and was the topic of extensive discussions was the increased need for various RE experts (i.e. engineers, technicians), in view of the ongoing and future increase in the energy production from RE sources.

Of particular interest to the stakeholders was the experience shared by the Romanian partner, which was included in the activity “A1.2 Identification of good practices on decarbonization and clean energy”, and concerned the plans to establish, as a result of a cooperation between Romanian Wind Energy Association, the Ministry of Energy, the University of Petrosani and companies such as Monsson - RESS and CEZ Romania, an Academy for Renewable Sources and Distribution of Electricity in the Jiu Valley. The Academy will seek access to funds through the Transboundary Carboniferous Platform, during the 10-year project implementation period, to train about 5,000 wind energy specialists and 3,000 electric, mechanic and hydraulic power specialists per year, for a total of up to 8,000. The certifications to be awarded are expected to allow workers to work in the installation, operation and maintenance of renewables’

projects. The program is designed to make it possible for a trainee to work in wind farms within 6 months of training.

At the same time, a major concern of the local communities, which was also voiced by the stakeholders in their meetings, was related to the future of the coal miners and particularly their ability to seek employment in different sectors and consequently the increased need for a better coordination of the various retraining schemes and relevant VET programs. Such a need for better coordination and higher effectiveness is highlighted by the lack of success that has often characterized past efforts to retrain coal miners.

In view of these two issues raised by the local communities and stakeholders, it was decided that best course of action, in alignment with the overarching aims and objectives of the DeCarb Project, would be to establish an Educational Network for Coal Workers' Employability, which is expected to bring together and coordinate the efforts from all relevant partners that can be involved in the retraining of coal miners, with the aim of improving the coal miners' employability and, simultaneously, covering the present and future needs for personnel that is specialized in RE technologies and their implementation.

Description of the action

The implementation of the Action consists of two sub-actions:

- Sub-Action 1: Training of staff who will manage the coordination network. To this end, ENEREA will regularly facilitate the training of the staff concerned.
- Sub-Action 2: Development and operation of an Educational Network for enhancing the employability of coal workers, coordinating the various existing initiatives on coal worker retraining/upskilling, bringing together businesses, vocational education centers, universities, regional development agencies, and any other relevant

organizations involved and/or with a mandate to offer retraining services to coal workers and professionals.

Services coordinated by the Network, realizing the Action:

- Identify sectors with labor shortage and/or employment opportunities in the area.
- Identify the required skills in these sectors.
- Match coal miners to the sector that has the closest alignment skill-wise.
- Consult with the training organizations for adjustments in the retraining programs based on the above results.
- Provide information to the miners on the available training services and employment opportunities.

Identify opportunities for internships/on the job training.

Stakeholders involved Indicatively, the stakeholders in the Action will be (currently in consultation):

MANAGING AUTHORITY & MINISTRIES

- Managing Authority for Environmental Programmes, Deputy State-Secretariat of Environmental and Energy-Efficiency Operational Programmes, Ministry of Innovation and Technology
- Ministry of Education

ENERGY PROVIDERS

- MAVIR Hungarian Independent Transmission Operator Company Ltd.
- Electricity Coordination Group (ECG)

LOCAL MUNICIPALITIES

Municipalities of Debrecen, Eger, Miskolc, Nyíregyháza, Salgótarján and Szolnok

ACADEMIC INSTITUTIONS

- University of Debrecen
- University of Miskolc
- Universities' Career Centres
- Centre for Energy Research of the Hungarian Academy of Sciences
- National Research, Development and Innovation Office
- Research Institute of Agricultural Economics
- Építésügyi Minőségellenőrzési Nonprofit Kft.
- Hungarian Mining and Geological Service

BUSINESS ACTORS

Hungarian Chamber of Engineers

Timeframe	2021-2023 (Phase 2 of the DeCarb project)
Indicative costs	The personnel needs for the operation of the Coordination Network by the Managing Authority are estimated at 2 employees. These needs are expected to be covered by the reallocation and retraining of existing employees of the Managing Authority. As a result, no additional costs are expected by the implementation of the action.
Indicative funding sources	Environmental and Energy Efficiency Hungary 2014-2020

6.2 INSERTING A MONITORING MECHANISM IN THE GOVERNANCE OF THE KEHOP TO ASSESS RES DEPLOYMENT IN THE REGION

Action 2

Monitoring mechanism with indicators to assess RES deployment in the region

Relevance to the project

The mission of the DeCarb project focuses on exchanging experiences and transferring knowledge on how to transition from the carbon-intensive energy model towards a clean energy future, supporting regions in securing sustainable development, economic and societal stability, and a role in the 2030 energy mix.

The provision of appropriate regulation, mechanisms, and criteria for successful business investments in renewable energy production and transmission activities is a key factor for the sustainable creation and development of an emerging green economy in coal-dependent regions, for assisting communities and businesses to decouple from lignite-based value-chains, accessing new markets and capacity building to adapt to the new energy framework.

It is expected that the local communities and markets, currently affected by the negative impact of decarbonization and the COVID-19 crisis, could greatly benefit from such a monitoring mechanism. The reason for this choice is that business investment in RES can strengthen the recovery of the local economy and enable the transition to a greener and more sustainable economic model, while alleviating the hydrocarbon dependency on foreign resources and increasing the energy self-sufficiency of the country.

The mechanism proposed is expected to enable the better management and coordination of subsidies for renewable energy projects.

Implementing this action, ENEREA will:

- Consult with the Managing Authority, which must have a concrete and long-term planning for the large-scale introduction of renewables
- Integrate local/regional specificities in the governance of KEHOP
- Consult with the Managing Authority to ensure the inclusion of the assessment mechanism proposed in the KEHOP+ 2021-2030 (the successor of KEHOP plan, consisting on the Just Transition Plan 2021-2030, which is under formulation and currently under public debate), using the suggested indicators for the RES investments in the region.

Interregional inspiration The interregional inspiration for this action derived through the Workshop A3.1 activity, namely “Interregional workshop on the large-scale introduction of renewables in partners' energy mix”, addressing issues of: a) economic & technical aspects of investments/infrastructures required, b) energy stability & sufficiency, and c) partners’ new role in the EU energy mix. This workshop was organized by AGENEX in the 2nd semester of 2019 (Phase 1), and was attended by the entire DeCarb partnership. Partners discussed the role of stakeholders in the support and adoption of renewable energy, based in the input study drafted by AGENEX, which highlights:

- The role of stakeholders in the support and adoption of renewable energy.
- The monitoring and examination of potential and reality regarding the future energy mix and the share of renewable energy.
- The determination of the needs in partnership regions, in order to proceed in the implementation of renewable energy.

Partners discussed the efforts to introduce RES projects into their region and the need to coordinate the monitoring and assessment of these efforts. Sharing its own experience, the German partner - the Ministry for

Economic Affairs and Energy, Federal State of Brandenburg (MWE) – elaborated on the measures adopted to monitor the environmental quality in the state, and the advising of regional city councils on how to monitor these measures as part of their strategic approach to the transition to a low-carbon economy.

ENEREA retained this aspect as a lesson learnt and shared it with the Hungarian stakeholders during the post-workshop stakeholders meeting, as a possibility to address the previously located lack of suitable criteria to assess the conformity of current and future RES investments.

This initial discussion was further examined through communications (telco and e-mail exchange) with the MWE and was reformulated, consulting with the Managing Authority of the KEHOP, to address the regional and national needs. ENEREA’s stakeholders were also involved, particularly providing feedback on the indicators to be included in the action.

Description of the action

The implementation of the Action consists of two sub-actions:

- Sub-action 1: Defining reliable indicators for assessing the deployment of renewable energy projects in the region
- Sub-action 2: Assisting the Horizontal Monitoring Committee (HMB) to improve KEHOP’s existing monitoring mechanism (coordinated by HMB) and supporting HMB in realizing the monitoring and evaluation processes.

The tentative outline of these criteria and the monitoring mechanism can be found in the ANNEX I.

Stakeholders involved

The stakeholder in the Action will primarily be the Managing Authority of the policy instrument.

- Managing Authority for Environmental Programmes, Deputy State-Secretariat of Environmental and Energy-Efficiency Operational Programmes, Ministry of Innovation and Technology.
- Horizontal Monitoring Committee (Horizontális Monitoring Bizottság): The Secretariat of the Prime Minister is responsible for the use of EU funds provided by the State Secretariat. The Horizontal Monitoring Committee (HMB) is responsible for the sustainable development and territorial cohesion monitoring and validating cohesion aspects during implementation.

Timeframe	2021-2023 (Phase 2 of the DeCarb project)
Indicative costs	Action 2 aims to improve the existing KEHOP's monitoring mechanism led by the HMB, by introducing suitable indicators for the assessment of renewable energy projects. As a result, no additional, operational or other, costs are expected to arise from the implementation of the action.
Indicative funding sources	Environmental and Energy Efficiency Hungary 2014-2020

7 ANNEX I

These are tentative indicators aiming to measure the efficiency of the “Environmental and Energy-Efficiency Operational Programme (KEHOP) 2014-2020” in supporting the deployment of renewables in the region of Észak-Alföld.

The indicators are divided into three areas: a) transparency of subsidies for renewable energy projects, b) ease of acquiring permits for a renewable energy project, and c) incentives and regulatory support for renewable energy projects.

#	Indicator	Assessment/metric
1	Transparency of subsidies for Renewable Energy (RE) projects	
1.1	The total amount of subsidy allocated to RE is specified in laws or policies	Determine whether or not the total amount of subsidy that will be available for RE is specified in law or policy
1.2	The duration of subsidies for RE is specified	Determine if the time when subsidies for RE will end is specified in law or policy
1.3	The frequency that remuneration rates and incentives for renewables can be modified by the relevant authorities is specified in laws, policies, or regulations	Determine whether or not the times when RE subsidy levels can be modified are specified in laws and regulations
1.4	The amount of adjustment that can be made to remuneration rates and incentives for renewable energy is identified in laws or regulations	Determine whether or not the extent to which relevant competent authorities can adjust remuneration rates and incentives levels for RE is specified in laws and regulations
2	Ease of permitting a RE project	
2.1	Time and no. of procedures to obtain environmental permits for an RE project	Evaluate the number of days and the number of procedures necessary to obtain all

<p>2.2 Time and no. of procedures to get land use permits for an RE project</p>	<p>environmental, land use, resource use permits and to negotiate an off-take agreement.</p>
<p>2.3 Time and no. of procedures to get resource use permits for an RE project</p>	<p>[Conduct this analysis for a standard set of renewable energy technologies of different sizes.]</p>
<p>2.4 Time and no. of procedures to negotiate an off-take agreement for an RE project</p>	
<p>3 Incentives and regulatory support for an RE project</p>	
<p>3.1 Open access to published clear and practical guidance on what permissions are required to develop an RE project</p>	<p>Determine whether there are accessible clear and practical guidelines on what permissions are required to develop an RE project</p>
<p>3.2 Offer of direct financial incentives for RE project (e.g. capital subsidies, grants or rebates, investment tax credits, tax reductions, production tax credits)</p>	<p>Determine whether there are direct financial incentives for an RE project and of what kind</p>
<p>3.3 Offer of long-term contracts for an RE project by producers (e.g. via feed-in-tariffs, PPAs awarded through auctions etc.)</p>	<p>Determine whether there are long-term contracts for an RE project by producers and of what kind</p>

8 ANNEX II

This ANNEX details the newly governmental Policy Priorities on Energy Production, as stated in the National Energy and Climate Plan¹¹ issued by the Ministry of National Energy and Climate Plan.

PRIORITY	CONTEXT
ELECTRIFICATION	<p>The next two decades will be characterized by electrification; the share of electricity within total energy consumption will increase, with a rise in electricity demand among the energy sources, which, however, will lead to the consumption of more climate-friendly electricity (nuclear power and electricity produced from renewable energy sources).</p> <p>As the underlying cause, as a result of tightening climate policy measures and technological development, the consumption of electricity produced by more climate-friendly means will replace a growing share of energy consumption for transport and heating purposes through the spread of electromobility and the use of heat pumps, for example. The electrification of industrial processes – posing a more complex technological challenge – will also produce a substantial effect.</p>
SECTOR COUPLING	<p>The convergence of energy systems (sector coupling) will intensify, involving the interconnection of the production processes of various forms of energy (electricity and heat, and fuels).</p> <p>The gas and electricity markets are already interconnected at a number of points.</p> <p>In the near future, however, sector coupling may also extend to new areas, such as the replacement of gas based heating and cooling with electricity based on renewable energy sources and heat pumps in regions with infrastructures with a low utilization rate or which are not connected to the gas network.</p>

¹¹ The Ministry of Innovation and Technology: The National Energy and Climate Plan
https://ec.europa.eu/energy/sites/ener/files/documents/hu_final_necp_main_en.pdf

The convergence of energy systems is also supported by the development of energy storage technologies (e.g. battery, heat storage, power-to-gas technologies).

DECARBONISATION The structure of electricity generation will also change; electricity generation from fossil fuels will gradually diminish, to be replaced with renewable forms of energy production with low GHG emission intensity.

As a major challenge associated with the decarbonization trend, however, weather-dependent renewables offer significantly variable capacities both an intraday and seasonal basis. More and more types of flexibility solutions will be needed in the future.

DECENTRALISATION Supply based on the growing weight of renewable energy necessitates a completely different network structure. Large power plants will be replaced and/or supplemented with many smaller, decentralized production units that are commonly connected not to high-voltage networks, but to either distribution networks or operate as independent islands.

The transformation not only affects the infrastructure, but classic consumer and producer roles will also change. Prosumers already exist, which not only consume but also operate as decentralized producers.

DIGITISATION The capacity of the electricity grid is limited, therefore electricity supply must operate in complete harmony in real time with the demand of millions of consumers.

Although the broad application of digital technologies is a major challenge, it also offers enormous opportunities for facilitating the interconnection of energy systems and energy market participants, including producers, network operators and consumers, and to enhance the intelligence, efficiency, reliability and sustainability of networks.

In digitized energy systems, communication is faster between production, demand, storage and the network. It is easier to determine who needs energy where and at what time.

The digitalization of the systems can improve the efficiency of energy production, the transfer and distribution of energy, and also offers more opportunities and choices to consumers in determining their energy consumption.

A growing number of energy consumers expect accessible options – e.g. mobile applications, online administration – for administering their day-to-day affairs as fast and as efficiently as possible, reducing the time needed or without the need for personal administration to enable them to meet their needs with as little personal contact as possible.