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Action Plan of the POWERTY Project

Renewable energies for vulnerable groups

May 2022

POWERTY Interreg Europe

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ЕНЕРГИЙНА АГЕНЦИЯ ПЛОВДИВ

ENERGY AGENCY OF PLOVDIV

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Content

1. Part I – General information

- ✓ Project: POWERTY project – Renewable energies for vulnerable groups.
- ✓ Interreg Europe Web**:** https://www.interregeurope.eu/powerty/
- ✓ Regional Web**:** https://eap-save.eu/
- ✓ Partner organisation: Energy Agency of Plovdiv (EAP)
- ✓ Country: Bulgaria
- ✓ NUTS2 region: South-Central
- ✓ Contact Person: Petar Kisyov, POWERTY project coordinator
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2. Part II – Policy context

The Action Plan aims to impact:

- ✓ **Investment for Growth and Jobs programme.**
- ☐ European Territorial Cooperation programme.
- ✓ **Other regional development policy instrument.**

Name of the policy instrument addressed:

1. **Operation Programme "Environment" (OPE) 2021-2027 Priority #5 "Air quality"**

Specific Objective: "Improving the protection and conservation of nature, biodiversity and environmentally friendly infrastructure, including in urban areas, and reducing all forms of pollution".

- ➢ The policy instrument is among the few instruments directly impacting household energy needs, providing them subsidy in the form of a new heating device.
- ➢ It targets vulnerable households relying on wood and coal, i.e. households with low-incomes that can`t afford to invest in fuel-change (less environmentally harmful heating).

- Energy Agency of Plovdiv has been the local project coordinator of the same action financed through the Operation Programme "Environment" 2014-2020 and responsible to set up the project for the Municipality of Plovdiv, gaining experience in action implementation.
- Energy Agency of Plovdiv has joined the **thematic working group** of the Operation Programme "Environment" 2021-2027 and has provided and will provide valuable feedback during the next round of public discussions.
- An updated version of the programme is currently evaluated by the EC.

2. Plan for the Integrated Development of Plovdiv Municipality 2021-2027

The Plan for the Integrated Development of Plovdiv Municipality 2021-2027 (referred as the "Plan") is about to be officially approved in Q2 of 2022. This "Plan"

- Defines the medium-term goals and priorities for sustainable development of the Municipality of Plovdiv for the period of 2021-2027;
- Links the advantages and potential for development at local level with a clearly defined vision, goals and priorities related to the pursuit of a higher standard of living in the municipality and sustainable and greener development of the territory;
- Serves for providing the framework of the ERDF program for Plovdiv for the period 2021-2027.

All mentioned, makes the "Plan" as a very strategical one, concerning the energy efficiency and RES policies and investments of the Municipality of Plovdiv for the next period of 7 years.

One of the chapters of this "Plan" is the "Energy Planning and Strategy for 2021-2027" (referred as the "Strategy") where the energy objectives defined will lead to the development of concrete "Action plans" with concrete measures, budget and indicators.

This “Strategy” is currently is in process of final fine-tunning and is based on the support provided by EAP, as a technical assistance partner and some of the POWERTY stakeholders.

The formal approval of this “Strategy” is estimated for the second quarter of 2022 and will be based on the guidelines provided by EAP and the stakeholders mentioned.

Web:

3. **Operation Programme “Environment” 2021-2027:**

https://www.eufunds.bg/sites/default/files/uploads/opos/docs/2021-11/PE%202021-2027_version%205_BG.pdf

4. **Plan for the Integrated Development of Plovdiv Municipality 2021-2027:**

https://www.plovdiv.bg/piro/struktura/

3. Part III – Details of the actions envisaged

3.1. Action 1: Municipal programme for installing PVs for self-consumption and Battery Energy Storage systems (BESSs) in social buildings

3.1.1. Background

Increased **renewable self-consumption** is currently gaining momentum in EU. Action 1 of this action plan has been influenced during the POWERTY learning process. More specifically, by the good practises developed in Andalucía (AEA – Spain) and in Auvergne Rhone Alpes (AURA-EE, France), both highlighting the success stories of different **self-consumption models.**

In Andalusia, AEA shared experience how local administrations are developing initiatives to help solve the climate change emergency and are tackling energy poverty through **collective and shared renewable self-consumption models** (link). Data technologies are optimizing the energy distribution between users associated with the self-consumption plant, maximizing the amount of self-consumed energy.

Also in Andalusia, Spain, the non-profit company ECOOO promotes collective and social self-consumption through different lines of action and strategies, in order to make it easier for citizens to benefit, directly or indirectly from renewable energies.

In Auvergne Rhone Alpes, AURA-EE shared experience on **collective systems based on photovoltaics for self-consumption in social housing,** which is financed by the Sol Solidaire sponsorship campaign (link). The practise installs PVs for collective self-consumption (installed power ranging from 10 to 250 kWp) in social housing (social and public landlords) with the aim to reduce their energy bills. An annual reduction of the electricity bill by €200 per household is achieved.

Finally, experience is derived from the bilateral meeting taking place with VIPA (Lithuania), which highlighted the role of remote renewable energy power plants on household's electricity consumption. The successful model developed in Lithuania is **allowing consumers to become prosumers by doing investments in remote PVs** (link). The practice allows a rapid increase of PVs in the residential, public and private sectors.

3.1.2. Actions to be implemented

Action 1 foresees setting up of a Municipal programme for installing PVs for self-consumption and BESS (PV+BESS) in social buildings (mainly kindergartens) to cover own electrical demands.

The Municipality of Plovdiv will launch a Municipal programme to equip 40 social building with PV+BESS systems. In order to do so, public procurement to select the contractors to analyse the energy consumption and power loads and to design and implement the PV+BESS systems per each social building will take place.

The Energy Agency of Plovdiv (EAP) and the Green Synergy Cluster will monitor results, impact and provide feedback and recommendations for the installation implementations.

3.1.3. Players involved

- **Municipality of Plovdiv** will contract a private contractors to define the individual building`s PVs requirements.

- **Private contractors** will analyse the consumption and load patterns, roof conditions and design the solution per each building and will implement the solutions.

- **Energy Agency of Plovdiv (EAP)** will monitor results, impact and provide feedback.

- **Green Synergy Cluster** will monitor results, impact and provide feedback.

3.1.4. Timeframe

The different activities and their timeframe to be implemented for this action are described below:

ACTIVITIES OF THIS ACTION	MONTH PHASE 2
The Municipality of Plovdiv launch the public procurement to select the contractors to design the PVs for self-consumption and BESS solutions in the 40 social buildings.	September 2022 to November 2022
The contractors collects building related information from and implements the PVs + BESS solutions in the 40 social buildings.	January 2022 to May 2023
The Energy Agency of Plovdiv (EAP) and Green Synergy Cluster monitor the project designs development and installations implementations, as well as the following indicators: • Number of children benefited: 4,000 • CO_2 reduction: 1,277 t/y • Energy generated 1.56 MWh/y	April 2023 to July 2023

3.1.5. Cost

The budget of this action is estimated in **EUR 1,500,000**.

3.1.6. Funding sources

The **measures will be eligible for funding under the Operational Program "Development of the regions 2021 – 2027". The funds are set aside in Priority 1 "Integrated Urban Development".** The distribution of the resource will be on a competitive basis, and beneficiaries from the more active municipality will be able to absorb a larger share of the budget set for the cluster.

3.1.7. Policy instrument to be improved

The policy instrument to be improved with this action is the **Operational Program "Development of the regions 2021 – 2027".**

3.2. Action 2: A new municipal subsidy programme for coupling heat pump with RES within vulnerable households in Sofia Municipality

3.2.1. Background

The good practice is identified during the learning process of the POWERTY project and by the exchange of good practices with POWERTY partners. More specifically, these are the good practises highlighting the success stories about STOP SMOG program (link) and Clean Air program (link).

The Clean Air program foresees the reduction of bith the air pollution and reduced energy consumption. To do so, the **programme subsides the replacement of the heating source, providing additional opportunities for the end users, such as the photovoltaic installations (PVs)** for instance, as long as this action is also carried out together with the replacement of the heat source. Action 3 has similarities with the Air-wood fund good practice coming from France (link), where similar heating issues (polluting domestic heating) are treated by **subsidizing the replacement of old wood heating equipment with high-performance renewables ones**.

Finally, inspiration is derived from the bilateral meeting with VIPA (Lithuania), which focused models on remote renewable energy power plants facilitating the increase of the number of prosumers. It is a successful model **allowing consumers to become prosumers** (link). Such practices are seen as important tools for the larger RES development.

3.2.2. Actions to be implemented

Based on the success and evidence about viability demonstrated during POWERTY Pilot action in Plovdiv, Bulgaria which implemented 3 hybrids consisted of PVs and Battery Energy Storage systems (PV+BESSs) within public buildings with social purpose, **this action consists of sets up a new municipal subsidy programme in Sofia municipality to test the process from application to implementation the hybrids heat pumps and PVs and/or BESSs in 50 low-income households.**

The technology coupling of efficient heating systems, like the heat pump with additional RES will allow significant decrease of the factors causing energy vulnerability in Bulgaria. Such instruments will allow a large number of vulnerable households affected by energy poverty to have new energy supply produced through RE, achieving significant decrease of both their energy bills and CO_2 emissions.

The measure allows 50 low-income households to reap the immediate benefit of greater thermal comfort for significantly lower cost, coupling electricity driven heat pumps with PVs to power it. This delivers community benefits of reduced harvesting of wood from

local forests and better air quality, while reducing energy poverty. In this way, energy efficiency in homes contributes to sustainability over the long term, raising citizens' awareness of the impact of domestic heating on the air quality.

The outputs derived from the implementation of this action will serve to formulate the necessary guidelines, allowing rest of the admissible Municipalities to utilize all developed tools from this programme, so as to implement similar programmes at local level, empowering households to change their heating. **This programme includes the development of the following tools:**

- entry and eligibility criteria for the low-income households – to serve to the needs of the Management body of OPE,
- study on the technologies and technological coupling conditions, including installed heating and PVs capacities per type of dwelling (insulated and non-insulated, number of occupiers, dwelling size, etc.),
- package of application documents,
- investment preparedness calculations tools.

In order to set up this action, the Energy Agency of Plovdiv (EAP) through collaboration with Sofia Municipality and the Managing Body of OPE will have as a result:

- A study of good European practices examples of heating applications with heat pumps and PVs and storage,
- Estimations on the indicative investment costs for the different types of dwellings, technologies, capacities and energy behaviour,
- Criteria for selection of appropriate heating technologies through heat pump systems for the various pilot buildings,
- Eligibility conditions and application criteria,
- Necessary package of application documents.

This programme developed and implemented will serve to formulate the necessary guidelines, so each eligible Municipality under OPE will be able to use and apply them for the purposes of empowering households to change the heating during.

3.2.3. Players involved

- **Ministry of Environment and Water** is the principal Managing Authority of the Operation Programme "Environment", which is responsible for the preparation of the program for 2021-2027.
- **Energy Agency of Plovdiv (EAP).** Member and founder of ABEA and POWERTY coordinator at regional level.
- **Sofia Municipality:** Municipality where the updated programme is run, tested and demonstrated.

3.2.4. Timeframe

ACTIVITIES OF THIS ACTION	MONTH PHASE 2
Signature of the contract Programme implementation phase. This includes the development of this programme vision, including: • study of good European practices and examples of heating applications with heat pumps and PVs and storage. • estimations on the indicative investment costs for the different types of technologies, capacities and users. • selection criteria set of appropriate heating technologies through heat pump systems for the various pilot buildings. • development eligibility conditions and application criteria. • development of the necessary package of application documents.	August 2022 to March 2023
Selection phase to identify applicable households	November 2022 to July 2023
Implementation phase	January 2023 to July 2023
Monitoring phase (low-income households: 50)	Above the beyond of the POWERTY Phase 2

3.2.5. Cost

This programme will have an indicative budget of **127,800 €** and will be able to support nearly 50 low-income households to set up such hybrid systems within Sofia Municipality.

3.2.6. Funding sources

The financing will be provided through the **Operation Programme "Environment" (OPE) 2021-2027 Priority #5 "Air quality"**.

3.2.7. Policy instrument to be improved

The policy instrument to be influence will be the **Operation Programme "Environment" (OPE) 2021-2027 Priority #5 "Air quality"**. OPE intends to finance specific actions in Municipalities struggling with air quality. To do so, Municipalities need to adopt new programmes at local level targeting vulnerable households relying on wood and coal, i.e. households with low-incomes to change their heating with an alternative form. The operational programme has an indicative budget of 60 M€.

3.3. Action 3: Improved energy planning at local level targeting RES

3.3.1. Background

Action 3 is based on the success and the evidence demonstrated on the viability of the Photovoltaics and Battery Energy Storage systems hybrids (PVs+BESS) during the **POWERTY pilot action in Bulgaria**. The project implemented a total of 26 kWp PV capacity and 81.2 kWh of storage capacities within 3 public buildings with social purpose in Plovdiv, Bulgaria. It demonstrated a novel technical solution allowing buildings to achieve a significant share of renewable self-consumption and decreased electricity consumption. The action demonstrated a novel approach how end users can significantly decrease onsite electricity consumption and improve heating/ cooling comfort through RES, alleviating high electricity bills and thus energy poverty.

3.3.2. Actions to be implemented

The outcomes of the bulgarian pilot action and implemented meetings **already resulted to an improved the** "**Plan for the Integrated Development of Plovdiv Municipality 2021-2027**, referred as the "Plan" , where specific sub-measures targeting increased self-consumption within **the policy instrument** and more specifically as part of **Priority 1. "Clean, green and attractive city of Strategic goal 1"** were defined.

The sub-measures defined are seeking to deploy a group of projects to mitigate climate change through the implementation of energy efficiency measures and introduction of PVs and PVs+BESS for self-consumption in public and private buildings.

During the Phase 2 of POWERTY project, EAP plans to **monitor the implementation of the Plan** and analyse the implemented installations and the funding demand to draft new proposals to improve and/or propose new actions dedicated to the increased use of RES for the vulnerable groups. This will be done both on public and private level.

The following indicators has been set within the matrix of indicators for monitoring and evaluation of the Plan:

- **Renovated kindergartens or buildings with social purpose**, incl. buildings with improved energy performance class through the implementation of photovoltaics for own consumption – **40 buildings.**

- **Households received support for the implementation of PV installation on the roofs of their homes** – **1,400.** The interexchange also generated ideas to support individual households. Hence the Municipality of Plan plans to support 1,400 households to install PVs for own consumption. The measures has been also included as part of the Measure 1.4. Climate change interventions of the Strategy.

3.3.3.Players involved

- **Municipality of Plovdiv** is responsible for the plan implementation.

- **Energy Agency of Plovdiv (EAP)** will monitor results, impact and provide feedback.

- **Green Synergy Cluster** will monitor results, impact and provide feedback.

3.3.4. Timeframe

The different activities and their timeframe to be implemented for this action are described below:

ACTIVITIES OF THIS ACTION	MONTH PHASE 2
MONITORING: EAP monitor the "Plan": The implementation of PV+BESS, number of buildings with installed PVs, number of households with installed PVs, investments in RES, etc. EAP continue to monitor the impact generated from the pilot action within the 3 social buildings: Renewable energy generation, consumption and stored energy, CO_2 emissions avoidance, economic results, such as the reduction of the energy bills and social acceptance and vulnerability changes status, such the decreased energy costs (the expenditure approach), the improved self-reported assessment about the level of domestic energy service.	August 2022 to July 2023

PROPOSALS FOR AMENDMENTS AND IMRPOVMENTS: EAP analyse the implemented installations and the funding demand, then it will draft **new proposals to improve and/or create new measure** dedicated to increase use of RES within social buildings and for the vulnerable groups.	March 2023 to July 2023

3.3.5. Cost

No external budget will be used.

3.3.6. Funding sources

The measures have been applied within the **Plan for the Integrated Development of Plovdiv Municipality 2021-2027.**

3.3.7. Policy instrument to be improved

The policy instrument to be influenced is the **Plan for the Integrated Development of Plovdiv Municipality 2021-2027.**

Conclusions

The action plan emerged with the need to improve policy instruments in the field of renewable energy. The Action Plan consists of various concrete measures which are the result of the compilation, analysis and adaptation of good practices identified by the various POWERTY partners, thanks to the interregional work carried out and the important role of experts and project partners.

Date: May 2022.
Signature:
Stamp of the organization (if available):