



ENERGee Watch

**D4.2 | Database of replicable
monitoring and verification
practices – first draft**

**WP4 – Monitoring the learning programme
and making policy recommendations**

August 2023

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Preface

The overall aim of ENERGee WATCH is to launch an easy and replicable peer to peer learning program to enable regional and local authorities to timely and accurately define, monitor, and verify their sustainable actions. The learning focuses on regional/provincial authorities and their agencies that are responsible for collecting and overseeing the monitoring of mitigation and adaptation measure indicators in order to empower them to make use of best practices. The learning programme is structured into four (4) courses: i) data collection, ii) monitoring & verification, iii) indicators for adaptation to climate change, iv) data display, dissemination, and validation by final users. ENERGee Watch launched 3 learning cycles between 2020-2023 offering these 4 courses (twelve in total over 3 years) to a total of 70 participating mentees. The learning program entailed tools such as mentoring, site visits, tailored guidebooks and guided practice exchanges to enable the proper matching of peer groups and proper knowledge replication.











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4	Auvergne-Rhône Alpes Energy Environment (AURA-EE)	FRANCE	FR	
5	Energy Agency of Savinjska, Šaleška and Koroška region (KSEENA)	SLOVENIA	SI	
6	Ile de France Regional Energy and Climate Agency (IAU IDF)	FRANCE	FR	
7	South East Energy Agency (SEEA)	IRELAND	IE	
8	Energy Agency of Plovdiv (EAP)	BULGARIA	BG	
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Executive Summary

This report presents a written database of best practices based on the survey results submitted by ENERGee Watch mentees as well as observers and partners. These results were gathered during the process laid out in *D4.1 Report on monitoring guidelines for the success of the learning programs* and feed into ENERGee Watch's recommendations and lessons learned.

This report detailing a list of best and replicable monitoring, reporting and verification practices (MRV) ensures that examples and information of best practices collected through the mentees and partners are not missed. The written list has been transferred to the ENERGee Watch [online database](#), allowing for authorities, energy agencies, and interested users to sort through the gathered materials in an efficient way. The database is an extensive, state-of-the-art repository created to meet the growing demand for standardized, trustworthy monitoring and verification processes across the ENERGee Watch learning programmes. This report that aggregates all database entries aims to provide decision-makers, experts, researchers, and policymakers with a centralised and simple-to-use resource that encourages the adoption of reliable monitoring and verification procedures by compiling a wide range of reproducible methodologies and tools.

The database consists of a total **55 best practices**, 22 innovative practices, 19 good practices, and 14 promising practices. All best practices are aligned with the ENERGee Watch modules. Additionally, the database entries encourage the sharing of successful monitoring and verification practices among mentees and other relevant practitioners within ENERGee Watch, as well as facilitate the setup of a proper replication mechanism for cities and regions, who may consult and use the learning programme material and tools beyond the consortium network and project's duration.



1 Introduction

In the context of energy, climate adaptation and the environment, there are several best practices that individuals, communities, and organisations can adopt. These practices aim to mitigate the impacts of climate change, promote sustainability, reduce energy demand, and protect the environment.

These practices are geared towards regional/provincial authorities and their agencies that are responsible for collecting and overseeing the monitoring of mitigation and adaptation measure indicators in order to empower them to make use of best practices. Furthermore, ENERGee Watch aims to enable accurate and successful data collection, dissemination, and validation, monitoring and verification practices and choice of proper monitoring indicators in cities and regions across EU through the collection of practices that are considered relevant for the project.

The best practices provided in this report relate to one of the four courses offered within the ENERGee Watch learning programme:

1. Data collection
2. Monitoring & verification
3. Indicators for adaptation to climate change
4. Data display, dissemination, and validation

An overview of the courses' content and material is available on the [ENERGee Watch website](#). The initial practices collected throughout the Action Plan survey from mentees (described in *Deliverable 4.1 Report on monitoring guidelines for the success of the learning programs*) and the data repository from project partners were assessed throughout several criteria and categorised in three different clusters, namely innovative, good, and promising practices. The assessment was corroborated with internal exchanges between UPRC and IEECP. Moreover, after finalising the list of practices according to the predefined criteria, all practices were published on the ENERGee Watch website, see <https://energeer-watch.eu/best-practices/>.



2 ENERGee Watch determining good practices

2.1 What is a good or best practice?

Table 1 summarises the research conducted and used to identify similar local and regional initiatives collecting good or best practices. The intention of this exercise was to investigate the criteria taken into account when considering or rating a best practice.

A **good practice** is a recommended or established method of action that has been shown to be successful, efficient, or advantageous. It is a practice that is often regarded as helpful and yields favourable results. The foundation of a good practice is a body of knowledge, experience, and research. They stand for a standard of performance or method that is seen as acceptable and produces satisfying outcomes.

On the other hand, a **best practice** is a procedure that is acknowledged as the most effective and efficient means of reaching a desired result or outcome. It stands for the highest requirement or standard in a specific industry or field. Best practices frequently stem from in-depth study, analysis, and proof of greater performance. They are thought of as cutting-edge or state-of-the-art procedures and are constantly evolving.

Table 1. Summary of initiatives and the definition of several types of practices

Initiatives	Definition		
<u>URBACT project</u>	<p>A practice that has been proven to work well by ensuring desired results and could be recommended as a model. It is a successful experience, which has been tested and validated, and deserves to be shared so that a greater number of cities can adopt it. Characteristics:</p> <ul style="list-style-type: none"> • Integrated approach: bringing together social, economic, and environmental actions to address policy challenges in a holistic manner. • Participatory approach: demonstrating strong involvement of local stakeholders in the development and implementation of the practice. • Transferability: how suitable the practice is for adapting to different contexts and transferring to other cities. 		
<u>The Copenhagen Centre on Energy Efficiency</u>	<p>The collection developed by the Copenhagen Centre on Energy Efficiency presents these cases within the framework of a methodology inspired by the "Best Policy Practices for Promoting Energy Efficiency" publication by the United Nations Economic Commission for Europe:</p> <table border="0"> <tr> <td> <ul style="list-style-type: none"> • Location • Population • Climate • Duration • Sector • Funding sources • City networks • Savings • Multiple benefits • Objective </td> <td> <ul style="list-style-type: none"> • Solutions • Funding • Innovation • Success factors • Significant outcomes • Synergies with local policies • Political alignment (connected strategies and plans) • Marketability </td> </tr> </table>	<ul style="list-style-type: none"> • Location • Population • Climate • Duration • Sector • Funding sources • City networks • Savings • Multiple benefits • Objective 	<ul style="list-style-type: none"> • Solutions • Funding • Innovation • Success factors • Significant outcomes • Synergies with local policies • Political alignment (connected strategies and plans) • Marketability
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<p><u>Energy Cities</u></p>	<p>City actions with creative and practical approaches to shifting our energy system. Categorisations:</p> <ul style="list-style-type: none"> • Climate neutrality • Cooperation • Energy democracy • Energy efficient and buildings • Finance and divest • Heating and cooling • Lifestyle and behaviour • Mobility • Participative governance • Renewables • Tools and capacity building • Urban planning and vision
<p><u>H2020 CoME EASY</u></p>	<p>The EU project Best Practice Library provides a selection of best practices from cities involved in the CoME EASY project and from interested networks for incitement and replication. The best practices can be sorted by country, size of the municipality, theme, or reference to the EEA catalogue of measures.</p>
<p><u>UN Habitat</u></p>	<p>This is a database with approximately 4,000 solutions to the common social, economic, and An ENERGee Watch 'Best Practice' is an energy efficiency or climate adaptation practice which aims to standardize sustainable data at European level, enabling comparisons across European territories to be made and for European-wide methodologies to be established. This means that a city or a region has a good practice to share on how they:</p> <ul style="list-style-type: none"> ➤ Collect and manage data (including acquisition and treatment) ➤ Monitor and validate data ➤ Use indicators for adaptation to climate change to ensure that adaptation to climate change is fully integrated in their energy and climate plans. ➤ Display, disseminate and validate data. <p>There is distinction among four categories:</p> <ul style="list-style-type: none"> • "Award Winner" • "Best Practice" • "Good Practice" • "Promising practice" - denotes those practices that have been assessed as: <ul style="list-style-type: none"> ○ Covering relevant thematic areas ○ Having the basic elements of the minimum criteria ○ Showing good potential, but ○ Not existing for long enough for meaningful assessment (less than 2 years)
<p><u>Banc de Bones Práctiques</u></p>	<p>One of the key elements to ensure that an initiative can be considered as good practice is to have objective and quantifiable selection criteria that allow them to be evaluated, weighted, and classified. A report on Criteria for Identifying Local Good Practices (available in Spanish and Catalan) is published as well as the evaluation criteria with specific criteria for the different thematic areas included.</p> <ul style="list-style-type: none"> • Innovation • Transferability • Feasibility • Positive impact • Planning (capacity to integrate and coordinate efforts to mitigate and adapt the climate change plan and general policies. This parameter ought to allow assessing whether good practice is integrated into a coherent framework of policies) • Solid leadership • Accountability



- System of evaluation in place
- Implication on the city
- Peer-recognition

2.2 ENERGee Watch definition

The purpose of collecting best practices is to share them with other cities and regions for replication. In order to differentiate among different stages of *best practices*, we have decided to divide collected practices into “innovative”, “good” and “promising” practices. The criteria for selection of each are described in the next section.

2.3 Criteria for ENERGee Watch best practices

To set the criteria for rating MRV best practices, the objectives for collecting these must first be identified. The following table sets out ENERGee Watch objectives and ways to evaluate them.

Table 2. Best practice according to ENERGee Watch definition

Best practices should be:	Evaluation criteria:
1. Carried out on a local/regional level	<ul style="list-style-type: none"> • Small and medium sized town - i.e., less than 50 000 inhabitants • Small urban centre with 50 000 to 100 000 inhabitants • Medium urban centre - i.e., 100 000 up to 250 000 inhabitants • Large urban centres or region between 250 000 and less than a million inhabitants • Metropolitan area – more than 1 000 000 inhabitants
2. Sustainable	Has elements of mitigation (saves energy or helps to reduce CO ₂) or adaptation (helps mitigate risks or adapt to expected local climate changes) practices.
3. Replicable/operational	The practice is already implemented and used by the city/region in one of their plans or planned out to the detail (not only proposed).
4. Transferable	How suitable the practice is for adapting to different contexts and transferring to other cities? See Chapter 2 of ENEFIRST report ¹ .
5. Relevant	Covers one of ENERGee Watch four topics: <ul style="list-style-type: none"> • Data collection and management (including acquisition and treatment) • Data monitoring and validation • Indicators for adaptation to climate change to ensure that adaptation to climate change is fully integrated in their energy and climate plans • Data display, dissemination and validation.
6. Evidence-based	The practice is well documented: there is at least one source (website, report form the mentor/mentee) where more details can be found.
7. Innovative	Original, either in type of activity, sector or financing, or unusually high impact

¹ [Analysis of transferability of global experience to the EU.](#)



Following the above-mentioned criteria, ENERGee Watch has divided all collected practices into three classifications, namely innovative practice, good practice, and promising practice.

Innovative practice – If all of the above criteria are fulfilled and satisfied.

Good practice – If all criteria are satisfied but not innovative.

Promising practice – If all criteria are satisfied but not yet being implemented and are still in the planning phase.

2.4 Best practice information

The following information was used to gather information on best practices within the Action Plan, the results of which were transferred to an internal data repository after each learning cycle. These questions have been added to the Action Plan which mentees needed to fill out before and after completing their selected course (in parts). The complete “Action Plan” questions are available in Annex 1.

Table 3. Template for collecting data about best practices

Information	Explanation
City/region name	What is the name of your city/region?
Population	<ul style="list-style-type: none"> • Small and medium sized town - i.e. less than 50 000 inhabitants • Small urban centre with 50 000 to 100 000 inhabitants • Medium urban centre - i.e. 100 000 up to 250 000 inhabitants • Large urban centres or region with 250 000 or more inhabitants, but less than a million • Metropolitan area – more than 1 000 000 inhabitants
Objective	What is the action at question?
Implementation status	What is the status of this action?
Source	Please either provide a summary of the action, a presentation, or a link to where the action is described or where some examples of implementing the actions is visible.
Topic	ENERGee Watch topic which this action belongs to
Involvement/stakeholder engagement	All levels of organisation or particular departments? Were other stakeholders involved?
City networks	Are they members of any of the city networks?
Outcomes/benefits/innovation	Can be savings in energy, time, manpower, multiple benefits, raised awareness due to better data display...
Synergies with local policies	Which local policies does it refer to?
Marketability/specific local conditions for implementation	Are there any specific circumstances or legal conditions that allowed for the practice to occur?

3 Collection process

3.1 Purpose

The purpose of collecting MRV practices is to:

- Ensure that the best practices database is kept up to date with new and relevant data.
- Publish categorised best practices on the <https://energee-watch.eu> website.
- Use the database as replication tool for other cities and regions to learn from the chosen practices.
- Write policy recommendations based on practices collected and challenges reported.
- Design short publications about a selection of the practices.

3.2 How, when and who collected the information?

This report sets out the indicators for choosing and rating best practices, as well as displays the information that will be collected for each MRV practice.

The actual database detailed in this report was saved in Excel during the project and was available on the project repository for all partners to access, add practices, and to help in their categorisation. It was updated by IEECP after every learning cycle, and with the learning program having been finalised, this report presents the results in the following sections.

The information was collected in three instances:

- By mentors in each learning cycle through urging mentees to fill out the Action Plan. Once the action plans were filled out, they were checked by IEECP and used to update the *best practices database* excel document. Further reminders and follow up emails to complete the Action Plan were sent out until June 2023.
- By peer review which took place in September 2022 and February 2023, and has gathered all information required from the mentees that participated in the programme. Peer review meetings, also referred to as Action Plan Workshops, provided support in keeping mentees and mentors engaged after the physical meetings and they served as a follow-up with mentors and mentees. This was a chance to update any information that were not available, or ready during the initial completion of the Action Plans, as well as find out about any potential obstacles to why some promising practices had not evolved to best practices, and what the underlying challenges were.
- By project partners which provided additional examples gained from interactions with mentees during the learning programme and action plan workshops as well as their own knowledge on best practices related to the ENERGee Watch.

After the collection of all data provided by mentors, peer reviews, and project partners, a thorough assessment were carried out and some examples provided were excluded from the pre-selection as they fall out of any of the ENERGee Watch categorisations.



The ENERGee Watch recommendations and lessons learned (available in *D5.4 Impact assessment and lessons learned*) use the collected practices, and report *D5.3 Exploitation and Replication Activities*, published in August 2023, to complete an impact analysis related to collected practices.



4 Identified Monitoring, Reporting and Verification Practices

The following table presents the database of best practices, ranging from innovative, good, and promising. It therefore illustrates the results of the pre-screening process of MRV practices from both partners and mentees.

Table 4. List of identified MRV practices

Practices	ENERGee Watch Topic Relevancy	Objective	Involvement/ stakeholder engagement	Main Outcomes	Synergies with local/ regional policies
Innovative Practices					
The EENSIGHT tool	Data monitoring and validation	Learning tool that will contribute to the much-needed advancement of automated measurement and verification methods for energy efficiency. It will provide essential insights for investors, energy companies, legislators and building owners.	The SENSEI consortium developed this tool to be used by investors, energy companies, legislators and building owners. It can also be used for performance guarantees for ESCOs.	Advanced measurement and verification (MRV), sometimes called MRV 2.0, can lay the foundation for energy efficiency project aggregation schemes and/or energy efficiency support programs by providing the insights that are necessary for all parties involved in up-scaling energy efficiency to correctly evaluate risks and expected benefits. MRV 2.0 combines real-time data and predictive modelling methods so that to produce: (a) tools to understand the characteristics of a building's energy consumption, and (b) continuous feedback on the most probable impact of an energy efficiency intervention.	The tools can be very effectively used to estimate energy savings (metered energy savings) to account for article 7 of the EED and Energy Efficiency Obligation Schemes (EEOs).
Klimaat Monitor Databank	Data collection and management (including acquisition and treatment)	Core dataset monitoring climate and energy transition local governments. A core dataset of 70 indicators for monitoring the climate and energy transition. This core dataset is divided into 4 layers (emissions, energy, results, progress) and 5 sectors of	Local authorities of the Netherlands (Rijksverheid)	Measurement on the climate plans and policies according to the same standards, so that the effect between provinces can be compared and added up. This is only possible with comparable concepts and units. Therefore, an exploratory study was carried out into a core set of indicators for monitoring climate policy in the provinces.	The local and regional authorities have made it possible to shift to the energy transition in the Netherlands. Together with IDA, work has been done on a core set of indicators with associated principles and rules. The provinces have committed themselves to the



		climate policy (electricity, built environment, mobility, industry, agriculture).			agreements of the Climate Agreement.
CLIMACT Prio	Indicators for adaptation to climate change to ensure that adaptation to climate change is fully integrated in their energy and climate plans	CLIMACT Prio is a decision support, capacity building and climate awareness tool for screening and prioritizing of local climate change actions.	<ul style="list-style-type: none"> • City adaptation or mitigation planning > Responsible actor: the task force in charge of the Climate Adaptation or Mitigation Action plan. • Training of city/regional/national government officers > Responsible actor: a public officer trained to use CLIMACT Prio. • Training Master course students > Responsible actor: course leader/climate expert trained to use CLIMACT Prio. 	CLIMACT Prio utilises a multi-criteria approach to assist decision makers and urban planners to identify a wide range of decision criteria and set priorities among objectives while performing an analysis and assessment of climate change (mitigation or adaptation) actions. This method does not necessarily identify an “optimal” option, but rather requires the user to draw conclusions by looking at different components of the whole picture of the assessment and prioritization process, while seeking a consensus decision between stakeholders with different needs, concerns, and priorities.	N/A
DATA4ACTION	Data monitoring and validation	DATA4ACTION is data access guidebook to access key energy data in the Region, and inform the sustainable energy policies, plans and strategies by identifying transferable models of collaboration, explores ways to improve the access of public authorities to energy data for a better implementation and a better monitoring of SEAPs. It recognises the importance in establishing long-term data exchange models in sustainable energy planning through cooperation between public authorities and energy data providers.	<p>Our Data Access Guidebook has been primarily developed for:</p> <ul style="list-style-type: none"> • Public Authorities that are seeking better access to local, accurate energy data within their territory for use in sustainable energy planning. • Energy Planning Facilitators wishing to support the development of advanced collaboration models between public authorities and data providers such as a Regional Data Centre. • Energy Observatory; and Energy Data Providers willing to play a positive role in the development and implementation of Regional and Local Energy Policies. 	The key results of this project will be regional roundtables open to a wide range of actors, the creation of a guidebook designed on SEAP data access and based on the experience of partners, the expansion and the promotion of the ENERGee-Watch network. Long term collaboration models will be implemented through bilateral data exchange cooperation agreements and with the development of twelve “one-stop shop” regional data centers or observatories, representing more than five thousand municipalities.	<ul style="list-style-type: none"> • Sub-national level energy planning (Directive 2012/27/EU: Energy efficiency; Directive 2009/28/EC: Renewable energy) • Consumption data access (Directive 2012/27/EU: Energy efficiency; Directive 2010/31/EU: Energy performance of buildings; Directive 2009/71/EU: Internal market in electricity and gas; Directive 2009/73/EU: Internal market in electricity and gas) • Data collection by Member States (Directive 2012/27/EU: Energy efficiency) • Data protection (Directive 2002/58/EU: Privacy and electronic communication; Directive



					95/46/EC: Protection of personal data) • Environmental data access (Directive 2007/2/EU: Infrastructure for spatial information in the EC)
TerriStory	Data monitoring and validation	A Reference Decision-Making Web-tool for Territories in Transition, a web tool developed by Auvergne-Rhone-Alpes Energy Environment Agency (AURA-EE) to help municipalities to plan and monitor their energy transition.	TerriSTORY® enables local municipalities in France to better grasp their territory.	The web-tool assesses its potential and identify clues to prioritise development in support of their decision process and plans. It provides a set of functions to build, follow-up and assess the territories' trajectory and simulate scenarios to visualise their socio-economic (electric bill reductions, generated added value, maintained employment, local tax benefits) and environmental impacts (energy savings, prevention of GHG emissions).	Public domain data and multi-sources from the National Institute of Statistics and Economic Research, the National Institute of Geographical and Forestry Information, public sector services, AURA-EE, regional energy, climate and air quality observatory, etc.
ADAQA	Indicators for adaptation to climate change to ensure that adaptation to climate change is fully integrated in their energy and climate plans	An index of adaptation plan quality—the ADAptation plan Quality Assessment index ADAQA. ADAQA is based on six well-established principles of plan quality (1. fact base; 2. goals; 3. measures; 4. implementation; 5. monitoring & evaluation of measures; and 6. societal participation).	Any municipality, region, other sub-national or non-state actor as well as national governments can assess the quality of its adaptation planning process and related documents via our indices.	ADAQA compares urban adaptation plan quality evolution and draw conclusions on the question of progress and learning for adaptation, with a special focus on climate risk assessment, vulnerability and equity/ justice considerations in adaptation planning in 327 European cities between 2005 and 2020. The ADAQA indices can therefore serve as a benchmark to facilitate learning, and to draw scientific conclusions and policy recommendations. The accessibility of the online tool and the self-assessment option is also a good opportunity to provide science-policy arenas for knowledge transfer and collective learning.	National adaptation policies in a representative sample of 327 cities across the former 28 European Union (EU) member states (EU-27 plus the United Kingdom).
DiscoMap	Data display, dissemination and validation	DiscoMap is a geographic information system (GIS) application programming interfaces (APIs) to obtain a wide range of environmental	These map-services are available via many other portals such as INSPIRE, ArcGis, GEOS.	The EEA covers thematic areas such as air, water, climate change, biodiversity, land and noise. Our services are made accessible in as many ways as possible. All these map services contain metadata and have a simple interface. Eionet is the European	The EEA re-use policy follows: • Directive 2003/98/EC of the European Parliament and the Council on the re-use of public



		data for Europe, and helps users create their own map services.		Environment Agency partner network that supports the EEA work programme implementation. Together, the EEA and Eionet implement the EEA-Eionet Strategy for 2021-2030 to give EU policymakers and the public the best available knowledge to reach agreed environmental and sustainability targets. These map-services are available via many other portals such as INSPIRE, ArcGis, GEOS. The EEA allows users to re-link these services into their own websites or portals, but maintains its metadata only from the services hosted in this infrastructure.	sector information throughout the European Union. <ul style="list-style-type: none"> • Commission Decision of 12 December 2011 on re-use of Commission documents. • Directive 2013/37/EU of the European Parliament and of the Council of 26 June 2013 amending Directive 2003/98/EC on the re-use of public sector information.
Climate Information	Indicators for adaptation to climate change to ensure that adaptation to climate change is fully integrated in their energy and climate plans	Providing climate information and guidance for adaptation and mitigation activities.	The climate information is developed by SMHI on behalf of WMO, WCRP, GCF, University of New South Wales, University of Veracruz, and World Energy and Meteorology Council. National Meteorological and Hydrological Services (NMHS) contributions from operating the national hydrometeorological to observing networks that provide the principal inputs for science-based climate action. A National Framework for Climate Services (NFCS) is a mechanism for enabling the coordination and collaboration.	This service provides: <ul style="list-style-type: none"> • Instant summary reports of climate change for any site on the globe. • Easy access to many pre-calculated climate indicators, based on state-of-the-art in climate science, of the past, present and future. • Climate information guidance. 	National communications, Country-level policy documents, National climate change strategies, National Adaptation Plans of Action (NAPAs), Technology Needs Assessments (TNAs), Nationally Appropriate Mitigation Actions (NAMAs), NAPs and NDCs, as well as in sectoral policies, strategies and action plans.
Climate Protection Planner	Data monitoring and validation	A tool that does far more than emissions inventories.	Development of the Climate Protection Planner for German municipalities began in 2012. The development of the climate protection planner was carried out by the three project partners Climate Alliance eV, ifeu - Institute for Energy and Environmental Research Heidelberg and Institute for Decentralized Energy Technologies (IdE) and funded by the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB). The tool entered	The Climate Protection Planner is Climate Alliance's online tool that enables German cities, towns and regions to create energy and greenhouse gas emissions inventories according to a standardised methodology for use across Germany. The tool comes with comprehensive and up-to-date statistics, factors and other key figures, thus reducing data collection needs. Still, it is flexible enough to allow for the input of more precise local data should this be available. The benchmarking module within the tool employs both qualitative as	The climate protection planner is the association's own, internet-based software for monitoring municipal climate protection. Cities, municipalities and districts can use it to create energy and greenhouse gas balances according to the Germany-wide standardized BSKO method. The climate protection planner can be used by all German municipalities



			the market in early 2016 and is now available for use by all interested local authorities.	well as quantitative aspects of climate action monitoring, helping municipalities to see how their progress compares to others.	and is provided by the office of the association.
MICATool	Data monitoring and validation	MICAT is a project that aims to develop a comprehensive approach to estimate Multiple Impacts of Energy Efficiency (MI-EE) by co-creating a free, easy-to-use, scientifically sound online tool (MICATool).	The development of the MICATool can only be done properly in cooperation with experts, policy makers, representatives of public administrations and institutions, universities and institutes, businesses and civil society.	The MICATool seeks to enable policymakers and practitioners to conduct simplified analyses for different data and policy scenarios, in order to compare and assess the relevance of the multiple impacts and strengthen reporting and monitoring at the three governance levels.	This can be used to report on target progress at the EU level, for Integrated National Energy and Climate Plans (NECPs) or other reporting requirements at national levels, as well as in local reporting on energy efficiency within Sustainable Energy and Climate Action Plans (SECAPs).
SocialWatt	Data monitoring and validation	<p>SocialWatt Analyser, to identify energy poor households.</p> <p>SocialWatt Plan, to elaborate Energy Poverty Action Plans.</p> <p>SocialWatt Check, to monitor and assess the energy poverty schemes.</p>	<p>Numerous stakeholders, including energy companies, experts in energy efficiency and energy poverty, social services, policy makers, financial institutions and researchers are encouraged to actively participate in SocialWatt activities, whilst in parallel benefit from the development, implementation, testing and exploitation of innovative schemes to alleviate energy poverty.</p> <p>People having difficulty paying their energy bills and/or adequately heating/cooling their home are the final recipients of all SocialWatt activities implemented by utilities and energy suppliers. In particular, the schemes developed are focused on triggering investments in energy efficiency and renewable energy at household level.</p>	<p>SocialWatt aims to develop, adopt, test and spread innovative schemes to alleviate energy poverty. The tools help utilities and energy suppliers to effectively identify energy poor households as well as develop and monitor schemes that focus on increasing the energy efficiency of these houses.</p> <ul style="list-style-type: none"> • Best practices and tools to identify energy poor households and develop schemes to alleviate energy poverty. • Better design and implementation of innovative schemes that aim to alleviate energy poverty in eight EU countries. • Enhanced collaboration of energy stakeholders with public authorities and social services. • A reduced number of households affected by energy poverty due to energy efficiency interventions triggered. • Significant energy savings, as a result of energy efficiency investments triggered. 	Energy Efficiency Directive (2012/27/EU), Article 7.



				<ul style="list-style-type: none"> • Increased uptake of renewable energy sources, as a result of investments triggered. • Climate change mitigation, due to notable reductions in greenhouse gas emissions. 	
Smart Waterford	Data collection and management (including acquisition and treatment)	The strategy will provide a roadmap for development of a “Smart Waterford” over the 5 years up to 2026 in setting the framework of support for communities and businesses to reap the full rewards of a digitally enabled society.	Rural/ urban development, people & community, strong foundation, fit for purpose organisation, 10 remote working hubs (Arclabs, Boxworks, Dungarvan Business Centre, Dungarvan Enterprise Centre, Dunhill Ecopark, Fumbally Exchange, Innovation House, Southeast BIC Ltd, Tallow Enterprise Centre, Waterford City Community Enterprise Centre CLG).	<ul style="list-style-type: none"> • Ensure Waterford makes best progress on Broadband roll out and maximise the benefits that can bring to all citizens especially in rural areas • Build and promote Waterford’s role as a Smart City within the Southeast region • Provide a focus for the Council’s engagement with a range of external stakeholders including local “digital champions” • Leverage the “digital” actions already identified in a range of other Council strategies and help align/ co-ordinate the digital strategies of other public agencies at local level. • Access to online Council services • Enhanced job creation prospects as a result of the digital economy 	European and National Policy Context mainly EU Digital Ambitions for 2030.
BEACON, Sustainable Energy Action Plan (SEAP), 2015-2020	Indicators for adaptation to climate change to ensure that adaptation to climate change is fully integrated in their energy and climate plans. Also, provides an overview of the successes and learnings of the project, this interactive brochure zooms in on the	provides an overview of the successes and learnings of the project, this interactive brochure zooms in on the specific stories of how schools and municipalities across Europe have created impact in the BEACON project.	Centre for Renewable Energy Sources and Saving (CRES), Energy Cities, Energy Cities Romania (OER), ENVIRON Association, FCIências.ID – University of Lisbon, National Trust Ecofund Bulgaria (NTEF), SEVEn, The Association of Municipalities Polish Network (PNEC), 34 municipalities, 57 schools,	<ul style="list-style-type: none"> • The BEACON project worked with 60 schools and kindergartens, 34 municipalities and seven countries across Europe to promote climate action and create common ambition to realise the Paris Agreement. • Cross-border dialogue facilitated mutual learning, collaboration, and a sense of common identity. • Sustained project support over 3+ years helped build robust networks, accompany the implementation of concrete projects and build capacities. 	<p>Climate change laws: Energy Transition Act (France), Climate Act (Sweden), Climate Change Act (UK), Transport, Bonus-Malus Vehicle Incentive System (France), Incentives for Electric Vehicles (Norway), Modal Shift Policy (Switzerland), Company Car Taxation (Sweden)</p> <p>Buildings: Energy Performance Certificate Database (Denmark), Energy Transition Tax Credit CITE (France), Technology Procurement</p>



	<p>specific stories of how schools and municipalities across Europe have created impact in the BEACON project.</p>			<ul style="list-style-type: none"> • The spirit of tailored support, flexibility, and innovation helped maximise BEACON's effectiveness. • Targeting vertical collaboration helped close gaps in communication and collaboration amongst national, regional, and local decision makers. • Leveraging knowledge of local partners organisation allowed for effective engagement with local stakeholders and tailored support. <p>Develop a vision and mainstream climate action via:</p> <ul style="list-style-type: none"> • Internal restructuring and cooperation; • Facilitating collaboration with local stakeholders; • Implementing new climate action measures; • Setting up a monitoring and energy management system (ISO 50001) to monitor energy data of buildings and the municipal car fleet; • The latter was planned with the support and inspiration from BEACON project. 	<p>Groups Innovation Cluster (Sweden), SlovSEFF Energy Financing Facility (Slovakia), Energy Efficiency Facility (Latvia), Green Savings Programme (Czech Republic).</p> <p>Industry: Tax Deduction Scheme (Belgium), Energy Efficiency Obligation Scheme (Denmark), Carbon Tax (Sweden), Climate Change Agreements (UK).</p> <p>Agriculture: Action Plans for the Aquatic Environment and Green Growth Agreement (Denmark), Bio-Methane Support Policy (France), The Agrocovenant (Netherlands), Greenhouse Gas Action Plan for Agriculture (UK).</p>
<p>GENOA 2050 Action Plan</p>	<p>Data display, dissemination and validation</p>	<p>Genoa 2050 Action Plan is based on THREE assets, THREE pillars, SIX focuses and 12 actions which aim to achieve a better governance of the city system, to strengthen the urban fabric and to innovate the development of infrastructures, networks, services and communications.</p>	<p>University of Genoa, Department of Economics (DIEC), Municipality of Genoa Alderman for Green transition, Transports, Integrated Mobility, Environment, Waste, Animals, Energy Economic Development Department and Innovative Projects</p>	<p>Development of an online platform for dissemination, information sharing and training purposes, an innovative indicators framework, inspired by the opportunities offered by investment in urban resilience and the progressive development towards the Doughnut Economy which, are the expression of urban strategy's transversal systems.</p>	<p>Strategic Plan of the City of Genoa 2021, Made by the Management Economic Development, Innovation Projects of the Municipality of Genoa.</p>



<p>Lighthouse City Plan supported by the EU RESPONSE project</p>	<p>Indicators for adaptation to climate change to ensure that adaptation to climate change is fully integrated in their energy and climate plans</p>	<p>The practice is a creation of a leading digital public authority through the engagement into the “OnDijon” smart city dynamic and definition of a pioneer data e-governance strategy. RESPONSE brings together 8 cities who are active signatories of the Covenant of Mayors (CoM) for Climate and Energy Initiative and share a common vision for accelerating the decarbonisation of their territories, strengthening their capacity to adapt to unavoidable climate change impacts and allowing citizens to access secure, sustainable and affordable energy.</p>	<p>RESPONSE supports the lighthouse cities of Dijon (FR) and Turku (FI) and their Fellow cities Brussels (BE), Zaragoza (ES), Botosani (RO), Ptolemaida (GR), Gabrovo (BU) and Severodonetsk (UA). It consists of 53 partners, led by European Institute for Energy Research (EIFER) Germany, being technically supported by Centre for Research and Technology Hellas, CERTH, Greece</p>	<p>OnDijon project is hinged around a connected control center, which, thanks to public services digital data, makes it possible to achieve the following:</p> <ul style="list-style-type: none"> • simplifying and better coordinating the metropolis’ service maintenance operations in the public space; • remotely managing all urban amenity equipment across all territory’s municipalities; • ensuring the safety and security of the public space; • coordinating transport modes and journeys throughout the territory; • fostering transparency in terms of the way the Metropolis and its services are managed. <p>In addition, Dijon Metropolis implements a proactive open data policy providing access to public service data and sharing it with digital economy players. This includes, but not limited to:</p> <ul style="list-style-type: none"> • the annual monitoring and computing of statistics on the energy consumed and GHG emissions at the scale of the territory by the local energy and air quality agency ATMO BFC; • the OPTTEER - Climate, Air and Energy platform, developed by the ATMO BFC; • an integrated and interconnected open data platform, to facilitate communication and data sharing 	<p>N/A</p>
<p>Energy Masterplan supported by the</p>	<p>Data collection and management</p>	<p>SIMPLA supports local authorities in harmonising their seaps and sumps.</p>	<p>AREA Science Park, Autonomous Region Friuli Venezia Giulia, Region Tuscany, Promoscience, Stenum Environmental Consultancy and</p>	<ul style="list-style-type: none"> • A practical, step-by-step tool to guide the harmonisation process, SIMPLA’s online observatory. 	<p>SEAPs and SUMPs</p>



<p>SIMPLA HORIZON 2020 project</p>	<p>(including acquisition and treatment)</p>	<p>The project targets small and medium-sized municipalities with a population between 50.000 and 350.000 inhabitants proposing a four-step approach to foster harmonised planning.</p> <p>In the elaboration of the Masterplan the principles followed are:</p> <ul style="list-style-type: none"> • increasing energy efficiency in all types of human activity; • use of renewable energy sources where their potential had already been identified; • systematic promotion of energy management. <p>Indicators development for monitoring and evaluate the impact of the implementation of the Masterplan, in relation to the decrease in energy intensity, the amount of emissions of greenhouse gases, and the share of green energy in the energy total.</p>	<p>Research Company, Regional Government of Carinthia, Circe – Research Centre for Energy Resources and Consumption, Provincial Government of Zaragoza, Provincial Government of Huelva, Dobrich Local Agency for Energy Management, Union of Bulgarian Black Sea Local Authorities, Regional Energy Agency Kvarner, Primorje-Gorski Kotar County, Region of Istria, Alba Local Energy Agency, Alba County Council.</p>	<ul style="list-style-type: none"> • Local authorities are offered tailored in-class training and webinars to enhance their strategic planning capacity. • Dedicated experts' support to develop harmonised plans (for local authorities benefitting from in-class training). • Harmonised SEAPs and SUMPs making them greener and smarter. 	
<p>AdaptaVille</p>	<p>Data display, dissemination and validation.</p>	<p>AdaptaVille's mission is to facilitate the reproduction of these climate change adaptation solutions by public policies at the local, departmental, regional or national level. It is a mobilisation platform, a</p>	<p>Agence Parisienne du Climat, Métropole du Grand Paris, Ville de Paris, ADEME, Icase, ALEPTE, GPSO Energie, ALEC Plaine Commune, ALEC POLD, ALEC-MVE, CEREMA, Météo-France, Observatoire de l'Immobilier Durable (OID), Une autre ville, Urban Lab Paris&Co, Réseau TEDDIF.</p>	<p>AdaptaVille aims to decipher the challenges of adaptation that are becoming more and more visibly imposed on metropolitan actors through the pooling of knowledge, the publication of articles and a newsletter.</p>	<p>N/A</p>



		toolbox of operational solutions and a territorial animation program for actors in Greater Paris who wish to commit to adapting to climate change.			
GÉODIP	Data collection and management (including acquisition and treatment)	It is a mapping tool for energy poverty that looks at the spending of the household vs. the income per household, with data at national/regional level, but also in some districts.	National Observatory of Energy Poverty (ONPE), local authorities, energy and urban planning agencies.	The tool provides territorial actors with the GEODIP mapping tool to visualise at different scales the areas of energy poverty related to housing and household car use. This easy-to-use tool will make it possible to obtain data on the socio-economic characteristics of households, their habitat and their mobility in a chosen area. The cross-referencing of this information aims to highlight the different forms of fuel poverty using several indicators constructed by the ONPE: the rate of energy effort, eligibility for ANAH aid, the number of households below the monetary poverty line at the territorial level.	N/A
LIFE EUFC	Indicators for adaptation to climate change to ensure that adaptation to climate change is fully integrated in their energy and climate plans.	Provides tailored technical and financial support to municipalities for their sustainable energy projects.	Energy Cities, Climate Alliance, Fedarene, ENVIROS, adelphi, GNE Finance, ICLEI	<ul style="list-style-type: none"> • Provide hands-on locally rooted technical and financial expertise, inspired by ‘best in class’ European practice, to municipalities, local authorities and local public entities aggregating municipalities/local authorities to deliver credible and scalable investment projects, which should trigger public and private investment; • Build the capacity of municipal staff to develop substantial project pipelines and provide them with tools, networking and knowledge transfer opportunities, which will facilitate and accelerate the IC implementation, including via innovative financing mechanisms and project aggregation. • Facilitate access especially for small and medium-sized municipalities, to private finance, EU funding streams and similar facilities, such as the European 	N/A



				<p>Structural and Investment Funds, EU Project Development Assistance programmes and the European Investment Bank's (EIB) European Local Energy Assistance) and advisory services such as the EIB Advisory Hub to realise and amplify the expected investments.</p> <ul style="list-style-type: none"> • Use the successful investment concepts and the knowledge of EUCF beneficiaries to reach out to more than 10,000 local governments, encourage replication and catalyse further action across European cities. 	
BeCoop Toolkit	Data display, dissemination and validation.	Aims at providing the necessary conditions, technical as well as business support tools, for unlocking the underlying market potential of community bioenergy, fostering new links and partnerships.	Local government/ authorities, Actors within the community bioenergy logistic chain, raw biomass producers, biomass fuels producers, final biomass users, transportation/ storage companies, Citizens Energy Communities (CECs), White research and consulting, GOIENER, Karditsa Energy Community, GMINA OBORNIKI SLASKIE, Federazione Italiana Produttori di Energia da Fonti Rinnovabili, SÜDTIROLER ENERGIEVERBAND, CIRCE Research Centre for Energy Resources and Consumption, CERTH Centre for Research and Technology HELLAS, Institute for European Energy and Climate Policy, Wroclaw University of Environmental and Life Sciences, Q-PLAN International, CBS Copenhagen Business School.	<p>This toolkit, developed in the frame of the BECoop project, supports developers and operators of community bioenergy and heating projects. It is developed to support your bioenergy community's journey from the starting point to the growing stages and its operational steps. It can also help to scale energy community initiatives in your neighbourhood.</p> <ul style="list-style-type: none"> • Technical tools: Destined to solve all kinds of technical issues. • Business model tools: Related mainly to financial models and supply chain issues, as well as policy databases or strategic planning's. • Community model tools: Community building tools that can help discuss and deal with difficult communication and management issues, in addition to voting tools. • Related projects: Projects related to renewable energies, energy communities, energy efficiency or circular economy. 	EU law on the Renewable Energy Directive and the Regulation on land use, land-use change and forestry (LULUCF) and the United Nation's Intergovernmental Panel on Climate Change (IPCC).
IN-PLAN Practice	Indicators for adaptation to climate	Aims to develop, test and roll-out the IN-PLAN practice – a	North-West Croatia Regional Energy Agency (REGEA), Institute for European Energy and	IN-PLAN intends to empower local and regional governments and their agencies through a two-	N/A



	<p>change to ensure that adaptation to climate change is fully integrated in their energy and climate plans.</p>	<p>long-lasting support structure enabling local and regional authorities to effectively implement their sustainable energy and climate plans by:</p> <ul style="list-style-type: none"> • integrating energy and climate planning with spatial planning (and other types of planning tools, such as mobility, infrastructure, etc.); • ensuring commitment at all political levels (through vertical integration); and • matching the included measures with specific dedicated local and regional budget lines. 	<p>Climate Policy (IEECP), UIV Urban Innovation Vienna GmbH (UIV), Technological University of the Shannon: Midlands Midwest (TUS), Innovatum Progress AB (EKV), Area di Ricerca Scientifica Tecnologica di Trieste (AREA), Alba Local Energy Agency (ALEA), Tipperary Energy Agency (TEA), FEDARENE.</p>	<p>step capacity-building programme. From the start, the IN-PLAN consortium will engage 15 local and regional authorities – the Lighthouses – to co-create, implement and refine the IN-PLAN practice, its operational guidelines and the capacity-building programme. 30 more authorities – the Pilots – will also partially benefit from the IN-PLAN practice.</p> <ul style="list-style-type: none"> • Get familiar with the IN-PLAN practice – a long-lasting support structure enabling local and regional authorities to effectively implement their sustainable energy, climate, and spatial plans. • Take part in the train-the-trainer workshops designed for local and regional energy, climate, or development agency to teach how to use the IN-PLAN practice. • Offer a new support service about spatial planning to their regional and local authorities (new portfolio of competence, or update of the competence). 	
<p>Smart Density</p>	<p>Data display, dissemination and validation.</p>	<p>The tool is a product of a science project by Chalmers university of technology, the Swedish Building Administration, and others. It is based on a meta-study of 229 empirical peer-reviewed studies and breaks down density impact on a number of areas, such as mobility, public infrastructure and environmental impact.</p>	<p>Meta Berghauser Pont from Chalmers (coordinator), Per Haupt from BTH and Per Berg from SLU. Further, the Swedish National Board of Housing, Building and Planning (Boverket) participated in the project and Norrköping municipality, where the tool was tested.</p>	<p>The results show a strong dichotomy between, on the one hand, the positive effects of density on public infrastructure, mobility and economics and, on the other hand, the negative environmental, social and health impacts. This creates a challenging task for urban planners to balance these two, while at the same time acknowledging the need for some form of densification to handle current urbanisation rates. This overview of research results can be helpful by offering more accurate descriptions of effects, by providing support in trade-offs, and by providing motivation for compensatory measures that can eliminate or mitigate any negative effects.</p>	<p>The tool is the result of two research projects financed by Formas, the government research council for sustainable development. During the first project (Density and sustainability: norms in practice and the results of research), the systematic review was conducted, while in the second project (Smart density), the review results were used to develop this tool. The results of the review are also published in the special collection on Urban Densification in the journal Buildings and Cities (Berghauser</p>



					Pont et al. 2021), as well as being incorporated into a second, revised edition of Spacematrix – Space, Density and Urban Form (Berghauser Pont, Haupt 2021).
Good Practices					
ClimaSTORY	Data display, dissemination and validation.	ClimaSTORY ® is a fun support for facilitating collective reflection on adaptation to climate change. Designed for use by all types of territorial actors, ClimaSTORY ® proposes to consider a fictitious territory from the angle of climate change and adaptation solutions for 5 themes of economic activities.	AURA-EE, ADEME, the Chamonix-Mont-Blanc Community of communes and the Urban Community of Puy-en-Velay, L'ADEME en Auvergne-Rhône-Alpes, La Région Auvergne Rhone Alpes.	The board game comprises cooperation between administrative departments, local authorities and initiated public to decentralise their vision and reconsider their actions from the angle of climate change adaptation. It is designed for all types of users, this educational support introduces a fictional territory facing the effects of climate change and proposes adaptation solutions around 5 economic activities: Agriculture and Forest; Industry; Tourism, Trade and Crafts; Health and Safety; Development, and Management of Resources and Biodiversity.	N/A
PROSPECT	Data monitoring and validation	A repository of replicable practices for cities and regions that provide a list and elaborates on the outcomes of successfully completed projects on how to implement their sustainable energy and climate action plans using innovative financing schemes.	The repository is based on the implemented or planned or forecasted projects involving 149 local and regional authorities and 46 energy agencies and networks	PROSPECT aims to enable cities and regions to learn from their peers about innovative financing schemes and how implement sustainable energy projects. This will be accomplished through a verification step added to the check list of Facilitators, as an important step to follow-up with mentees and participants after the Capacity Building Programmes Learning Cycles (LC). The results collected from the survey conducted by Facilitators (every 6 months) will add to the repository of replication activities on the website.	The results from the project activities will be collected via surveys to promote synergies and enhance city decision-making processes regarding the implementation of energy efficiency measures in five (5) thematic learning modules 1. Public Buildings, 2. Private Buildings, 3. Transport, 4. Public Lighting, 5. Cross Sectoral.
SEAP Data Access Guidebook - Ireland	Data collection and management	It outlines the national framework on data access as well as the pathways to	3 Counties Energy Agency: Carlow, Kilkenny, and Wexford, together with Southeast Energy Agency.	This Guidebook aims at supporting local authorities in the European Union (EU) Member States, joining the Covenant of Mayors for Energy	Local Authority's Sustainable Energy Action Plan (SEAP)



	(including acquisition and treatment)	collaboration with energy providers and users in accessing local data.		and Climate (2030 target). The present guidebook provides detailed, step-by-step guidance to local authorities to develop an effective SECAP. Particular focus is put on: <ul style="list-style-type: none"> • Defining the key elements of the initiative • Elaborating a Baseline Emission inventory (BEI) • Performing a Risk and Vulnerabilities Assessment (RVA) • Developing a Sustainable Energy and Climate Action Plan (SECAP) • Supporting the implementation and monitoring of the SECAP. 	
SBAM (the School of Bioclimatic Design for Adaptation and Mitigation)	Data display, dissemination and validation.	To respond to the need of local authorities to develop new skills concerning urban climate adaptation, the project invites public officers and technicians to a training course focused on resilience, also as part of Covenant of Mayors activities. SBAM is also an outreach and training opportunity aimed at creating a network of competent professionals ready to implement adaptation strategies.	ANCI Emilia-Romagna (the Regional Association of National Italian Municipalities) and AESS (the Agency for Energy and Sustainable Development). Ministry of the Environment that enabled the creation of SBAM, using an innovative approach based on collective funding.	The idea is that a conscious design of public spaces using nature-based solutions (NbS) and sustainable urban development allows for widespread climate change adaptation actions that can significantly improve the comfort of urban areas: mitigating the heat island effect, avoiding local flooding, improving air quality, and stimulating social inclusion. Ministry of the Environment that enabled the creation of SBAM, using an innovative approach based on collective funding.	N/A
European Climate Adaptation Award	Data display, dissemination and validation.	Systematic support for German municipalities on their way to adapt to climate change developed by B. & S. U. mbH which is a quality	The eca has been successfully tested with financial support of the Ministries of the Environment of the Federal State of North Rhine-Westphalia and the Free State of Saxony in a pilot project with 12 municipalities and is	The implementation of adequate administration and structures is key to have an integrated proceeding and to consider different perspectives and requirements. The awards enable municipalities to integrate climate adaptation into their communal processes and their daily work.	Analysis of climate impact and current state; profile of strengths and weaknesses that shows in which sectors further adaptation measures would be most reasonable or rather most



		management process and certification system.	now available for municipalities throughout Germany.		necessary; planning and implementation of activities; auditing, certification and awarding.
Climate ADAPT Urban Adaptation Map	Data display, dissemination and validation.	to provide an overview of the current and future climate hazards facing the European cities, the vulnerability of the cities to these hazards and their adaptive capacity.	Part of the European Climate Adaptation Platform Climate-ADAPT, which is a partnership between the European Commission and the European Environment Agency.	The aim of this map viewer is to provide an overview of the current and future climate hazards facing the European cities, the vulnerability of the cities to these hazards and their adaptive capacity. The map viewer collates information from various sources on the observed and projected spatial distribution and intensity of high temperatures, flooding, water scarcity, wildfires and vector-borne diseases. It also provides some information on the causes of cities' vulnerability and exposure to these hazards, linked to the characteristics of cities and their population. Finally, the map viewer provides information on adaptation planning and actions of European cities.	N/A
ANERGO Energy Observatory	Data collection and management (including acquisition and treatment)	ANERGO Energy Observatory development on both energy data processing and climate hazards indicators	Alba Iulia Municipality, Alba County Council, Cerntru Regional Development Agency, Municipalities in Alba County.	Expanding the number of data processing tools used by the Observatory; Development of new climate hazards analysis (RVA); Installing new data acquisition and archiving sources (platforms for air quality monitoring, weather patterns).	Local SECAPs, Local SUMPs, Local spatial plans, Local Climate Adaptation plans, Alba County strategy for energy development, Alba County strategy for Air Quality.
CCAP Ireland	Data monitoring and validation	To document the occurrence of past climatic events, their frequency, the specific areas in Dún Laoghaire-Rathdown that are most vulnerable, and the risks associated with such events. This adaptation baseline also highlights the need for emergency planning to be continually updated in	This Climate Change Action Plan has been prepared by the Dublin energy agency Codema, in partnership with the Climate Change and Energy Strategic Policy Committee and the Elected Members of Dún Laoghaire-Rathdown County Council.	<ul style="list-style-type: none"> • Establishment of four Climate Action Regional Offices (CAROs), each led by a local authority. • The CCAP includes 144 actions in total, across the five theme areas of Energy & Buildings, Transport, Flood Resilience, Nature Based Solutions and Resource Management. • Continuous collaboration between the Council and the Eastern and Midland Regional Assembly (EMRA), in the EU funded PROGRESS project where 	The Climate Change Action Plan was also prepared having regard to A Strategy towards Climate Change Action Plans for the Dublin Local Authorities, published in 2017 and in accordance with the requirements of the Planning and Development (Strategic Environmental Assessment) Regulations 2004 and Article 6 of the Habitats Directive 92/43/EEC.



		line with extreme weather events.		they developed a mapping approach to provide enhanced information and to make better decisions regarding the management of existing green infrastructure.	Additional Climate Action and Low Carbon Development Act 2015, The National Mitigation Plan, The National Adaptation Framework, Project 2040 (National Planning Framework and the National Development Plan).
Sustainable Energy and Climate Action Plan 2021-2030	Data display, dissemination and validation	<p>The development of an information system and the monitoring and analysis of the "adaptation" indicators as part of the Cohesion and Development Tools for Strengthening the Interregional Cooperation in the Balkan area.</p> <p>Sofia 2050 is a compact, diverse and adaptable city, skillfully managing its resources and involving citizens in the decisions for the future in order to create and maintain a variety of opportunities for development and high quality of life</p>	"Climate and Energy" Expert Council: MoEW, ME, MRDPW, SEDA, the Sofia Regional Administration, UACEG, St. Kliment Ohridski Sofia University and the Technical University of Sofia.	<ul style="list-style-type: none"> • The establishment of the "Climate, Energy and Air" Directorate in which the general coordination of the activities implementation under the plan will be performed. • The full set of climate data that can be provided through the implementation of Study of the eco-system services and pilot introduction of two-way bidirectional cost recovery schemes and benefits balancing and Protection of the tall buildings facades from overheating measures. • The monitoring and control of the plan implementation. • The implementation of a special communication strategy to promote the actions for the municipal climate policy implementation and the engagement of the broad public. • The creation of 29 mitigation measures and 36 adaptation measures. 	Plan for Reconstruction and Resilience of the Republic of Bulgaria, 2021.
LOCARBO	Data display, dissemination and validation	<ul style="list-style-type: none"> • To improve the energy efficiency, smart energy management and renewable energy use in public infrastructures. • Promotion of best practices in the green public buildings and inform and engage the 	<ul style="list-style-type: none"> • Regional organisation responsible for the policies implementation: Centre Regional Development Agency. • Local associations and NGOs which aim to contribute to the sustainable development of the city: PAEM ALBA FOUNDATION, Alba Agency for Local Energy ALEA 	LOCARBO is unique in focusing its activities on bottom-up initiatives and mainly because of the approach to handle 3 thematic pillars (services, organizational structures and technological solutions) in a fully integrated way. 1) Supplementary services and products offered by authorities 2) Innovative cooperation models 3) Innovative smart technologies.	The Hungarian Virtual Power Plant Program (VPPP); Policy 7 - Number of public buildings refurbished in an energy efficient way (8) with the target - 8.



		<p>population to participate actively.</p> <ul style="list-style-type: none"> • Embed low carbon into decision-making processes at city/regional level, related to green public buildings. 	<ul style="list-style-type: none"> • Private architecture/construction companies and firms: Enerom Sebes, Architectural Office "STRAJAN". • Decisionmakers: Agency for Environment Protection, Actors involved in the refurbishment process, namely associations or other references working with the municipalities for the refurbishment activities of buildings: • Energy Auditorium Body – Alba County. • Other public institutions: 1 Decembrie 1918 University Alba Iulia, Technical University of Cluj Napoca (Alba Iulia Branch)." 	<ul style="list-style-type: none"> • Exemplary study cases of green public buildings promoted. • "Improving behaviour" Campaigns. • Public buildings refurbished in an energy efficient way. • New Plan for Energy Efficiency Improvement of Alba Iulia Municipality. 	
<p>ADAPTNOW</p>	<p>Indicators for adaptation to climate change to ensure that adaptation to climate change is fully integrated in their energy and climate plans</p>	<p>ADAPTNOW works on strengthening the adaptive capacity of Highly Affected and Exposed Territories (HEAT). To this end, the project partners implement and evaluate the available tools and practices for climate adaption and risk mitigation. Also, the replication guide increases the risk management and adaptation capacities of HEAT through the implementation and evaluation of agile, integrated, systemic and participatory approaches coordinated by regional and local public authorities with the support of sectoral agencies and research institutes.</p>	<p>Auvergne Rhône-Alpes Energy Environment Agency (Lead partner), Regional Agency for Infrastructure development, building Renovation and Energy of Liguria – IRE spa, EURAC Research, National Research Institute for Agriculture, Food and the Environment Universität der Bundeswehr München, iiSBE Italia R&D, Energy and Environmental Centre Allgaeu, Energy Institute Vorarlberg, Energy and Climate Agency of Podravje, Municipality of Genoa, Municipality Selnica ob Dravi, Grenoble-Alps Metropole.</p>	<p>ADAPTNOW brings together regional sectoral agencies and research centres from five AS countries (France, Italia, Austria, Germany and Slovenia) to support Pilot Actions and help set up and run Climate Services in support of 7+ HAET in the Alps.</p> <p>ADAPTNOW will provide:</p> <ul style="list-style-type: none"> • Support information and knowledge exchange of existing adaptation and risk mitigation management tools and practices a transnational/regional/local level to improve the adaptive capacities of HAET; • At least 7 pilots will test the adapting capacity of specific economic sectors within HAET (Urban infrastructure, Forestry, Tourism and Health) share their experiences and develop more integrated and agile adaptation planning; • Existing Climate Support Services will be tailored to the local needs and increase the adaptation capacity of HAET; 	<p>EUSALP AG:</p> <p>AG8 Risk governance</p> <p>AG9 Energy efficiency and renewable energy</p>



				<ul style="list-style-type: none"> • Raise awareness among experts, policymakers, and citizens to create a common and shared knowledge of Alpine risks & adaptation solutions and practices. <p>Project outputs will be:</p> <ul style="list-style-type: none"> • Guidebook for introducing advanced Climate Adaptation and Risk Mitigation planning at local level • Alpine Climate Adaptation Support Service Package • Replication guide • Policy recommendations 	
Porto Energy Hub	Data monitoring and validation	A One-Stop-Shop to promote energy savings and increase home comfort aims to mitigate energy poverty. AdEPorto is running an OSS formed of a Central Hub in Porto (directly managed and run by AdEPorto) and local offices in each local authority supported.	Agencia De Energia do Porto, S317 Consulting, TELLES, RDA Climate Solutions	<p>The Hub offers integrated services in the areas of Energy Efficiency in Buildings and Renewable Energy and Self-Consumption. In particular, the local offices serve as the first entry point for the local community, carrying out preliminary checks and audits to the households interested in renovation works. Concerned homeowners and/or tenants are then redirected to the central hub for specialised support.</p> <p>An interesting aspect of this hub is the mobile unit (van) moving around the territory and reaching areas in situation of energy poverty, particularly vulnerable households. The mobile unit, as well as the overall hub, are promoted thanks to coordinated campaigns with the concerned local authorities, which also host the local offices in their buildings, so to be easily found and accessible to the community.</p>	N/A



<p>RENOWABE</p>	<p>Indicators for adaptation to climate change to ensure that adaptation to climate change is fully integrated in their energy and climate plans</p>	<p>Boosting Regional ENergy TransitiOn through EEand ReneWABLEs in public buildings (RENOWABE) is an Investment Programme targets energy efficiency investments and building-integrated renewables in about 225 non-residential buildings owned by Region of Extremadura. On average, 30% of energy savings are expected and, for the majority of the buildings, the RES contribution shall represent at least 25% of the final energy use.</p>	<p>ELENA beneficiary, Regional Ministry for Health and Social Services, Junta de Extremadura.</p>	<p>The project aims to mobilize an eligible investment of EUR 39 million (EUR 27.5 million for energy efficiency and EUR 11.5 million for RES). The renovations will include the modernization of the existing non- residential, including the following: envelope insulation; window replacements and improved glazing; heating, cooling & ventilation upgrade; domestic hot water; indoor lighting; HVAC systems; energy management systems; renewable energy solutions (mainly PV plants and if suitable solar thermal panels and biomass boilers).</p> <p>Energy Efficiency - Annual total energy saved 51.31 GWh representing a reduction of 30% compared to the baseline.</p> <p>Renewable Energy - Annual total 18 GWh, of which: 18 GWh RE electricity generation.</p> <p>CO2 reduction - Annual total reduction of 17,009 CO2 eq t representing a reduction of 36% compared to the baseline.</p> <p>Jobs created -184 equivalent FTE.</p>	<p>N/A</p>
<p>Collective Renovation Programme (CoachCopro)</p>	<p>Data monitoring and validation</p>	<p>Offers individuals and professionals the essential tools and services for a successful energy renovation project in co-ownership. In particular, the online tool developed by the project allows homeowners and tenants to monitor the data of their building.</p>	<p>Agence Parisienne du Climat, Rénovons collectif, République Française, ADEME, ANAH.</p>	<p>The agency also provides energy advisors (1 per each district of the city), to inform homeowners (condominium only) on how to proceed for renovating their buildings, focusing on the types of measures they may implement, how to look for funds, etc. The content offered is produced by all the communities and structures using CoachCopro in France, and by national partners such as ANAH and ADEME as well as tailor-made advice from a France Rénov' advisor.</p>	<p>N/A</p>
<p>EXCITE</p>	<p>Data monitoring and validation</p>	<p>Brings over the best practices in energy management by</p>	<p>Center for Energy Efficiency EnEffect, Austrian Energy Agency, Alternatives pour l'Energia, les</p>	<p>The EXCITE project supports implementation of the European Energy Award in Bulgaria, North</p>	<p>N/A</p>



		applying the time-proven methodology of the European Energy Award (EEA) to countries in Central and Eastern Europe.	énergies Renouvelables et l'Environnement, Romania Green Building Council, Institute Energy Agency of Savinjska, Saleska and Carinthia, Association "Energy Efficient Cities of Ukraine", Habitat for Humanity Macedonia, Salzburg Institute for Spatial Planning, Brandes Energija AG	Macedonia, Romania, Slovenia and Ukraine by providing direct technical support for 3 pilot cities in each country. On top, it delivers specialised training for local energy managers, tailored business models for local climate actions, and broad civil engagement campaigns. The EEA methodology is well understood as a tool for attraction of additional private investment in energy and climate actions by local authorities. Special attention will be paid to innovative financing mechanisms as crowd funding and energy communities.	
Energy coaching for SMEs	Data display, dissemination and validation	EKSyd provides coaching to implement energy transition for SMEs in which they are trained in the tools that give them a framework on how to implement energy efficiency in a systematic way in their organisation. Also, some network meetings to discuss energy transition together with the energy experts on lectures, sharing knowledge, and experiences.	Austrian Energy Agency, OurPower, Black Sea Energy Research Centre, B&SU Consulting, Cooperative and Raiffeisen Confederation, WIP Renewable Energies, Association of Young Professionals in Energy of Georgia, North-West Croatia Regional Energy Agency, National Society of Conservationists - Friends of the Earth Hungary, Reflex Environmental Association. Energie Teilen, Share Renewables Bulgaria, Energetske Zajednice Hungary, Eneruerbare Energie Gemeinschaften, Energy4All, Tudaster Kozenergia.	The key to engage all citizens is through well-equipped local heroes. For this reason, a Gateway will be the central digital platform in each partner country where local heroes can find all information they need to set up or expand their energy community. SHARES supports local heroes by creating country-specific platforms (SHAREs Gateways), which offer: <ul style="list-style-type: none"> • A country-specific information package to equip local heroes with all necessary information to set up their energy community (e.g., legal framework, model contracts, or business models). • Building blocks of a tailored "pick-and-mix" communication campaign to enable them to promote their energy community or collective action effectively to their most relevant consumer groups. 	N/A
REMARKABLE Climate Leaders	Data display, dissemination and validation	Build new leadership capacity through a Climate Leadership Programme (CLP) designed with and for leaders who, through their actions and inspiration, drive their	Regional Energy Agencies, public authorities, communities, Auvergne-Rhône-Alpes Energy Agency (AURA-EE), European Federation of Agencies and Regions for Energy and the Environment (FEDARENE), Escan Energy Consulting (ESCAN), Institute for Innovation	REMARKABLE's anthropology experts conduct specific ethnographic studies on leaders from the partner regions which will inform the development of the REMARKABLE Climate Leadership Programme (CLP). The CLP will be the first of its kind in Europe, designed with and for leaders of	N/A



		<p>communities and public authorities towards climate solutions. The CLP is an innovative training and co-creation programme for existing and emerging local (municipal) climate leaders designed as a service to increase their skills and capacities to effectuate ambitious climate neutrality goals before 2050.</p>	<p>and Development of the University of Ljubljana (IRI UL), North Sweden Energy Agency (Energikontor Norr), North West Croatia Regional Energy Agency (REGEA), Podravje Energy Agency (EnerGap), Tipperary Energy Agency (TEA), Technological University of the Shannon (TUS), Upper Austria Energy Agency (OÖ Energiesparverband).</p>	<p>the energy transition who wish to take the next step in delivering Climate Neutrality. Climate REMARKABLES will bring and share:</p> <ul style="list-style-type: none"> • The training of 120+ actors from multiple sectors, • 60+ territorial roadmaps, • 14 new services in support of climate neutrality, • A network of more than 300 leaders in the sustainable energy fields. <p>Interest for Energy Agencies:</p> <ul style="list-style-type: none"> • Shed light on local climate leadership to drive change in your region, • Design a climate leadership programme in your region, • Access a guide to help you create a Climate Neutrality Roadmap, • Develop Climate Neutrality Services and Solutions in regions, • Participate in the training of 120+ actors from multiple sectors, • Join Climate Leaders Circle, the network of more than 300 leaders in the sustainable energy field. • Access the repository of Climate Leaders from 7 regions. 	
<p>ROSEIDE</p>	<p>Data display, dissemination and validation.</p>	<p>The Ile-de-France energy and GHG observatory which ROSE aims to collect, consolidate, process and disseminate information, data and scenarios relating to the consumption and production of energy, as well as the</p>	<p>La Région Ile-de-France, L'Etat, L'Agence Régionale de l'Environnement et des Nouvelles Energies d'Ile-de-France, L'Agence de l'Environnement et de la Maîtrise de l'Energie, AIRPARIF, L'Institut d'Aménagement et d'Urbanisme de la Région d'Ile-de-France, La Chambre de Commerce et d'Industrie de Région d'Ile-de-France, Electricité de France,</p>	<ul style="list-style-type: none"> • A specific instrument for knowledge, support and monitoring of actions carried out in terms of energy management, development of renewable energies and the fight against climate change. • A methodology complementary to the previous one, which consists of attributing the energy consumption and GHG emissions of travel road to 	<p>The ROSE data constitute, for the fields and the years that they cover, the regional reference data.</p>



		associated GHG. The ROSE (Energy and GHG Statistical Observation Network), co-managed by DRIEAT and the Île-de-France Regional Council, was created in 2008.	Electricité Réseau Distribution France, Gaz Réseau Distribution France, Le Gestionnaire du Réseau de Transport d'Electricité, Le Syndicat Intercommunal de la Périphérie de Paris pour les énergies et les réseaux de Communication, Le Syndicat des Transports d'Ile-de-France.	the territories of destination of the journeys, and not to the territories crossed. This approach makes it possible to identify the main territories generating travel for which it would be relevant to investigate the levers that can be mobilized to reduce the impact of travel.	
Ecospeed	Data monitoring and validation	Instrument for the monitoring of energy consumption and CO2 emissions. This software provides regions, cities and municipalities transparent energy and CO2 auditing.	N/A	Instrument for the monitoring of energy consumption and CO2 emissions. This software provides regions, cities and municipalities transparent energy and CO2 auditing.	Efficient tool for development of Baseline Emission Inventories (Inventories) in the context of the Covenant of Mayors (CoM).

Promising Practices

Resource Manager Catalogue (RM) , Customer Energy Manager Catalogue (CEM) , Aggregation & Market Integration from RESONANCE project	Data collection and management (including acquisition and treatment)	Replicable and Efficient Solutions for Optimal Management of Cross-sector Energy is creating a software framework for plug-and-play development of solutions for demand-side flexibility management of distributed and small-scale assets. The Framework constitutes 3 catalogues of software libraries as well as marketplace services and tools that provide means for rapid, cost-efficient development and customisation of standard-compliant Resource Manager and Customer Energy Manager solutions as well as	VTT Technical Research Centre of Finland Ltd, fortiss GmbH, Institut "Jožef Stefan" JSI, Athens University of Economics and Business (AUEB) – Services, Technologies and Economics Group (STecon), CheckWatt AB, Smart Com d.o.o., Consolinno Energy GmbH, Trialog, Amibit, energetski sistemi, d.o.o., In-JeT ApS, Bovlabs SAS, Caverion Suomi Oyj, Enerim Oy, European Dynamics S.A., Elektro Celje d.d., ECE d.o.o., CluBE, Municipality of Eordaia, Mölndal Energi AB.	This is achieved by developing an innovative software framework that provides means for rapid development and plug-and-play deployment of standard-compliant solutions. Based on the results, RESONANCE will create a best practice reference book and roadmaps for market replication. The Customer Energy Manager, specified in the EN 50491-12 standard family, is a software agent that automates demand-side flexibility management by interacting with a building's smart appliances, represented by the Resource Manager Catalogue, as well as aggregators and the energy markets, represented by the Aggregation and Market Integration Catalogue.	N/A
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		their aggregation services into different sectors.			
<u>SHAREs Energy Communities and Collective Actions</u>	Data display, dissemination and validation	An EU-funded initiative, supports so-called local heroes in setting up or expanding their energy community and enables them to motivate consumers to participate, including those who do not yet have an affinity to energy or are simply unfamiliar with the concept of energy communities.	<p>Austrian Energy Agency, OurPower, Black Sea Energy Research Centre, B&SU Consulting, Cooperative and Raiffeisen Confederation, WIP Renewable Energies, Association of Young Professionals in Energy of Georgia, North-West Croatia Regional Energy Agency, National Society of Conservationists - Friends of the Earth Hungary, Reflex Environmental Association.</p> <p>Energie Teilen, Share Renewables Bulgaria, Energetske Zajednice Hungary, Eneruerbare Energie Gemeinschaften, Energy4All, Tudaster Kozenergia.</p>	<p>The key to engage all citizens is through well-equipped local heroes. For this reason, a Gateway will be the central digital platform in each partner country where local heroes can find all information they need to set up or expand their energy community. SHAREs supports local heroes by creating country-specific platforms (SHAREs Gateways), which offer:</p> <ul style="list-style-type: none"> • A country-specific information package to equip local heroes with all necessary information to set up their energy community (e.g., legal framework, model contracts, or business models). • Building blocks of a tailored “pick-and-mix” communication campaign to enable them to promote their energy community or collective action effectively to their most relevant consumer groups. 	N/A
<u>REGILIENCE Self-Assessment Tool</u>	Indicators for adaptation to climate change to ensure that adaptation to climate change is fully integrated in their energy and climate plans	A self-assessment tool to spot risks of maladaptation for any user who wishes to plan good climate adaptation but neglect the risk of maladaptation	The tool is developed by Fresh Thoughts Consulting GmbH in the framework of REGILIENCE project. The tool is mainly designed for people or institutions who oversee planning and implementing regional adaptation actions. It can also be adopted to be used on a local, individual or national (by both public and private organisations) level. To minimize the risk of subjective judgements, we recommend that more than one person fills in the checklist to compare the results afterwards. This also helps to increase the awareness of maladaptation.	The REGILIENCE self-assessment tool explicitly focuses on spotting potential risk factors for maladaptation as early as possible. Its objective is to help users (staff of the competent regional authority/ies for climate adaptation or of other departments and organisations e.g. consultants for the administrations, CSOs dealing with climate adaptation) to avoid or reduce maladaptation risks in the planning phase of adaptation actions.	As a general rule, the more questions of the checklist are answered with ‘no’ or ‘partially’, the higher is the maladaptation risk. Once the whole checklist has been completed, all questions marked with ‘no’ shall be further investigated, because they imply a potential risk of maladaptation. They mark specific issues where additional action is needed to minimise or mitigate the risk of negative outcomes. To do so, it is useful to consult the Climate-ADAPT Adaptation Support Tool and check the steps of the



					adaptation process specifically linked to potential maladaptation risks.
CERVINO	Data collection and management (including acquisition and treatment)	CERVINO (Creating an EnerGy data exchange and VisualizatiON tOol for the alps) alpine space project is implementing the CERVINO Alpine Energy Data Platform. The project will connect regional energy data from the 48 regions members of the Macro-regional strategy EUSALP and make them available through a web platform using the TerriSTORY open-source code.	5 partners in Italy (Region Liguria: IRE spa, the Regional Agency for Infrastructure development, building Renovation and Energy of Liguria as lead partner. Provincia Autonoma di Bolzano/Bozen: Eurac research), France (Region Rhône-Alpes: Auvergne Rhône-Alpes Energy Environment Agency), Slovenia (Region Vzhodna Slovenija: Energy Agency of Savinjska, Šaleška and Koroška Region), Germany (Region Oberbayern: Civic Fundation Energiewende Oberland (EWO)). 4 regional energy agencies (AURA-EE, KSENA, EWO, IRELIGURIA) one research center: EURAC. Partners have contacts of many people in charge of data in regional authorities and/or their organisations in charge of data.	CERVINO facilitates the exchange and visualisation of energy data within the Alpine territory. It sets up a stable and reliable system that enables a better collection, management, update and use of Alpine energy data. The project improves the Energy Survey conducted in 2017 and 2019 in the framework of the EU Strategy for the Alpine Region (EUSALP) developing a simple, user-friendly energy data management tool. Data entry and processing of the management tool will be facilitated, and a roadmap will ensure regular surveys on energy data.	EU Strategy for the Alpine Region (EUSALP).
EUCRA - European Climate Risk Assessment	Indicators for adaptation to climate change to ensure that adaptation to climate change is fully integrated in their energy and climate plans	EUCRA seeks to complement the existing knowledge base on the assessment of climate-related hazards and risks in Europe and provide added value for policymaking.	The implementing partners are EEA, Consortium partners of the European Topic Centre on Climate Change Adaptation and LULUCF (ETC/CA), Joint Research Centre (JRC), and Copernicus Climate Change Service (C3S) EUCRA also involves a large number of external experts, policymakers and other stakeholders during different phases of the project, including an Expert Advisory Group, a Working Group of the European Commission, Eionet Group on Climate Change Impacts, Vulnerability and Adaptation.	EUCRA seeks to complement the existing knowledge base on the assessment of climate-related hazards and risks in Europe and provide added value for policymaking in the following areas: <ul style="list-style-type: none"> • Using state-of-the-art model outcomes and scientific literature; • Systematic assessment of the magnitude of current and future key climate risks; • Addressing compound hazards, cross-border risks, cascading risks, and systemic risks; 	The EU Adaptation Strategy sets out how the European Union can adapt to the unavoidable impacts of climate change and become climate resilient by 2050. Under No. 14: “Building on its overview of natural and man-made disaster risks the European Union may face, relevant research projects, its series of PESETA reports, and taking into account existing sector regulations, the Commission will draw up an EU-wide climate risk assessment.”



				<ul style="list-style-type: none"> • Involving stakeholders from the European Commission throughout the assessment process; • Assessing the European policy context, risk ownership, and urgency for action for each key risk; • Providing complementary interactive tools on climate hazards and risks. 	The European Parliament resolution of 15 September 2022 also urged the Commission to draw up an EU-wide climate risk assessment and to pay special attention to the risks of droughts, forest fires and health threats.
SustainBioE SustainBioEn tool from BioScreen CEE project	Indicators for adaptation to climate change to ensure that adaptation to climate change is fully integrated in their energy and climate plans	Evaluates energy use plans and data and their deficiencies, improving the capacity and engagement of stakeholders on recommendations of alternatives to forest biomass and sustainability criteria beyond those in Renewable Energy Directive II (REDII) for achieving climate targets. These recommendations will include alternatives for pilot local municipalities with firewood dependency and will be advocated towards national policymakers.	The BioScreen CEE project is co-funded by the European Climate Initiative (EUKI). EUKI is a project financing instrument by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU). Its implementation is supported by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.	EAP has developed this tool to estimate the impacts of the REDII biomass sustainability criteria. It seeks to have an impact on enhancing the implementation of the EU climate and energy framework, mainly through the national transposition and implementation of REDII and the implementation and future review of the National Energy and Climate Plans.	SustainBioEn tool is compatible with the REDII biomass sustainability criteria. The local strategic document that this tool can be used for are SEAP/SECAPs, RES Action plans, Forestry management plans, Environmental Protection Action Plans.
GIS heating refurbishment tool	Data display, dissemination and validation	The tool is aimed at the local authorities to analyse heat and monitoring impacts.	The tool development was led by EAP and was applied in Sofia Municipality. In future, the tool could be adapted to the needs of local and regional authorities and upgraded with other layers of interest.	EAP is developing a GIS-based map for planning and implementing fossil fuel exchange programmes and estimating their impacts on emissions.	The tool may be used for planning fossil fuel phase out actions, sustainable energy actions, supplementing SECAP, etc.
ClimaAct CEE Tool	Indicators for adaptation to climate change to ensure that adaptation to climate change is fully	The new ClimaAct CEE project on boosting the decarbonised, low-emission transformation in Central and Eastern Europe, and co-funded by the	Local authorities, energy, environment, climate experts, developed by Energy Agency of Plovdiv (EAP), Alba Local Energy Agency, Deutsche Umwelthilfe (DUH), Energy Agency	EAP, REGEA and ALEA are cooperating to develop a tool to make an inventory of the energy and GHG and air pollution emissions in potential LEZ/ZEZ in the EU cities. The ClimaAct CEE project recognises that more nuanced policies and actions at local	The tool may be useful in sustainable energy planning transition and implementing decarbonisation policies as well as policies for air pollution reduction.



	integrated in their energy and climate plans	European Climate Initiative (EUKI).	of Plovdiv (EAP), North-West Croatia Regional Energy Agency (REGEA).	<p>and regional levels are needed to tackle the climate challenges and support CEE in achieving the long-term EU policies, especially in the light of the Fit for 55 and Green Deal packages.</p> <p>The project will propose a climate-screening framework for reducing GHG emissions and air pollution through converging energy, climate and air quality policies that will trigger decarbonised and low-emission urban transformation in CEE. This will be embedded into a guided tool for the European cities to design and implement decarbonised and low-emission city zones (i.e. climate neutral zones) that will showcase and ensure that integrated policies become a game-changer in fighting the climate challenges we all face. The resulting climate neutral zones will be scaled-up and replicated as flagships of the sustainable, climate-resilient and energy-independent future of all European cities.</p>	
Regional Energy Plan Piemonte	Data monitoring and validation	<p>The measures and priorities defined at regional level are compliant with the overall European and National strategies aiming at setting a reduction target of greenhouse gas emissions by at least 55% by 2030 and a long-term vision to reach climate neutrality by 2050 in the area of:</p> <ul style="list-style-type: none"> • Energy efficiency • Renewable energy supply • Sustainable infrastructure and spatial development 	<p>the following list of stakeholders have been invited in the consultation:</p> <ul style="list-style-type: none"> • AIEL - business group organisation (Biomass) 20 • AIRU - business group organisation (District heating) • ANCE- business group organisation (Building Construction) • ANCI - Association of Municipalities • ASSOESCO - business group organisation (ESCO) • Elettricità Futura - business group organisation (Energy Producers) 	<p>The definition of the 2030 and 2040 scenarios was carried out through the integration of the measures and actions defined within the Prospect2030 project with the planning scenarios developed at national level with a 2050 horizon, published in early 2021.</p> <p>Creation of business models and regional applicability to:</p> <ul style="list-style-type: none"> • bundling approach for public buildings • one stop shop for citizens for the renovation of private buildings • energy communities <p>The Sustainable Energy Department of Piemonte Region is entitled and in charge of monitoring and</p>	<ul style="list-style-type: none"> • Strategia italiana di lungo termine sulla riduzione delle emissioni dei gas a effetto serra, Ministero dell’Ambiente e della Tutela del Territorio e del Mare; Ministero dello Sviluppo Economico; Ministero delle Infrastrutture e dei Trasporti; Ministero delle Politiche agricole, Alimentari e Forestali; January 2021. • Proposta di piano per la transizione ecologica - Inquadramento generale; Comitato interministeriale della transizione ecologica (CITE); July 2021.



		<ul style="list-style-type: none"> • Catalysing factors: awareness, education, information 	<ul style="list-style-type: none"> • EGEA - Utility (DSO) • ENEA - Energy and Environmental Agency • ENEL - Utility (DSO) • ENVIPARK - Research Institute • FIPER - business group organisation (Energy Producers) • IREN - Utility (DSO) • LEGAMBIENTE - Environmental Association • SNAM S.P.A. - Utility (TSO) 	<p>evaluating the progress in the implementation of the energy transition targets at regional level.</p>	<ul style="list-style-type: none"> • Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union, Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and Regulation (EU) 2015/757; July 2021
PESPKA-PDE	<p>Indicators for adaptation to climate change to ensure that adaptation to climate change is fully integrated in their energy and climate plans</p>	<p>to identify and prioritise the necessary measures and actions to adapt the Region to the upcoming climate changes. For that purpose, a vulnerability and impact assessment analysis carried out taking into account three scenarios of the global evolution of greenhouse gas concentrations (RCP2.6-favourable, RCP4.5-intermediate, RCP8.5-adverse) for 12 identified key sectors to climate change and 3 time periods, in accordance to the 5th report on climate change (AR5, IPCC, 2014) of the IPCC.</p>	<p>Mainly different administrative departments and technical services within the Region; local authorities/municipalities and their implementation agencies; Central structures, such as ministries and different administrations/departments of sustainable/spatial planning. Also, representatives of energy sector, such as HEDNO; representatives of education sector (schools/universities) and cultural heritage.</p>	<p>Based on a Statistical Analysis of 70 Climate Indicators and a Statistical Analysis of the region's vulnerability to Climate Change the plan proposes measures and actions that:</p> <ul style="list-style-type: none"> • tackle climate change and prioritise (avoiding impacts, to reduce the intensity and extent of the impacts, and restoring impacts) • focus on the priority sectors and vulnerable regions, while covering the remaining sectors that are not directly threatened • integrates and harmonise at the regional level actions and measures of the National Strategy for Climate Change Adaptation <p>Key actions and measures on Agriculture and farming, Forests – Renewable, Biodiversity – Ecosystems, Fishing – Aquaculture, Water resources, Coastal uses – Rivers, Tourism, Energy demand, Transport infrastructure, Health, Environment, Cultural heritage, Harmonised Sectors, Natural disaster management, Environment protection.</p>	<p>National Plan for Adaptation to Climate Change (NAPPA), National Energy and Climate Plan, National Strategy for Forests, River Basin Management Plans (1st revision), Flood Risk Management Plans, Five-year Operational Program of Western Greece, Evaluation, Review and Specialization of the Regional Spatial Planning and Sustainable Development Framework.</p>



<p>SECAP for Sveti Juraj na Bregu Municipalities</p>	<p>Data monitoring and validation</p>	<p>Raise capacity of cross-border public institutions in sustainable energy planning and management and climate change mitigation.</p> <p>Increase capacity in the cross-border public sector through cooperation and exchange of knowledge, experience and best practices in the field of sustainable energy planning and climate change mitigation and also to encourage planning and implementation of energy efficiency measures and the use of renewable energy sources in the public and private sectors.</p>	<p>Medjimurje Energy Agency Ltd. (CRO) and Zala County Foundation for Enterprise Promotion (HU)</p>	<p>Project partners developed Joint methodology on strategic planning with the technical, professional and advisory assistance of experts in the field of strategic planning. It is considered to be a tool which will help local and regional government units in setting the basis for defining and implementing an effective energy and climate planning process in their administrative area and will be used as supporting material during development of strategic and planning documents and other relevant strategies and implementation programs in their administrative area.</p> <p>Development of common cross-border methodology on strategic planning, documents, joint analysis of best practices examples, bilingual guidelines for local and regional government, and development of joint Sustainable Energy and Climate Action Plans (SECAPs). More than 40 participants in project events, conferences, meetings, networking events, and information events.</p>	<p>The EU's policies related to climate and energy are based on Articles 191-194 of the Treaty on the Functioning of the European Union. Under Article 191, combating climate change is one of the objectives of the EU's environment policy, while under Article 194 the EU promotes energy efficiency and energy saving and the development of new and renewable forms of energy. Strategy for the energy development of the Republic of Croatia from 2009-2020 (OG 130/09) and from 2030-2050 (OG 25/20). National Energy Strategy 2030 of Hungary, with an outlook to 2040 and the National Energy and Climate Plans (NECP).</p>
<p>CLIMaterisk And vulnerability Assessment framework and toolbox (CLIMAAX)</p>	<p>Indicators for adaptation to climate change to ensure that adaptation to climate change is fully integrated in their energy and climate plans</p>	<p>It builds upon existing risk assessment frameworks, methods and tools, and promotes the use of datasets and service platforms for local and regional scale deployment. It will develop a robust and coordinated framework of consistent, harmonised and comparable risk assessments.</p> <p>The project brings the existing tools and services beyond state-of-the-art by prioritising</p>	<p>Deltares, adelphi, CIMA Research Foundation, CMCC, CRAHI-UPC, ECMWF, eurada, Funding Box, IGOT Lisboa, IIASA Austria, Ilmatieteen Laitos, Vrije Universiteit Amsterdam, KAJO services, Latvijas Vides, ģeoloģijas un meteoroloģijas centrs, Ministry of the Interior Finland, Pelastusopisto, Identitat corporativa protecció civil, SETUBAL Municipality.</p>	<p>CLIMAAX is designed to significantly contribute to the harmonization and consolidation of the practice of climate risk assessment (CRA), leaving a substantial legacy for upcoming European initiatives. The project will deliver:</p> <ul style="list-style-type: none"> • A standardized CRA framework CRA built on current community experience and best-practices • A Toolbox with data, models and utilities to provide access to European and global open data archives integrated with local data and procedures • Five European pilot regional CRAs to shape the framework and toolset 	<p>N/A</p>



		the further development of accessibility, guidance, tuning to local contexts, interpretation and uptake by representative Disaster Risk Management and Civil Protection authorities.		<ul style="list-style-type: none"> • Financial support for at least 50 regions to execute a context specific CRA • CRA guidance material and online helpdesk for other European regions • A proposal to upscale results into the future operationalization of the regional CRA support function 	
crossCert (Assessment of Energy Certificate in Europe) – KxC: Knowledge Exchange Centre	Data display, dissemination and validation	Provides reliable, practical, and people-centred European energy performance certification of buildings. The project wants to compare certification tools in different countries: Spain, Slovenia, UK, Greece, Croatia, Poland, Bulgaria, Malta, Denmark, and Austria. This Knowledge Exchange Centre is a web-based repository of information on next generation Energy Performance Certificates for buildings in the European Union.	Universidad de Zaragoza, Heriot Watt University, Institute for Innovation and Development of University of Ljubljana, EC Network, Ente público Regional de la Energía de Castilla y León, Malta Intelligent Energy Management Agency, Foundation Center for Energy Efficiency EnEffect, Krajowa Agencja Poszanowania Energii S.A. (The Polish National Energy Conservation Agency), Regionalia Energetska Agencija Sjeverozapadne Hrvatske (North-West Croatia Regional Energy Agency), Centre for Renewable Energy Sources and Saving, Austrian Energy Agency, Klima-Bündnis / Alianza del Clima e.V.	<p>Guidelines for the development of people-friendly EPC products and services integrate new (and evolving) EPC approaches and capacities for tailored application at the level of individual EU Member States. The project performs cross-testing between the current energy certificates and the original approaches/initiatives using +140 buildings in Europe and creates a public benchmarking database of test cases. The results of the different approaches/initiatives are then compared and analysed to prepare policy recommendations that include potential improvements in accuracy, usability, and harmonisation. CrossCert contributes to the success of the next-generation EPCs (Energy Performance Certificates) by elaborating and testing guidelines and recommendations that achieve:</p> <ul style="list-style-type: none"> • A public benchmark repository. • Technical guidelines for the next generation of EPCs. • Guidelines and tools for the exploitation of EPC data. • Guidelines for people centred EPCs. • Recommendations for the harmonisation of next generation EPCs. 	N/A



				<ul style="list-style-type: none"> • An EPC knowledge exchange centre. A web-based repository of information on EPC approaches. • An EPC community forum. 	
MATRYCS Modular Toolbox	Data monitoring and validation	<p>MATRYCS Toolbox is a cloud-based data analytics platform revolutionising building data management. It enables reliable policymaking, innovative data analytics services, and safe operations. Utilising AI-driven ML/DL algorithms, it analyses diverse data sources for statistical insights and predictive modeling. A game-changing solution for energy efficiency and sustainability for the energy and building sector. Building energy management will be elevated to a new level through improved data processing, analysis, and aggregation. The project aims to enhance the implementation of energy efficiency policy objectives with the adoption of novel validated business models for the building sector, by opening new opportunities considering the Big Data approach for decision-making.</p>	<p>ENGINEERING Ingegneria Informatica S.p.A., The National Technical University of Athens (NTUA), Fundacion CARTIF, RWTH Aachen University, EURAC, HOLISTIC IKE, ComSensus Komunikacije in Senzorika, Blagovno Trgovinski Center DD, FASADA, Miasto Gdynia, Coopérnico - Sustainable Development Cooperative C.R.L., ASM TERNI S.p.A., Veolia group, ICLEI European Secretariat GmbH, Ente Publico Regional de la Energia de Castilla y Leon, The Latvian Environmental Investment Fund, Housing Europe, SEVEN - the Energy Efficiency Center.</p>	<p>MATRYCS envisions smart energy-aware buildings towards a real-data building economy by providing innovative analytics building services targeting 4 themes and covering different perspectives in the whole building sector:</p> <ul style="list-style-type: none"> • Performance – monitoring and improvement of the energy performance of buildings • Design – design facilitation and development of building infrastructure • Policy – policy-making support ad policy impact assessment • Fund – de-risking of investments in energy efficiency 	N/A



5 Conclusions

The survey responses from partners and mentees of ENERGeE Watch served as the foundation for the database of the finest monitoring, reporting, and verification processes. It includes information and illustrations of best practices gathered from the ENERGeE Watch learning programme's courses and modules. A total of **55 best practices**, 22 innovative practices, 19 good practices, and 14 promising practices are included in the database. The recommendations and lessons acquired from the study are influenced by these findings.

By gathering a wide range of replicable approaches and tools, the report offers decision-makers, professionals, researchers, and policymakers a centralised and user-friendly resource that promotes the adoption of trustworthy monitoring and verification procedures. The practices also promote the establishment of a proper replication mechanism so that regions and cities can consult and use the learning programme materials and tools even after the consortium network and the project's duration, as well as the sharing of successful monitoring and verification practices among mentees and other relevant practitioners within ENERGeE Watch.



