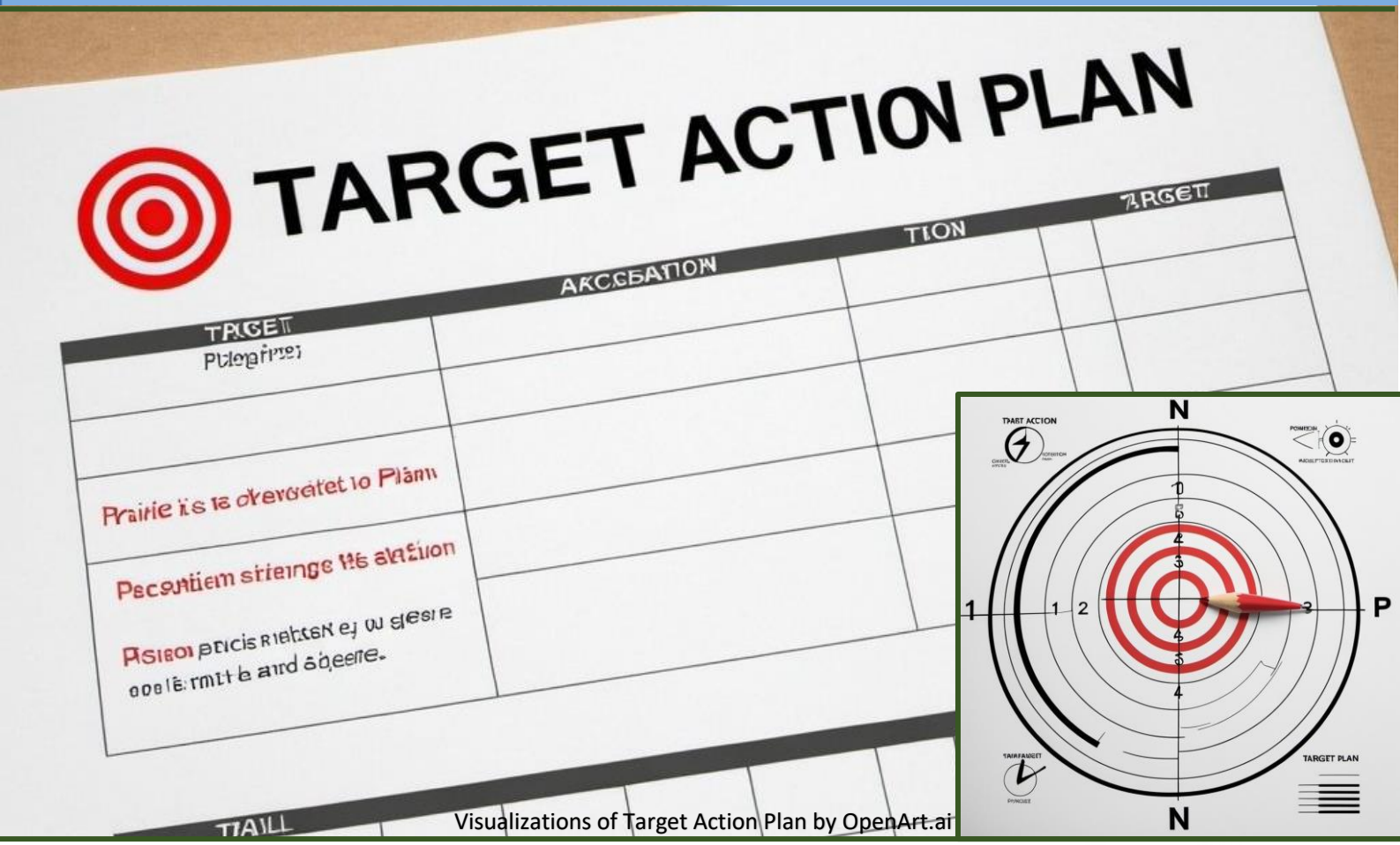
simply positive

D5.1. Target Action plan with Sets of Sustainable Indicators

21st of June 2024



Visualizations of Target Action Plan by OpenArt.ai

SONNENPLATZ Großschönau

Città di Settimo Torinese

AMS Amsterdam Institute for Advanced Metropolitan Solutions

TU Delft

PV Works

denkstatt create sustainable value

FH University of Applied Sciences TECHNIKUM WIEN

Reșița

Leader SET (RINA-C/LINKS)

Dissemination Level

PU	Public	X
CO	Confidential	

History

Version	Description	Lead author	Date
V1	First Template	SON	February 2023
V2	First draft shared with the coordinator	RINA-C/LINKS	April 2024
V3	Deliverable Review	SON	April 2024
V4	Second draft shared with the consortium	RINA-C/LINKS	May 2024
V5	Deliverable Review	SON	May 2024
V6	Final document	RINA-C/LINKS	June 2024
V7	Final formatting	SON	June 2024

Disclaimer

This project has been developed in the framework of the PED Program, which is implemented by the Joint Programming Initiative Urban Europe and SET Plan Action 3.2. *The Austrian part is supported by the Austrian Ministry of Climate Action, Environment, Energy, Mobility, Innovation, and Technology (BMK); the Romanian part is supported by a grant of the Ministry of Research, Innovation and Digitization CNCS/CCCDI – UEFISCDI, project number PED-JPI-SIMPLY POSITIVE, contracts number 325/2022 and 326/2022, within PNCDI III; the Dutch part is supported by the RVO (the Netherlands Enterprise Agency), reference number ERANETPED-02767306; and the Italian part is supported by a grant of the Ministry of Education and Merit - Department for Higher Education and Research, project number PED_00042, from the Fund for Investment in Scientific and Technological Research (FIRST/FAR) and/or Special Accounting Account no. 5944.*

Executive Summary

Deliverable D5.1, "Target Action Plan with Sets of Sustainable Indicators", is a pivotal component of the Simply Positive project's mission to support the emergence of Positive Energy Districts (PEDs) and the transition to climate-neutral cities. The objective of this deliverable is to establish a robust monitoring framework to track progress, visualize processes, and maintain high levels of motivation within the focus districts.

Recognizing the constraints of local administration personnel resources, our approach emphasizes simplicity, clarity, and efficiency in data input and result visualization. Leveraging methodology guidance from the Covenant of Mayors, we have developed a comprehensive monitoring plan aligned with city and PED boundaries. This plan facilitates the establishment of Specific Sustainable Indicators across environmental, social, and economic domains, tailored to monitor progress towards set targets and goals. Additionally, we align these indicators with relevant Sustainable Development Goals (SDGs) to ensure comprehensive tracking.

The Target Action Plan outlined in this deliverable provides a roadmap for the successful implementation of innovative strategies and actions agreed upon at the local authority level. By aligning goals with executable plans, we aim to facilitate the creation of PEDs in the focus districts and accelerate progress towards climate neutrality. This deliverable serves as a crucial tool for expert stakeholders (policymakers or implementers) to navigate the complex landscape of sustainable urban development and drive meaningful change.

List of Figures

Figure 1 – Workshop held in Resita in November 2023 to develop the SECAP 13
Figure 2 – Workshop held in Resita in July 2023 to develop the SECAP 13

List of Tables

Table 1 – Secondary Indicators 17

List of Abbreviations and Acronyms

BEI	Baseline Emission Inventory
CoM	Covenant of Mayors
D	Deliverable
EU	European Union
GHG	Greenhouse gases
ICT	Information and Communication Technology
KPI	Key Performance Indicator
MEI	Monitoring Emission Inventory
MoUs	Memoranda of Understanding
PED	Positive Energy District
PEN	Positive Energy Neighbourhood
REC	Renewable Energy Community
RVA	Risk and Vulnerability Assessment
SDG	Sustainable Development Goal
SECAP	Sustainable Energy and Climate Action Plan
T	Task
PV	Photovoltaics
WP	Work Package

Table of Contents

1 INTRODUCTION 7

1.1 Purpose of the document 7

1.2 Relation to other project activities 7

1.3 Structure of the document 8

2 OBJECTIVES AND GOALS 10

2.1 Establish SMART Objectives: 10

2.2 Framing a flexible pathway towards climate neutrality 12

3 IDENTIFY PRIORITY ACTIONS 14

4 INDICATORS FOR PEDS 16

4.1 Contribution to the achievement of the Sustainable Development Goals 16

4.2 PEDs' Indicators 17

5 IMPLEMENTATION OF INNOVATIVE STRATEGIES 18

6 WORK TOGETHER: COLLABORATION AND COORDINATION 19

6.1 Engaging Key Stakeholders 19

6.2 Establishing Collaborative Frameworks 20

6.3 Coordinating Actions and Resources 20

6.4 Fostering a Culture of Collaboration 21

6.5 Leveraging Technology for Collaboration 21

7 MONITORING OF RESULTS 21

8 A "TARGET ACTION PLAN" FOR EVERYONE 23

9 CONCLUSIONS 26

SOURCES 27

1 Introduction

To facilitate the development of Positive Energy Districts and Neighbourhoods, the SIMPLY POSITIVE project is pioneering innovative strategies, concepts, and guidelines aimed at enhancing municipal and city participation. With a particular focus on urban areas, the project explores practical methods to maximize clean energy utilization, including PV deployment, energy storage, and usage optimization. Central to this effort is the development of a standardized energy balance calculation process, utilizing accessible data to enhance acceptance and understanding. A robust monitoring system ensures the effectiveness of implemented actions. Various participation concepts are evaluated based on their potential impact and acceptance. The project aims to disseminate generated strategies, recommendations, and best practices within the PED and Smart Cities research community, facilitating widespread implementation of PEDs and climate-neutral cities across Europe

1.1 Purpose of the document

The aim of the document is to establish a comprehensive monitoring framework and action plan within the Focus Districts of the SIMPLY POSITIVE project. This includes setting strategic targets, agreeing on action plans, and monitoring progress towards achieving a positive energy balance. The document aims to ensure ongoing monitoring and visualization of processes to maintain high motivation levels while considering the limited personnel resources of local administration. Furthermore, it aims to integrate feedback from individual strategies and monitoring needs into the finalized version of the PED definition framework of Simply Positive. The overarching goal is to support the emergence of Positive Energy Districts (PEDs) and to facilitate the transition to climate-neutral cities by analysing and supporting focus regions and establishing tailored participation strategies to motivate further cities towards climate neutrality.

1.2 Relation to other project activities

The document is part of WP5 activities. WP5 “Monitoring, Controlling and Digitalisation of individual PED-Pathways “is focused on monitoring. It highlights the crucial role of continuous monitoring and visualization in maintaining motivation following the establishment of strategic objectives and action plans in Focus Districts. Given the constraints of local administration resources, ensuring clear data input and visualization is essential for sustained support. Feedback from monitoring activities informs the final PED definition framework.

The report, stemming from T5.1 “From the Status Analysis to an executable Target Action Plan”, underscores the necessity of developing a monitoring plan to ensure data traceability throughout implementation. Following the task description, this plan will consider city and PED boundaries to understand City Functional units better. Municipalities will define Specific Sustainable Indicators covering environmental, social, and economic aspects, aligned with SDGs. Subsequently, an actionable Target Action Plan will be created based on these indicators to ensure successful implementation of strategies and actions at the local level, aiming for a positive energy balance and the creation of PEDs within focus districts.

This deliverable is strongly connected to WP1 “Strategic assessment of the Focus Districts across all domains impacting the net zero transition”, as it generates the knowledge base that will drive the development of the SIMPLY POSITIVE strategies and give insights for the creation of the participation concepts. It defines the Focus District behaviour characterization; it settles the stakeholders and the Key Performance Indicators (KPI) for successful change. The KPIs have been selected and identified within WP1 activities. They are listed in D1.2 “Key Performance Indicators for PED/PEN Implementation Assessment”. The report analyses available KPI sets for the Simply Positive project and selects a set of KPIs for the PED/PEN implementation assessment of the Simply Positive Focus Districts. The KPIs established in D1.2 serve as a baseline for the KPIs identified for Target Action Plan.

Furthermore, the work undertaken in WP3 serves as a basis for the current task, since a consistent methodological framework with respect to existing urban areas on how the Focus-Districts can be considered PEDs has been developed. The foundation being done, the focus of this WP lays in practical implications from the participating Focus-Districts, view on available data sets, and easiness of application over a longer period of time with the given municipal resources. Next to the gap analysis of ideal and practically available data, all five Focus-Districts are being assessed according to the developed framework. D3.1 “Framework definition status and Methodology description for SIMPLY POSITIVE” defines the boundaries of PEDs, so it is also an important source for the current report.

This report also comprehends references to the D4.5 “Integrated SECAP+ report for Resita Municipality, published also on COMO website”, since the Municipality of Resita, in collaboration with the Resita Local Development Agency (ADLR) and Denkstatt Romania (DENK), developed, under SIMPLY POSITIVE project, the new Action Plan for Sustainable Energy and Climate.

Moreover, the Target Action Plan aligns with the development of a digital monitoring and visualization tool (D5.2) as part of T5.2. This tool, developed by DENK, serves as a demonstrator for tracking actions based on predefined requirements outlined in this deliverable.

1.3 Structure of the document

The document is divided as follows:

In the introductory section, a clear understanding of the document's purpose, its relation to other project activities, and a succinct outline of its structure, which serves as a roadmap for its exploration, is explained.

The section “Objectives and Goals” goes through the overarching aims of the document. It explains the significance of establishing SMART (Specific, Measurable, Actionable, Relevant, Time-bound) objectives and outlines a flexible pathway towards climate neutrality. Here, readers can find detailed insights into how strategic targets are set, action plans are formulated, and progress is monitored within the context of PED development.

Moving forward, the section on “Identifying Priority Actions” takes readers into the heart of PED implementation. It comprehends the collaborative efforts and stakeholder engagement necessary for realizing the vision of sustainable urban development through PEDs.

The subsequent section, “Indicators for PEDs”, provides a framework for measuring and evaluating the impact of PED initiatives. By aligning PED objectives with the Sustainable Development Goals (SDGs) and delineating key performance indicators (KPIs), this section offers a comprehensive toolkit for assessing progress and ensuring accountability in PED development.

The “Implementation of Innovative Strategies” provides the necessary insights in the technological, community-driven, and financial mechanisms underpinning PED development.

The section on “Collaboration and Coordination” underscores the importance of collective action and integrated planning in realizing the vision of PEDs. Through clear delineation of roles and responsibilities, transparent communication, and coordinated actions, stakeholders can synergize their efforts towards achieving common goals.

The “Monitoring of Results” section provides readers with a roadmap for assessing the efficacy of PED initiatives and driving continuous improvement. By establishing robust monitoring frameworks, visualizing progress transparently, and disseminating findings effectively, stakeholders can ensure that PED development remains adaptive, resilient, and responsive to evolving needs and challenges.

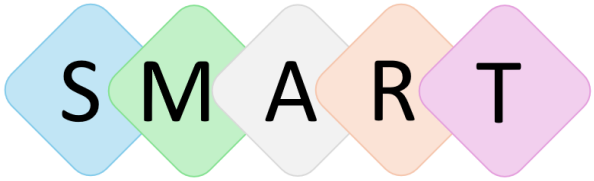
The section titled “A Target Action Plan for everyone” serves as a framework for identifying the key components that should be included in the Action Plan of any municipality. It offers guidance to writers, outlining essential elements in a structured manner.

A conclusion to the report is provided in the last section.

2 Objectives and Goals

The primary objective of this deliverable, the Target Action Plan, is to ensure the successful achievement of strategic targets and action plans within the Focus Districts to attain a positive energy balance. To accomplish this, ongoing work must be continuously monitored and visualized to maintain motivation at a high level. Given the constraints of limited personnel resources within local administration, it is imperative to facilitate easy and understandable data input and clear visualization of results. This approach ensures optimal support throughout the transitional period spanning several years.

2.1 Establish SMART Objectives:



SMART objectives are specific criteria used to guide the setting of goals and ensure they are clear and achievable. SMART stands for Specific, Measurable, Achievable, Relevant, and Time-bound. Applying these criteria to Positive Energy Districts (PEDs) ensures that objectives are well-defined and attainable, facilitating effective planning, implementation, and evaluation.

Specific Objectives:

The first step in transforming a district into a Positive Energy District (PED) is to develop specific objectives. These objectives should clearly outline the path to achieving a positive energy balance.

For instance, one specific objective could be to reduce district-wide energy consumption by 20% over the next two years. Another could be to ensure that at least 50% of the district's energy comes from renewable sources by 2026. These specific goals will guide the efforts and provide a clear focus for our activities.

Measurable Objectives:

To track the progress effectively, the objectives must be measurable. This means setting targets that can be quantified and monitored. For example, we could measure the reduction in CO2 emissions per year or track the increase in the number of energy-efficient buildings within the district. By using measurable indicators, the progress can be regularly assessed, and the decision-makers can make data-driven decisions to stay on track.

Actionable Objectives:

The specific objectives should also be actionable, meaning they can be realistically implemented with the resources and support available to the district. An example of an actionable objective is to retrofit all public buildings with energy-efficient lighting within the next 18 months. Another could be to install solar panels on 80% of district rooftops. By setting actionable objectives, it is possible to ensure that the goals are not only ambitious but also feasible.

Relevance to Energy Policies:

Ensuring relevance means aligning the specific objectives with local, national, and international energy policies. For instance, the goals should reflect the ambitions of agreements such as the Covenant of Mayors. By aligning the objectives with these policies, we can contribute to broader energy and climate targets and ensure our efforts are part of a larger, coordinated movement towards sustainability.

Time-bound Objectives:

Time-bound objectives are essential to maintain momentum and focus. Setting a clear timeline, such as achieving a 25% increase in energy efficiency by the end of 2025, provides a concrete deadline to work towards. Time-bound goals help in planning and prioritizing actions effectively, ensuring steady progress.

The objectives also must be in harmony with existing energy policies at all levels. For example, they should align with the goals set by the Covenant of Mayors and other relevant agreements. This alignment ensures that our ambitions to achieve a positive energy balance are supported by a solid policy framework, enhancing the feasibility and impact of our initiatives.

An essential part of the strategy is identifying the main challenges and opportunities in transforming into a PED. This includes considering socio-economic and environmental aspects. For instance, a significant challenge might be the high initial costs of renewable energy technologies, while opportunities could include potential job creation and economic growth in the green energy sector. Addressing these challenges and leveraging opportunities will facilitate a smoother transition.

Feedback from individual strategies and monitoring requirements will be systematically integrated into the finalized PED definition framework. This iterative process allows for the refinement and enhancement of monitoring practices, ensuring they align closely with project objectives and are effective.

Following the methodology guidance of the Covenant of Mayors, it will be possible to establish a comprehensive monitoring plan. This plan will enhance the traceability of information and data throughout the implementation horizon, considering both city and PED boundaries. The responsible personnel within municipalities will define Specific Sustainable Indicators covering environmental, social, and economic aspects, aligned with specific Sustainable Development Goals (SDGs).

An executable Target Action Plan will be developed based on the set goals to ensure the successful implementation of innovative strategies and actions agreed upon at the local authority level. This plan is integral to achieving a positive energy balance and creating PEDs within the focus districts.

2.2 Framing a flexible pathway towards climate neutrality

The three main functions of Positive Energy Districts (PEDs) are energy production, energy efficiency, and energy flexibility (Paola Clerici Maestosi & Claudia Meloni)[1]. PEDs should ultimately rely on renewable energy only, which is one of the main contributions towards climate neutrality; secondly, PEDs should utilise the renewable energies available and, thirdly, PEDs should act in a way that is optimally beneficial for the energy system. In this sense, PEDs should be conceived as part of a broader climate and energy strategy and need to be carefully planned within an overall spatial planning framework due to their spatial implications at both neighbourhood and city levels. The integration between energy and spatial planning is actually still far from finding an implementation (De Pascali & Bagaini, 2019)[2] and the Sustainable Energy and Climate Action Plan (SECAP) could facilitate this integration.

Currently, climate and energy strategies are addressed by local governments through their SECAPs and, even if they are not mandatory, they allow local governments to strategically plan their path towards climate neutrality as well as to obtain access to European, national, and regional funds (it is worth noting that several EU funds require local governments to have their SECAPs approved by the Joint Research Centre). Under the ambitious objective of reaching climate-neutrality by 2050, SECAPs define the methodology for emission inventory and monitoring, as well as the methodology for energy consumption definition and local CO2 inventory. The Baseline Emission Inventory (BEI) and the Monitoring Emission Inventory (MEI) are SECAPs' starting point to define specific targets and measures, then the Risk and Vulnerability Assessment (RVA) should be carried out. This includes the assessment of the vulnerability of the building sector, the transport sector, and the energy sector, among others.

[1] ISBN 8891650542

[2] https://doi.org/10.3390/en12010035

Figure 1 – Workshop held in Resita in November 2023 to develop the SECAP

Figure 2 – Workshop held in Resita in July 2023 to develop the SECAP

PEDs are defined by JPI Urban Europe as “energy-efficient and energy-flexible urban areas or groups of connected buildings which produce net zero greenhouse gas emissions and actively manage an annual local or regional surplus production of renewable energy”. By defining SMART (Specific, Measurable, Actionable, Relevant and Time-bound) objectives it is possible to transform a district into a positive energy balance entity within a specific time period, and this can be listed among the planned actions to be included in the SECAP. In this sense, PEDs should be conceived as the spatial implementation of SECAP’s strategy at both neighbourhood and city levels. They allow to conjugate energy, climate, and spatial planning within a defined territorial boundary and, in so doing, they play a crucial role in territorializing energy and climate policies. Indeed, as indicated by JPI Urban Europe, PEDs “require integration of different systems and infrastructures, and interaction between buildings, the users and the regional energy, mobility, and ICT systems, while securing the energy supply and a good life for all in line with social, economic, and environmental sustainability”.

By transforming existing neighbourhoods and districts into PEDs allow to simultaneously address socio-economic and environmental issues, as for instance mitigating energy poverty. If properly planned, PEDs can be the territorial units for integrating several renewable energy communities (RECs), not only fostering economic sustainability, but also social and environmental ones. Alongside the production of renewable energy, and the creation of a more flexible and resilient energy system, PEDs can aggregate several RECs with the aim of supporting families in vulnerable situation and facing energy poverty. In this sense, the pathway towards climate neutrality settled by SECAPs should be flexible enough to adapt to uncertain and changeable situations, and PEDs must be able to adapt to environmental and social requirements, as well as to economic ones.

3 Identify Priority Actions

Creating positive energy districts is a multifaceted endeavour that demands collaboration and input from various stakeholders to ensure success. These districts, which aim to produce more energy than they consume, represent a pivotal shift towards sustainable urban development. However, their realization requires meticulous planning, informed decision-making, and inclusive engagement of key actors at every stage of the process.

At the heart of any positive energy district initiative lies the local community. Engaging community representatives from the outset fosters a sense of ownership and empowers residents to shape the district's vision according to their needs and aspirations. Moreover, involving the community ensures that the project aligns with local values, cultural nuances, and socio-economic realities, thereby enhancing its acceptance and relevance.

Municipal authorities play a pivotal role in the transition towards PEDs. As the primary regulator of urban development, they manage resources and institutional capacity to facilitate the implementation of such initiatives. Furthermore, PEDs should be included in municipal spatial planning, and they necessarily need to align with climate and energy policies.

Furthermore, local governments can provide crucial support in securing funding, navigating bureaucratic processes, and mobilizing political will to drive PEDs' implementation forward.

Energy sector experts bring invaluable insights and technical know-how to the table. Their expertise in renewable energy technologies, energy management systems, and grid integration is indispensable for designing and implementing the infrastructure necessary for a PED. Collaborating with energy sector professionals ensures that the district's energy systems are optimized for efficiency, reliability, and sustainability. Additionally, their input can help identify opportunities for synergies between various renewable energy sources, such as solar, wind, and geothermal, to maximize energy generation and minimize environmental impact.

Inclusive engagement of other relevant stakeholders, such as businesses, academic institutions, non-profit organizations, and industry associations, enriches the decision-making process and broadens the PED's support base. Businesses can contribute with innovative solutions, investment capital, and market insights; academic institutions can offer research expertise, data analytics, and educational programs to inform evidence-based decision-making and to foster knowledge exchange. Non-profit organizations and industry associations can advocate for policy reforms, mobilize grassroots support, and facilitate collaboration among diverse stakeholders to overcome common challenges and barriers.

Clear definition and sharing of actions are essential to align stakeholders' efforts and ensure coordinated implementation towards the common goal of establishing PEDs. Developing a shared vision, goals, and milestones provides a roadmap for action and enables stakeholders to track progress, measure impact, and adjust strategies as needed. Transparent communication and information sharing foster trust, accountability, and collaboration among stakeholders, fostering a sense of collective ownership and responsibility for the PEDs' implementation.

Moreover, defining clear roles, responsibilities, and decision-making processes clarifies expectations and mitigates conflicts, enabling stakeholders to work together harmoniously towards a shared purpose. Regular engagement through workshops, town hall meetings, working groups, and online platforms facilitates continuous dialogue, feedback, and mutual learning, enabling stakeholders to co-create innovative solutions, anticipate challenges, and capitalize on opportunities collectively.

Overall, engaging key actors, including local community representatives, municipal authorities, energy sector experts, and other relevant stakeholders, is imperative for the successful development of PEDs. By harnessing their collective expertise, resources, and commitment, stakeholders can collaboratively define, implement, and share actions towards PEDs' implementation.

4 Indicators for PEDs

4.1 Contribution to the achievement of the Sustainable Development Goals

Positive energy districts (PEDs) represent a pioneering approach to urban development that aligns closely with the Sustainable Development Goals (SDGs) outlined by the United Nations. These goals provide a comprehensive framework for addressing global challenges related to poverty, inequality, climate change, environmental degradation, and sustainable economic development. By integrating the principles of PEDs with the SDGs, communities can pursue a holistic vision of progress that promotes social equity, environmental sustainability, and economic prosperity.

By prioritizing renewable energy sources, energy efficiency measures, and low-carbon technologies, PEDs contribute to SDG 7 (Affordable and Clean Energy) by advancing access to reliable, affordable, and sustainable energy for all. By reducing reliance on fossil fuels and mitigating greenhouse gas emissions, PEDs also support SDG 13 (Climate Action) by helping to combat climate change and its adverse impacts on communities, ecosystems, and economies. Moreover, PEDs embody principles of inclusive and sustainable urbanization, aligning with SDG 11 (Sustainable Cities and Communities). By promoting compact, walkable neighbourhoods, mixed land-use development, and accessible public transportation, PEDs enhance urban resilience, reduce pollution, and improve quality of life for residents. By prioritizing green spaces, biodiversity conservation, and ecosystem restoration, PEDs contribute to SDG 15 (Life on Land) by safeguarding terrestrial ecosystems and promoting sustainable land use practices within urban environments.

Furthermore, PEDs foster economic growth, job creation, and innovation, aligning with SDG 8 (Decent Work and Economic Growth) and SDG 9 (Industry, Innovation, and Infrastructure). By catalysing investment in renewable energy infrastructure, energy-efficient buildings, and smart technologies, PEDs stimulate local economies, attract businesses, and generate employment opportunities in emerging green sectors. By fostering collaboration among stakeholders, knowledge sharing, and technology transfer, PEDs also promote innovation ecosystems that drive sustainable development and build resilience against future shocks and disruptions.

In addition, PEDs prioritize social equity, inclusion, and community empowerment, aligning with SDG 1 (No Poverty), SDG 3 (Good Health and Well-being), SDG 4 (Quality Education), and SDG 10 (Reduced Inequalities). By addressing energy poverty, improving indoor air quality, and enhancing access to clean water and sanitation services, PEDs contribute to poverty alleviation, health promotion, and educational attainment among vulnerable populations. By engaging communities in decision-making processes, promoting social cohesion, and advancing social justice, PEDs foster inclusive development that leaves no one behind.

PEDs promote responsible consumption and production patterns, aligning with SDG 12 (Responsible Consumption and Production). By promoting energy efficiency measures, sustainable transportation options, and circular economy principles, PEDs reduce resource consumption, minimize waste generation, and promote sustainable lifestyles within urban

communities. By raising awareness, promoting behaviour change, and fostering sustainable consumption habits, PEDs empower individuals and businesses to make informed choices that contribute to a more sustainable future.

Overall, PEDs offer a transformative model for urban development that integrates social, economic, and environmental dimensions of sustainability in alignment with the SDGs.

4.2 PEDs' Indicators

The SIMPLY POSITIVE project has allowed to define a set of indicators divided among seven profiling indicators, 10 primary indicators, and 15 pre-selected secondary indicators, which shall be defined during the initial phase of a PED/PEN implementation and are related to specific needs of the PED/PEN.

Profiling Indicators

- 1. Size of Focus District [m^2}
- 2. Population of Focus District [# of citizens]
- 3. Density of Focus District [# citizens / m^2 of total area]
- 4. Built-up density [m^2 of built-up area / m^2 of total area]
- 5. Heating degree days [#]
- 6. Cooling degree days [#]
- 7. Average household income [EUR]

Primary Indicators

- 1. Overall Indicator PED / PEN achievement rate [%]
- 2. Energy related Final energy consumption [kWh/a]
- 3. Energy related Primary energy consumption [kWh/a]
- 4. Energy related RES generation [kWh/a]
- 5. Energy related Degree of energetic self-supply by RES [%]
- 6. Environment related Greenhouse gas emissions [kgCO2eq/a]
- 7. Acceptance People reached [%]
- 8. Acceptance Success rate [%]
- 9. Economic Money spent [€]
- 10. Economic Return on investment [years]

Secondary Indicators

Table 2 - Secondary Indicators

#	Category	Name	Measuring Unit
1	Energy	Storage capacity of the supply grids	kWh
2	Energy	Energy Savings	kWh/a
3	Mobility	Modal split of electric private vehicles	%
4	Mobility	Number of electric vehicles in circulation	#
5	Mobility	Diffusion of public charging infrastructure	#/km²
6	Mobility	Diffusion of private charging infrastructure	#/km²
7	Environment	Solid Waste generation	kg / capita
8	Environment	Recycling Rate	%
9	Environment	Air Pollution (PM 2,5 concentration)	µg/m³
10	Environment	Land consumption rate to population growth rate	%
11	Environment	Greenhouse gas emissions savings	kgCO2eq/a
12	Environment	Climate adaption vulnerable area	m² vulnerable area / m² total area
13	Acceptance	Increased citizen awareness	Scale 1-5
14	Acceptance	Stakeholder satisfaction	Scale 1-5
15	Economy	Energy poverty	energy costs / household income

5 Implementation of Innovative Strategies

Developing PED involves a multifaceted approach that integrates innovative strategies, technological solutions, community engagement, and diverse financing mechanisms to achieve sustainability goals.

One of the cornerstones of a PED is the adoption of innovative strategies and advanced technological solutions to enhance energy efficiency, promote renewable energy sources, and reduce greenhouse gas emissions. This may include the implementation of smart grids, energy storage systems, and decentralized energy generation technologies such as solar panels, wind turbines, and geothermal heat pumps. By leveraging these solutions, PEDs can optimize energy use, minimize energy losses, and maximize the utilization of renewable resources, thereby reducing their carbon footprint and enhancing resilience to climate change impacts.

Active involvement of district inhabitants is essential for the success of a PED. Through awareness-raising and education initiatives, residents can be empowered to adopt positive and sustainable behaviours related to energy consumption, waste management, transportation choices, and lifestyle habits. These initiatives may include educational workshops, community events, interactive campaigns, and digital platforms aimed at fostering a culture of sustainability and encouraging collective action. By engaging the community as partners in the transition towards a PED, stakeholders can ensure that the district's sustainability efforts are inclusive, participatory, and reflective of local needs and priorities.

Financing is a critical component of PED development, requiring investment in infrastructure, technology deployment, capacity building, and community outreach efforts. Securing funding from public, private, and international sources is essential for overcoming financial barriers and unlocking the full potential of a PED. Public funding sources, such as government grants, subsidies, and incentives, can provide initial support for pilot projects and demonstration initiatives. Private sector investment, including venture capital, impact investing, and corporate sponsorship, can drive scale-up and commercialization of sustainable technologies and services within the district. Innovative financing mechanisms, such as public-private partnerships (PPPs) and non-repayable financing, offer additional avenues for mobilizing resources and sharing risks among stakeholders. PPPs enable collaboration between public and private entities in the design, construction, operation, and maintenance of sustainable infrastructure projects within the district.

6 Work together: collaboration and coordination

Collaboration and coordination are critical components for the successful development and implementation of PEDs. This section outlines the strategies and mechanisms necessary to ensure effective cooperation among all stakeholders involved in the project.

6.1 Engaging Key Stakeholders

Successful PED projects require the involvement and commitment of a diverse group of stakeholders, including:

1. Local Governments and Municipal Authorities: They play a central role in policymaking, resource allocation, and regulatory oversight. Their support is essential for integrating PEDs into broader urban planning and climate strategies.
2. Community Members and Local Residents: Engaging the community from the outset fosters a sense of ownership and ensures that the project reflects local needs and values. Public consultations, workshops, and participatory planning sessions can facilitate this engagement.
3. Energy Sector Experts and Utilities: These stakeholders bring technical expertise in renewable energy technologies, energy management systems, and grid integration.

Their involvement ensures that the PED's energy systems are efficient, reliable, and sustainable.

4. Businesses and Industry Representatives: Local businesses and industry players can contribute innovative solutions, investment capital, and market insights. Their participation is crucial for the economic sustainability of PEDs.
5. Academic and Research Institutions: These organizations provide valuable research, data analysis, and educational resources. They can help in monitoring progress, evaluating outcomes, and disseminating best practices.
6. Non-Profit Organizations and Community Groups: These entities can advocate for policy changes, mobilize grassroots support, and facilitate collaborations among stakeholders.

6.2 Establishing Collaborative Frameworks

Creating structured frameworks for collaboration ensures that all stakeholders work towards common goals. Key elements of these frameworks include, for example, the Governance Structures, Memoranda of Understanding, regular meetings or workshops (or other events), communication channels, etc.

The Governance Structures help to coordinate activities, make decisions, and resolve conflicts, establishing clear governance structures, such as steering committees, working groups, and advisory boards.

Memoranda of Understanding (MoUs) between key stakeholders can formalize commitments, outline roles and responsibilities, and set out shared objectives and expectations.

Regular meetings, workshops and similar events help foster continuous dialogue with stakeholders, keeping them informed, and ensuring that the plan remains on track. These gatherings provide opportunities to share updates, discuss challenges, and brainstorm solutions.

Effective communication is vital for maintaining transparency and trust. Establishing multiple communication channels, such as newsletters, online portals, and social media, ensures that information is accessible to all stakeholders.

6.3 Coordinating Actions and Resources

Efficient coordination of actions and resources is essential for the seamless implementation of PED initiatives.

Developing detailed action plans with clear milestones, timelines, and responsibilities ensures that everyone understands their role and the steps needed to achieve the project's objectives.

Sharing resources, such as data, technology, and funding, maximizes efficiency and reduces duplication of efforts. Joint initiatives, such as shared energy storage or community solar projects, exemplify resource-sharing in action.

Also, it is essential to invest in capacity building through training programs, workshops, and knowledge-sharing sessions, to enhance stakeholders' skills and understanding, enabling them to contribute more effectively to the project.

6.4 Fostering a Culture of Collaboration

Building a culture of collaboration requires ongoing efforts to promote trust, mutual respect, and shared vision among stakeholders. Trust is the foundation of any successful collaboration. Encouraging open communication, demonstrating reliability, and delivering on commitments builds trust over time.

Moreover, all voices must be heard. The benefits of the PED project need to be distributed equitably, this also strengthens stakeholder buy-in and support.

It is also possible to motivate stakeholders to recognize and rewarding contributions, whether through formal awards, public acknowledgment, or other incentives, to push them staying engaged and committed.

6.5 Leveraging Technology for Collaboration

Modern technology offers numerous tools to enhance collaboration and coordination:

1. Digital Platforms: Online collaboration platforms can facilitate real-time communication, document sharing, and project management, making it easier for stakeholders to work together across different locations.
2. Data Analytics and Visualization: Advanced data analytics and visualization tools can help stakeholders understand complex information, track progress, and make informed decisions.
3. Virtual Meetings and Webinars: Virtual meetings and webinars enable continuous engagement and knowledge exchange, especially when in-person meetings are not feasible.

7 Monitoring of results

Developing and maintaining a PED requires ongoing assessment, monitoring, and transparent communication to ensure progress towards sustainability goals and to engage stakeholders effectively.

Conducting periodic assessments of progress is essential for tracking the PED's performance against its objectives and targets. This involves using predefined indicators, as outlined in the monitoring plan, to measure key metrics related to energy consumption, renewable energy generation, greenhouse gas emissions, and community engagement. By systematically collecting data and analysing trends over time, stakeholders can identify areas of success, pinpoint challenges, and adjust strategies accordingly to stay on course towards achieving the PED's objectives.

To maintain motivation and momentum, it's crucial to monitor the work in progress and visualize the process transparently. This can be achieved through various means, such as project dashboards, progress reports, and interactive data visualization tools. By providing real-time updates on project milestones, accomplishments, and challenges, stakeholders can stay informed and engaged, fostering a sense of ownership and accountability for the PED's success. Visualizing the process also helps to celebrate achievements, identify areas for improvement, and inspire continued commitment to the project's vision and goals.

Transparently communicating the results achieved through monitoring and evaluation is key to building trust, fostering collaboration, and maintaining stakeholder engagement. This involves actively engaging stakeholders and the local community in the monitoring process, sharing findings and insights through accessible and understandable formats, and soliciting feedback and input on proposed actions and next steps. By being open and transparent about successes, setbacks, and lessons learned, stakeholders can collectively learn from experiences, adapt strategies, and drive continuous improvement in PED implementation.

The insights gained from monitoring results should inform future planning and decision-making processes to enhance the PED's effectiveness and impact. This includes identifying best practices, replicable solutions, and scalable interventions that can be applied across similar contexts or expanded to other districts or communities. By leveraging monitoring data to identify opportunities for optimization, innovation, and resource allocation, stakeholders can ensure that the PED remains adaptive, resilient, and responsive to evolving needs and challenges.

Finally, monitoring results should be used to promote the replicability and scalability of successful solutions beyond the boundaries of the PED. This involves documenting case studies, sharing lessons learned, and disseminating good practices through knowledge-sharing platforms, capacity-building initiatives, and peer-to-peer networks. By showcasing the positive impacts and tangible benefits of PED implementation, stakeholders can inspire and empower other communities to embark on similar journeys towards sustainability, creating a ripple effect of positive change at a broader scale.

8 A “Target Action Plan” for everyone

The following Table of Content is designed to provide a comprehensive structure for municipalities to develop a robust Target Action Plan focused on achieving a positive energy balance, promoting renewable energy, and fostering sustainable urban development. Each section should be tailored to reflect the specific context and needs of the municipality while aligning with broader policy frameworks and sustainable development objectives.

Target Action Plan

1. Introduction

2. Overview

2.1 Purpose of the Document

2.2 Relation to Other Initiatives

2.3 Structure of the Document

2.4 Objectives and Goals

3. Establishing SMART Objectives (Specific, Measurable, Actionable, Relevant, Time-bound)

3.1 Aligning with Energy Policies and Sustainable Development Goals (SDGs)

3.2 Identifying Challenges and Opportunities

3.3 Strategic Framework

4. Vision and Mission

4.1 Guiding Principles

4.2 Stakeholder Engagement and Participation

4.3 Action Plan Development

5. Identifying Priority Actions

5.1 Setting Milestones and Timelines

5.2 Resource Allocation and Management

5.3 Risk Assessment and Mitigation

6. Key Performance Indicators (KPIs)

6.1 Defining KPIs for Monitoring and Evaluation

6.2 Profiling Indicators (e.g., size, population, density, etc.)

6.3 Primary Indicators (e.g., energy consumption, renewable energy generation, GHG emissions, etc.)

6.4 Secondary Indicators (e.g., economic impact, social acceptance, etc.)

7. Implementation Strategies

7.1 Technological Solutions and Innovations

7.2 Community Engagement and Empowerment

7.3 Financing Mechanisms and Funding Sources

7.4 Public-Private Partnerships

8. Collaboration and Coordination

8.1 Roles and Responsibilities of Stakeholders

8.2 Communication and Information Sharing

8.3 Coordinated Actions and Integrated Planning

8.4 Monitoring and Evaluation

9. Monitoring Framework and Methodologies

9.1 Data Collection and Analysis

9.2 Progress Reporting and Visualization

9.3 Feedback Mechanisms and Continuous Improvement

10. Strategies for Public Awareness and Education

10.1 Tools and Channels for Effective Communication

10.2 Documentation and Sharing of Best Practices

10.3 Future Planning and Scalability

11. Insights for Future Action Plans

11.1 Replicability and Scalability of Solutions

11.2 Long-term Sustainability and Adaptability

Appendices

Glossary of Terms

List of Acronyms

References and Bibliography

Additional Resources and Tools

9 Conclusions

This deliverable has thoroughly detailed the strategic framework necessary to guide the transformation of urban areas into Positive Energy Districts (PEDs) and ultimately achieve climate-neutral cities. The process encompasses setting SMART objectives, prioritizing actions, and implementing innovative strategies while ensuring active collaboration among stakeholders and meticulous monitoring of progress.

The objectives and goals established in this document lay a clear pathway towards climate neutrality. By defining specific, measurable, actionable, relevant, and time-bound objectives, municipalities can systematically work towards reducing energy consumption and increasing the use of renewable energy sources. The alignment with local, national, and international energy policies ensures that these efforts contribute to broader climate goals.

Identifying priority actions and engaging key actors, such as local community representatives, municipal authorities, and energy sector experts, is essential for the successful implementation of PEDs. The collaborative approach enhances the project's acceptance and relevance, ensuring that it addresses local needs and leverages the expertise of various stakeholders.

The innovative strategies proposed for PED implementation include adopting advanced technological solutions, fostering community engagement, and securing diverse financing mechanisms. These strategies are critical for enhancing energy efficiency, promoting renewable energy, and reducing greenhouse gas emissions, thereby supporting the transition to sustainable urban development.

Monitoring and evaluation are pivotal components of the PED development process. By using predefined indicators and continuously assessing progress, stakeholders can identify successes and areas for improvement, ensuring that the project remains on track and adaptive to changing circumstances. Transparent communication of results fosters trust and collaboration among stakeholders, further motivating them to contribute to the project's success.

Ultimately, the “Target Action Plan with Sets of Sustainable Indicators” framework provided in this document serves as a comprehensive guide for municipalities aiming to develop PEDs. It offers a structured approach to achieving a positive energy balance, promoting renewable energy, and fostering sustainable urban development. By following this framework, municipalities can effectively contribute to the emergence of climate-neutral cities, aligning with global sustainability goals and creating a ripple effect of positive change across Europe.

The SIMPLY POSITIVE project exemplifies how strategic planning, innovative solutions, and collaborative efforts can pave the way for a sustainable future. The insights and methodologies outlined in this deliverable are not only applicable to the Focus Districts but can also serve as a model for other cities and communities aspiring to achieve climate neutrality. As municipalities implement the Target Action Plan, they will play a crucial role in driving the transition towards a sustainable and resilient urban environment, ensuring a better quality of life for current and future generations.

Sources

[1] D1.2 “Key performance indicators for PED/PEN implementation assessment” (Simply Positive)

[2] D4.5 “Integrated SECAP+ report for Resita Municipality, published also on COMO website” (Simply Positive)

[3] Paolo De Pascali, Annamaria Bagaini, *Energy Transition and Urban Planning for Local Development. A Critical Review of the Evolution of Integrated Spatial and Energy Planning*, 2019.

[4] Paola Clerici Maestosi, Claudia Meloni, *Sustainable urban transition*, Maggioli Editore, 2021.

simply positive