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Creating an EnerGy data exchange and Visualization tOol for the alps

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Lead Partner: Regional Agency for Infrastructure development, building Renovation and Energy of Liguria – IRE SpA (Lead partner)

Activity 1.4 Developing a Roadmap for durability of the new energy data management system
Leader Organization: IRE SpA

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Preface

For the European Union to become a carbon-neutral economy by 2050, decision-makers need reliable energy data to define, implement, and monitor the effectiveness of energy policies.

The overall objective of CERVINO (*Creating an EneRgy data exchange and Visualization tOol for the alps*) project is to set up a stable and reliable system that will enable the collection, management, update and use of Alpine energy data to support decision-making.

The project has improved the Energy Survey conducted in 2017 and 2019 in the framework of the EU Strategy for the Alpine Region (EUSALP) and developed a simple, user-friendly energy data management tool.

This report describes all the activities performed in Activity 1.4 of CERVINO: “Developing a Roadmap for durability of the new energy data management system”. The A.1.4 aimed at:

- developing a Roadmap for the durability of the new energy data management tool, ensuring the regular update of the Survey and ultimately leading to the establishment of an Alpine Energy Observatory (AEO) in the mid-term;
- exploring the options to reduce the budget and time to further update the survey, based on the semi-automatic update of the Survey using the new tool.

EUSALP needs reliable consolidated energy data in order to facilitate the decision-making process at a macro-regional level. The Alpine Energy Observatory could become crucial for EUSALP strategy to support the identification of energy objectives, to monitor contribution to EU goals and stimulate energy transition in the Alps.

To ensure shared project ownership and the quality and usefulness of the developed solutions, a relevant group of observers from the EUSALP territory (AG9 members & regional authorities) was involved to provide expertise & support throughout project duration, playing the roles of multipliers, policy makers and/or local implementers.

The report is structured as follow:

- Chapter 1: The process: towards the future establishment of the Alpine Energy Observatory
- Chapter 2: The state of the art of energy data collection in regions
- Chapter 3: The future roadmap - main elements
- Chapter 4: Conclusions

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1 The process: towards the future establishment of the Alpine Energy Observatory

Energy balance is the fundamental ally of green transition: it allows us to acquire information on how energy is produced and used as well as the total energy availability of a country in a year and the best ways to use it. Energy balance is a tool for monitoring and analysis that is able to provide a quantitative and qualitative examination of energy flows that characterise all phases of the system.

This represents one of the main reasons why in the framework of CERVINO the project partners worked together to draft a Roadmap for the durability of the new energy data management tool developed by the project, ensuring the regular update of the reshaped Survey and ultimately leading to the establishment of an Alpine Energy Observatory (AEO) built as a landmark and reference point for the policies and decisions on EUSALP territory.

In particular some aspects of the Roadmap that could set up the conditions for the durability have been explored.

In order to draw up the Roadmap, IRE took advantage of the exchanges that took place during the 2023 project meetings as well as the open debate sessions where CERVINO project partners had the chance to:

- analyse the main aspects of energy data collection issues in the EUSALP regions, crucial for understanding the strengths and weaknesses;
- share their ideas on the possible points that the roadmap should explore.

The synergies among all the project activities and their results, especially with reference to the conduction of the new survey (1.3 Activity) in the EUSALP regions, carried out during 2023, were very significant to highlight important elements to take into account in the development of a roadmap that allows the durability of the tool, with the final aim of establishing a future Alpine Energy Observatory.

Considering that the survey simplification issue has already been successfully addressed in Activity 1.1, the main points that emerged were:

- the **need for a strong commitment** on behalf of the political decision makers of the EUSALP regions in order to ensure their engagement in the compilation of the reshaped survey through the regional technical offices in charge, using the CERVINO platform;
- the chance to explore possible **forms of automation mechanisms** between the data collection platform developed by CERVINO and databases/other observatories which may be present in the EUSALP regions, at a national or regional level.

Thus, the first stages of the roadmap have been identified as the **process towards the future establishment of the Alpine Energy Observatory**.

This process is composed of the following elements/stages:

- Stage 1: Investigating the **State of the art of energy data** collection in EUSALP/Alpine regions as fundamental conditions in order to acquire knowledge of how energy data flows are managed, and which points of these flows could be important for the following stages;
- Stage 2: **Increasing the commitment of the EUSALP regions** to add data to the CERVINO platform regularly – raising awareness among decision makers and demonstrating the tool validity and usefulness in order to have an updated and validated energy picture of the EUSALP territory as a basis of energy policy management;

- Stage 3: **Exploring possible forms of automation mechanisms** between the data collection platform developed by CERVINO and databases/ observatories which may be present in the EUSALP regions, at a national or regional level.

The previous stages are more detailed in the next dedicated chapters of this document.

2. State of the art of energy data collection in EUSALP/Alpine regions

The present chapter deals with Stage 1 of the process towards the future establishment of the Alpine Energy Observatory:

“Investigating the State of the art of energy data collection in EUSALP/Alpine regions as fundamental conditions in order to acquire knowledge of how energy data flows are managed and which points of these flows could be useful for the following stages”

Energy data collection at EUSALP level started in 2017 with the development of the first Energy Survey. The aim of this survey was to collect valuable information on the energy condition in the Macroregion to monitor and evaluate the energy situation and the potential for renewable energy sources in the Alpine Space. The availability of this kind of data is very useful for stakeholders and decision makers to define, implement and monitor the effectiveness of energy policies and projects promoting the energy transition progress in the Alpine region. Moreover, the survey could also potentially help in the identification of possible areas for energy innovation and investment in the Alpine region.

In 2019, the EUSALP Energy Survey was reorganised to gather updated energy data and new insights for policy measures and investment priorities in the EUSALP territory. Compared to the 2017 Energy Survey, more detailed data were requested on renewable energy sources (RES) in the transport sector, RES installed capacity, and heat pumps contribution in the heating and cooling (H&C) sector. Moreover, regional energy consumption was divided by the reference sector (industry, transport, residential, services, agriculture/forestry, fishing).

The CERVINO project, starting from an in-depth analysis of the results of the two previous surveys (the results of this analysis are contained in Deliverable 1.1.1) works to improve the Energy Survey structure and develop a user-friendly energy data management tool.

Thanks to the experience gained in conducting and updating the previous Energy Surveys, the new survey is designed to make the collection of energy data and the entire data management process more efficient, reliable, and cost-effective.

The Survey developed in the framework of CERVINO aims to be a macroregional decisional tool that is easy to compile and easy to be consulted, that allows regions to visualise and elaborate data on different levels and scales (macroregional, regional, etc.), create regional energy profiles and compare regional performances. In the future, the survey could also include different sectors (transport or energy communities for example) and be implemented with new functions (modelling of future scenarios for example) thus becoming a useful tool for other EUSALP Action Groups.

Finally, this tool represents the first step towards the establishment of the **Alpine Energy Observatory (AEO)**.

In this context it is important to develop an analysis of the state of the art of energy data collection in EUSALP regions in order to define a common starting point and identify any gaps or obstacles to be addressed to ensure the continuous updating of the survey and the availability of actual and complete energy data.

In this chapter the energy data collection process and flows in EUSALP regions is described with details on who actually compiles the Energy Survey and in which way, as well as the main stakeholders involved.

Details on type of data collected can be found in Deliverable 1.3.1.

Slovenia

Slovenia's data collection process is unique due to the absence of regional administrative divisions in the country, compounded by its small size. Consequently, energy data in Slovenia is gathered at a national level. During the survey reshaping phase, KSSENA reached out to three national institutions (Slovenian national agency Energy Agency, Ministry for Infrastructure, The Statistical Office of the Republic of Slovenia) to ascertain the availability and sources of energy data. This effort provided us with a better understanding of the energy indicators we could access for the purpose of the EUSALP energy survey.

KSSENA undertook the data collection process, determining it would be more feasible to handle internally using the data sources identified from the three national institutions. However, certain energy indicators proved inaccessible due to their absence or lack of collection at a national level. These included Gross energy production for H&C, data on energy communities and hydrogen production.

German regions

BAVARIA AND BADEN-WÜRTTEMBERG

The energy data collection in Bavaria for CERVINO was carried out by Energiewende Oberland. Various stakeholders were contacted to collect the data.

The Bavarian State Ministry of Economic Affairs, Regional Development and Energy provided an estimated balance sheet for 2021 and the energy balances from 2018 to 2020, which are freely available for download from the Bavarian State Statistical Office. Only some of the indicators included could be entered directly into the platform by the EWO; some of the parameters still had to be converted with the help of secondary literature.

This concerns the indicators on energy balance, gross final energy consumption and gross energy production for heating and cooling from fossil fuels.

Data on final energy consumption was derived from Bavarian statistics (Bavarian State Statistical Office and Bavarian State Ministry of Economic Affairs, Regional Development and Energy) using the 2020 Federal Law Gazette and the 2017 Status Report on Primary Energy Factors of the German Federal Government.

Data on gross electricity production was obtained from the Bavarian State Statistical Office.

Data on electromobility in Bavaria was obtained from the Federal Motor Transport Authority (data at federal state level).

The data in Bavaria are all available annually at federal state level.

The energy data collection in Baden-Württemberg was carried out by the Ministry of the Environment, Climate Protection and the Energy Sector, Department 61 Fundamental issues of energy policy. An employee was responsible for collecting and entering all available energy data.

French regions

In France, we worked with four different regions and the producers of regional data within these regions.

AUVERGNE-RHÔNE-ALPES REGION

The main actors responsible for producing data on energy and climate change within this region are ORCAE (see <https://www.orcae-auvergne-rhone-alpes.fr/> for more details) and ATMO AURA (see <https://www.atmo-auvergnerhonealpes.fr/> for more details). They produce data on energy

production, energy consumption, GHG emissions and pollutants. These data can be accessed through their own websites or directly on Auvergne-Rhône-Alpes TerriSTORY platform (see <https://auvergnerhonealpes.terristory.fr/>). They are available at a city level.

BOURGOGNE-FRANCHE-COMTÉ REGION

The main actors responsible for producing data on energy and climate change within this region are ALTERRE (see <https://alterrebourgognefranchecomte.org> for more details) and ATMO BFC (see <https://atmo-bfc.org> for more details). They produce data on energy production, and on energy consumption, GHG emissions and pollutants respectively. These data can be accessed through the OPTER platform (see <https://www.opteer.org/>). They are available at group of Municipalities level.

GRAND EST REGION

The main actor responsible for producing data on energy and climate change within this region is the Observatoire Climat Air Énergie Grand-Est (see <https://observatoire.atmo-grandest.eu/inventair/> for more details), based on data produced by ATMO Grand Est (see <https://www.atmo-grandest.eu/> for more details). They produce data on energy production, energy consumption, GHG emissions and pollutants. These data can be accessed through their website. They are available at group of Municipalities level.

SUD REGION

The main actors responsible for producing data on energy and climate change within this region are the Observatoire régional de l'Énergie, du Climat et de l'Air de Provence-Alpes-Côte d'Azur (see <https://oreca.maregionsud.fr/> for more details). They produce data on energy production, energy consumption and GHG emissions. AtmoSud (see <https://www.atmosud.org/> for more details) is responsible for pollutants data. These data can be accessed through their website. They are available at a city level.

Italian regions

FRIULI VENEZIA GIULIA, VENETO, AUTONOMOUS PROVINCE OF BOLZANO, AUTONOMOUS PROVINCE OF TRENTO, LOMBARDIA, PIEMONTE, VALLE D'AOSTA, LIGURIA

In general for Italian regions, the main stakeholders involved are the regional administrations and in particular the offices dealing with energy balance and energy planning and strategies; or the regional energy agencies in charge of collecting energy data and supporting the administrations in the energy planning process.

For the Autonomous Region of Friuli Venezia Giulia, the first contact was with the regional Energy Agency (APE FVG) but in the end data were included by the Energy Transition Office of the region.

The Veneto Region did not reply to the various requests to compile the survey, thus data for this region are missing.

For the Autonomous Province of Bolzano, the Energy Survey was compiled by the person in charge of the energy balance and energy strategy within the Energy and Climate Protection Office. This person is the same that participated in the previous editions of the survey.

For the Autonomous Province of Trento, the person in charge is the Director of the Energy Resources Planning and Studies Office and the survey was compiled by two collaborators of hers.

For Lombardia, the Energy Survey was compiled by the regional company for innovation and procurement (ARIA S.p.A.), an in-house company with the mission of designing and managing physical and digital infrastructures that is in charge of collecting and managing also energy data.

For Piemonte, the reference person is the same since the first edition of the survey and he is in charge of European projects, Covenant of Mayors and statistical energy reports within the regional Sustainable Energy Development Office.

Also for the Autonomous Region of Valle d'Aosta, the Energy Survey was compiled by the person that participated in the previous editions of the survey; she is a collaborator of FINAOSTA S.p.A., an in-house company with the aim to promote and carry out activities and actions that improve the socio-economic development of the region, included energy data collection, energy balance and energy planning.

For Liguria, IRE has been supporting the Liguria Region for years in the elaboration of the regional energy balance. It is a tool that allows us to obtain a global vision of the energy consumed within regional borders as well as the type of energy sources used, providing information on the state of the art for some specific years.

This balance was elaborated through a data collection process on the regional territory for all the sectors (civil, industry and transport); thus, the energy data were "real". Up until 2018 this process was conducted in collaboration between IRE and Liguria Region when the energy data from 2016 were collected; the regional energy balance (BER) of 2016 is the last year for which the BER is available.

In order to elaborate the regional energy balance of 2020 Liguria Region decided to collaborate with ENEA (the National Agency for new technologies, energy and sustainable economic development).

ENEA represents one of the main actors in Italy in the field of energy issues and is in charge of elaborating the synthetic energy balance for all Italian regions, based on a statistical approach with a top – down method, starting from the BEN (National Energy Balance). The regional balances in the synthetic version are open and published, available publicly for free. They are published at the end of the year, referring to the previous two years (so, for example at the end of 2023 the regional energy balance of 2021 was published).

ENEA also offers the chance to the regions to have an extended version of the regional energy balance, upon payment; this version is based on a statistical approach as well but is more detailed and completed in all the sections of the balance (production, import/export, transformations, final consumptions).

Therefore, Liguria Region has the 2020 regional energy balance in the extended versions and all the other years (i.e.. 2018, 2019, 2021) in the synthetic version.

The availability of the regional energy balances (the synthetic version) represents a crucial point in the framework of the CERVINO project activities 1.3 and 1.4, because possible automation mechanisms could be studied in order to create a link transfer of data towards the CERVINO platform collection tool. This issue is better explained and detailed in chapter 3.2 of this document.

Switzerland

For Switzerland, both the Federal office for Spatial Development (ARE) and the Swiss Federal Office of Energy has been contacted. A member of the Swiss Federal Office of Energy filled in the survey for the whole country.

Austrian regions

For Austria, we started to contact, for each region, technicians who had been involved in compiling the previous surveys. Kssena took charge of this activity as part of activity 1.3 of the project. In general, initial feedback was more promising than the actual outcome, as most of the regions did not fill out the survey in the end. Some of the regions turned out to be completely unresponsive, while others were more willing, but due to time constraints left the surveys uncompleted. After engaging in

persistent and months-long communication, it was determined that the most effective course of action would be for us to independently gather and finalize the data. KSENA conducted research of the Austrian national databases, which contained a significant portion of the essential energy data for each region. Following the collection of data by KSENA, the validation process was undertaken by EURAC partners. Subsequently, the Austrian regions were contacted once more to verify the validated data and confirm their utilization on the CERVINO Alpine energy data platform. In summary, the level of interest and willingness demonstrated by Austrian regions can be characterized as unsatisfactory. This may be attributed to a lack of recognition regarding the specific value that the platform could provide, possibly because they already possess well-established data collection systems in their country.

3 The future Roadmap - main elements

In order to identify the main elements to focus on to ensure the durability of the tool developed by the CERVINO project in future years, we started from the analysis of the main barriers that can hinder the periodic updating of the energy survey. In the first phase of the Project (activity 1.1) we therefore worked on simplifying the survey compilation procedures, starting from the analysis of the results of previous surveys and involving the technicians of the EUSALP regions responsible for compiling the survey. This activity highlighted the following main issues:

- The indicators selected for the new version of the Energy Survey should give priority to those for which the level of data availability is high, and their number should be limited to increase the participation of all the EUSALP regions in the survey.
- The design of the collection procedure should minimise the issue of missing data allowing to clearly differentiate among zero values and not available values.
- Information regarding the data sources of the provided values should allow us to clearly assess the quality of the data.

The introduction of all these elements in the 2023 survey makes the compilation simpler and less costly in terms of time and, consequently money, thus ensuring a greater participation of the regions in the draft of an energy balance at the EUSALP macro-regional level.

To further stress this point, the project partners also explored the possibility of automating the compilation of the survey, evaluating whether it was possible to develop a system able to allow the automated transfer of data from a regional/national energy balance to the CERVINO data management tool. Automation is indeed another element we identified as really important to explore further in this document.

The last element that project partners discussed together and considered as a fundamental step towards the establishment of the Observatory is the commitment of the regions to fill in the tool regularly.

During the whole project we started work on this topic in order to show the stakeholders the potential and the usefulness of the tool for both data collection and visualisation.

To do that we have:

- Pushed regions to complete the survey with energy data. This is because the perception of the usefulness of the tool is proportional to the number of data available as well as the elaboration that the tool can allow.
- Maintained direct contacts with EUSALP Regions.
- Participated in AG9 meetings to update AG9 members on the progress of the project and illustrate the results step by step.
- Attended other AG meetings in order to explore the possibility to include other data starting from the needs of different AG members (e.g. AG4 on Mobility).
- Explored the possibility to implement the project results and upgrade the CERVINO visualisation platform thanks to other funds and projects.

In the next two chapters further information on what has been mentioned so far can be found; in particular, they are dedicated to stages 2 and 3 of the process towards the future establishment of the Alpine Energy Observatory as previously described.

3.1 Improve the Commitment

The present chapter is about *Stage 2 Increasing the commitment of the EUSALP regions to fill in the CERVINO platform regularly - raising awareness among decision makers demonstrating the tool validity and usefulness in order to have an updated and validated energy picture of the EUSALP territory as a basis for energy policy management.*

The work carried out in the framework of CERVINO in the last 18 months that was mainly an activity concerning the collection of energy data for the Energy Survey 2023 and the validation of the tool (activity 1.3), highlighted that the EUSALP regions are aware of the importance of having a regional/national energy balance. It is proved by the fact that, as specified in the previous chapter, all EUSALP regions have their own energy balance. The real challenge we faced within the project was represented by the need to demonstrate the importance of having an energy balance at a macro-regional level, as a decision-making tool for Alpine space territory. This is the reason why we focused our efforts on trying to involve EUSALP regions in our projects. Co-creation at a EUSALP level is essential to ensure its actual usefulness for the implementation of energy policies of the territories involved.

In general, we can say that having a clearer idea concerning which kind of data sources should be used and a deeper understanding on how the Energy Survey can help the daily activities in energy planning and strategies development would improve the commitment in updating the survey and sharing the energy data.

Energy characterisation of a region is a fundamental element for planning. Making political decision-makers understand the importance of having such data available, being able to easily view it and being able to compare the characteristics of their region with other neighbouring regions is a fundamental step in increasing the regions' commitment to regularly update the values.

The state of the art about commitment is very different in the regions involved in the project.

In Slovenia, for instance, the support and engagement from national institutions regarding data availability and sources is satisfactory. There is clear interest in the CERVINO project and its initiatives. They expressed curiosity about the project's upcoming phases, particularly the final tool and platform development. However, the level of commitment towards active participation in the survey, especially periodic data entry, might not be notably high.

One of the main causes could be Slovenia's lack of regional divisions: it seems more feasible for a specific organization or entity (such as energy agencies) to assume responsibility for periodically completing the survey, aided by support from national institutions. This approach could enhance the assurance of consistent data entry.

Other barriers have been identified in Bavaria where data must be requested from different institutions (state offices and federal offices) and must be adapted before being entered into the CERVINO platform so that it corresponds to the requested indicators.

The commitment to update data frequently in Bavaria and Baden-Württemberg could be supported by removing these barriers.

The aim is to reach an agreement now with the relevant authorities for future data collection so that the data could be requested at regular intervals. Automating the conversion of the data could certainly help with this in order to maintain the validity of the tool over time.

The situation in France has been evolving for a few months and is still expected to change in early 2024. The national network of regional agencies for energy (RARE) should publish a common set of indicators related to energy for every region. At the same time, national actors (ADEME or CGDD) are working on national platforms to provide services for all territories. Those platforms require good quality data available on the whole national territory. APIs or open data platforms should be available

before the end of 2024 and provide access to energy related data such as the dataset identified in Activity 1.1.

At the same time, the national legal framework is slowly evolving and might ensure the availability of main dataset related to energy transition and climate change in the upcoming semesters.

It is hard however, to involve French regions more closely. The links and relationships between the data providers (as presented in the previous section of this report) are very different depending on the region. If the national initiatives do not succeed, a possible improvement of the process would be to try to connect to existing APIs available at platforms mentioned above. Unfortunately, some regions do not yet provide exhaustive data freely.

In Italy most of the regions of the Alpine space are very interested in the issue of energy balances. During the development of the project, they actively participated in the activities and represented an important reference in the discussion regarding the reshaping of the survey. However, there are still some regions that are difficult to involve; this can represent a starting point for future discussions at the level of the Italian Alpine Macroregion with the aim of improving the commitment of these regions to ensure the completeness of energy data for Italy.

At EUSALP level we took the many opportunities to involve the AG9 members as well as the members of the other AGs in the implementation of the project and in the co-creation of the platform.

The endorsement by EUSALP is certainly fundamental to guarantee the durability of the tool even after the conclusion of Cervino project and to ensure that the platform could be taken into consideration as a reference for the development of energy policies at macro-region level and for future investments for possible implementations.

One of the goals we achieved is that the EUSALP work plan 2023-2025 identified as a flagship of Action Group 9 the Energy Observatory for data collection in the EUSALP as a fundamental tool in defining and implementing long term energy strategy for the Alpine territory.

Another important goal was to gather the interest of members of other AGs for our platform and to foresee moments of discussion and collaboration in perspective to think about how the tool could possibly be extended to other data and topics.

3.2 Explore the Automation

The present chapter is about Stage 3 of the CERVINO roadmap process, identified as ***Exploring possible forms of automation mechanisms between the data collection platform developed by CERVINO and databases/other observatories which may be present in the EUSALP regions, at a national or regional level.***

The establishment of possible automation mechanisms that enable a simplification of data collection and flows definitely represents a key point to explore in order to ensure the durability and sustainability of the CERVINO tool in the future, ultimately leading to the establishment of a permanent Alpine Energy Observatory.

The automation process could be reached by (pre)compiling the energy survey on the CERVINO data collection platform with data available in accessible databases/open data hubs of National or regional Authorities that provide data also at a regional level through direct access.

This automatic connection would allow to reduce the time spent by energy officials/technicians in compiling the survey. The “precompiled” energy survey has to be checked and validated but it could be assumed that a validation process (maintaining the chance to eventually modify some values manually) takes much less time than filling the survey by starting from “zero”.

Some steps in this direction were made in Italy during the project in 2023: the details of these activities are presented later in this chapter with a focus dedicated to the “Italian case” which can be considered as a pilot test.

On the other hand, lots of elements of the automation process needed to be taken into account and deserve a more in-depth analysis that goes beyond the duration of CERVINO project.

They are briefly described as follows:

a) Multiple sources of data that represent the various interlocutors involved.

This is the case for example of Slovenia, where the main data sources for filling the energy survey are various reports and actors rather than a single national statistical database, and Bavaria where data requested for the survey came from different institutions (national offices and federal offices).

b) Need to convert some data before it can be entered into the CERVINO data collection platform.

Sometimes the data available in reports/database/publications need to be matched and converted in order to be suitable for the energy indicator requested in the CERVINO energy survey form.

c) Continuous evolution of energy data governance process at national and regional level.

This is for example the case of France, where in 2024 the national network of regional agencies for energy (RARE) should publish a common set of indicators related to energy for every region and at the same time national authorities are working on national platforms to provide services for all territories. At a regional level however, the links and relationships between the data providers are very different depending on the region.

Based on what has previously been described, automation is recognized as a key element and absolutely desirable but not immediately feasible or, in any case, it requires some time to achieve which goes beyond the duration of the project.

Focus: the case of Italy

Some initial steps to explore automation mechanisms were carried out in 2023 by project Italian partners, in strong synergy between 1.1 and 1.4 project activities.

The Italian case could represent a significant pilot/test case because several Italian regions (Lombardia, Piemonte, Liguria, Val d’Aosta, Veneto, Friuli Venezia Giulia) and autonomous provinces (Bolzano and Trento) are part of EUSALP territory.

In Italy it’s possible to identify two main National Authorities in charge of energy data collection, management and supply:

ENEA – the National Energy and Economic Development Agency

ENEA is in charge of drafting the National Energy Balance (BEN); moreover, based on BEN, ENEA is also responsible for the development of the **regional synthetic energy balance** for each Italian Region. These balances were usually published in PDF format (excel available upon specific request) within the regions section of an annual publication that is the «Annual Report on Energy Efficiency». This report

is openly available on the ENEA website at the end of each year and contains BER related to two years back (for example the Annual Report of Energy Efficiency published at the end of 2023 contains regional synthetic energy balances related to 2021).

BER provided by ENEA contains several data useful for energy planning but:

- They are built with a top down approach based on the National Energy Balance,
- They are not in an extended version so several indicators are not included.

GSE – the National Authority for the Management of Energy Services

GSE is in charge of the monitoring of electrical and thermal Renewable Energy Sources plants and consumptions. Each year GSE publishes the **Annual RES report** (that contains a focus at a regional level for each type of RES). These reports, together with xls files available on GSE website (<https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale>), are open and available in pdf format on the GSE website. In the Annual RES report energy data are available related to the previous year.

Data provided by ENEA and GSE are fundamental for energy data management and governance of Italian regions; but then each region can decide to integrate these data running local data collection campaigns, sometimes in specific sectors (for example biomass or district heating).

With reference to CERVINO activities, in July a working group headed by EURAC and IRE was set up, with the aim of exploring possible automation mechanisms between the CERVINO platform and the GSE and ENEA databases.

In particular, with the help of two representatives of Italian regions the working group had the chance to organise two meetings which we shall now describe in detail:

ENEA

On July 11th some representatives of ENEA (energy balance responsible officials), EURAC and IRE had an online meeting. It was the occasion to present the CERVINO project activities with particular reference to the new CERVINO platform for the new energy survey for EUSALP territory. The indicators requested by the Energy Survey 2023 were presented and it was an occasion to discuss the support that ENEA could give to possible automation mechanisms starting from the energy data that ENEA provides and manages through the regional synthetic energy balance for each Italian region.

During the meeting, ENEA:

- agreed to validate which of the energy survey indicators could have correspondence with energy data available in the regional energy synthetic balances;
- shared the idea to publish excel files of the regional balances (instead of only PDF) on their website;
- declared themselves available to be involved in CERVINO partners' studying activities about possible direct connections between the platform for the survey and regional balances excel files in order to have a pre-compiled survey with the energy data of BER, to be then checked and validated by the regions.

GSE

On July 28th some representatives of GSE (RES annual report responsible officials), EURAC and IRE had an online meeting. It was, like for the meeting with ENEA, the occasion to present the CERVINO project activities with particular reference to the new CERVINO platform for the new energy survey for EUSALP territory. The indicators requested by the energy survey were presented and there was the chance to discuss the support that GSE could give to possible automation mechanisms starting from the energy data that GSE provides on thermal and electrical RES.

During the meeting, GSE:

- agreed to check the CERVINO survey data and give feedback about the correspondence of the survey indicators with those available in GSE reports and datasets;
- declared themselves available to be involved in CERVINO partners' studying activities about possible direct connections between the platform for the survey and GSE RES data in order to have a pre-compiled survey with the energy data of BER, to be then checked and validated by the regions.

After these two meetings, in the last months of 2023 some initial results emerged, relating to exploring possible automation mechanisms for pre-compilation of the energy survey:

- Both ENEA and GSE provided specific feedback about the correspondence between energy data available in their reports/databases and CERVINO energy indicators. The feedback provided is available in Annex I and Annex II;
- Excel files of regional energy synthetic balances were published in excel format (related to 2021) as open data on the ENEA website.

These represent some initial steps of how the energy survey compilation could become semi-automated; additional investigations are needed to further discuss definitions and correspondences to achieve a precompiled survey with reliable data that of course could be checked and modified by the regions if more detailed or bottom-up collected information is available.

4 Conclusions

In conclusion, it can be stated that the tool developed by the CERVINO project for the collection and visualisation of energy data in the EUSALP territory is fundamental for decision-makers in supporting energy transition policies.

To be really effective, this tool should be updated periodically, through the setting-up of an Alpine Energy Observatory, independent of the project itself.

We have to keep in mind that the maintenance of the tool still has some costs (around €2-300/year): This amount could be covered by other projects that, for example, implement the functions of the energy platform, or directly by EUSALP, in order to adopt this tool by recognizing its importance for the development of energy and climate policies for the Alpine territory.

In the CERVINO Activity 1.4 there was the chance to explore this process identifying some first steps that constituted an initial roadmap.

These steps have been laid down in 3 stages, as described in the previous sections of this report:

- Stage 1: Investigating the **State of the art of energy data** collection in EUSALP/Alpine regions as fundamental condition in order to acquire knowledge of how energy data flows are managed, and which points of these flows could be relevant to the following stages;
- Stage 2: **Increasing the commitment of the EUSALP regions** to compile the Energy Survey regularly – raising awareness among decision-makers demonstrating the CERVINO tool validity and usefulness in order to have an updated and validated energy picture of the EUSALP territory as a basis for energy policy management;
- Stage 3: **Exploring possible forms of automation mechanisms** between the data collection platform developed by CERVINO and databases/other observatories which may be present in the EUSALP regions, at a national or regional level.

Stages 2 and 3 represent some concrete actions that can be implemented to ensure the durability and sustainability of the energy survey and of the CERVINO platform towards the set-up of an Alpine Energy Observatory. In part, some aspects of these actions have already been dealt with during the project, in part they require further investigation and resources.

In particular, the study of possible data collection automation mechanisms has been recognised as a key point to reduce time and resources dedicated to the compilation of the survey, with the aim to set up an Observatory that feeds itself automatically through the establishment of direct and automatic connections with existent national or regional databases. This process could reduce time and resources without compromising the quality of the data since the check and validation of energy data would always be an option for the regions with the chance to modify or add new data manually.

On the other hand, this process of automation/semi-automation requires to be tailored for different countries, or regions in some cases, according to the various approaches in energy data collection, governance and management. The main point is that it's fundamental, but also time consuming to establish contacts with all national/regional authorities in charge of providing energy data (as done for the Italian case, where some initial results have been concretely achieved) and ensure correspondence between the indicators of the energy survey with the data available from other entities and bodies (with attention to the value conversion process).

It is essential that the Regions within the Alpine Space understand the importance of having updated and complete energy dataset available as well as an easy-to-consult tool that can allow data processing and visualisation on different scales. The CERVINO Energy Data Platform (put the link here??) represents exactly this tool. In the future, thanks to the data already collected through the Energy Survey 2023, we will be able to demonstrate its potential more effectively as a data collection and visualisation tool and it can be used as a starting point for further implementations thus becoming an actual decision-making tool for energy issues at a macroregional level.

This, as well as the possible implementation of the tool with new data and new functions, would require more financing and/or an ad-hoc project.

To do this, all the possibilities offered by European programs and calls on the topic will therefore be taken into account to have the opportunity investigate further the aspects of durability and sustainability in detail.

Annex

Annex I: ENEA feedback about the correspondence between energy data available in their Reports/databases and CERVINO survey indicators.

Annex II: GSE feedback about the correspondence between energy data available in their Reports/databases and CERVINO survey indicators.

Category	Subcategory	Core data	Additional data	Dato BER ENEA	Commenti
Energy balance	Energy balance	Primary production		produzione	SI
		Energy imports		importazioni	Nei bilanci regionali è presente il dato di saldo in entrata o in uscita e non il dato di importazioni ed esportazioni.
		Energy exports		esportazioni	
		Gross inland energy consumption		Consumo interno lordo	Nei bilanci di sintesi è presente la voce consumo interno che si ottiene dal consumo interno lordo sottraendo il consumo per l'aviazione internazionale. Non è riportato nel bilancio di sintesi però è un valore che possiamo fornire extra.
		Final energy consumption		Consumi finali energetici	SI
		Gross final energy consumption		Consumo finale lordo di energia	Per definizione di "Gross final consumption of energy", il dato non è disponibile nel bilancio di sintesi perché manca il dettaglio del consumo del settore energia (consumo di energia elettrica e calore per la produzione di energia elettrica)
Gross final energy consumption	From fossil fuels	Gross consumption from fossil fuels - total		Consumo lordo da combustibili fossili	Per definizione di "Gross final consumption of energy" coincide con la somma di consumi finali energetici
			From solid fuels (coal)		
			From oil		
			From gas		
		From non-renewable waste			
	From renewables	Gross consumption from renewables - total		Consumo lordo da energie rinnovabili	Per la definizione di "Gross final energy consumption from renewable", nei bilanci di sintesi il dato non è disponibile: sarebbe possibile utilizzare il dato aggregato dato dagli ingressi in trasformazione delle energie rinnovabili perchè le energie rinnovabili sono utilizzate per la produzione di energia elettrica e calore e sono immesse nel circuito dei biocarburanti, biodiesel, biobenzina e biometano, inserito negli ingressi in trasformazione. Non è chiaro se la produzione di energia idroelettrica da apporti di pompaggio debba essere inclusa oppure no. Andrebbe aggiunto il consumo delle pompe di calore per la climatizzazione, il solare termico e la parte dei biocombustibili solidi per il riscaldamento. Non deve inoltre essere inserito il dato "trasporti" perchè già incluso nelle trasformazioni (impianti per la miscelazione dei biocarburanti).
			For electricity		
			For Heating and Cooling (H&C)		
		For transport			
	From electricity	Gross consumption from electricity		Consumo lordo da energia elettrica	Per definizione di "Gross final energy consumption from electricity" è il dato import/export dei bilanci di sintesi. Non capisco il dato nell'esempio Piemonte
	From nuclear	Gross consumption from nuclear		Consumo lordo da energia nucleare	
	From others	Gross consumption from others		Consumo lordo da altre fonti	
In the transport sector	Gross consumption for transport - total		Consumo lordo per il trasporto - totale	Nel file definizioni non l'ho trovato, non posso verificare se è incluso nei bilanci di sintesi.	
		Oil			
		Natural gas			
		Renewables			
Gross electricity production	From fossil fuels	Electricity from fossil fuels - total		Elettricità da fonti fossili	
			Coal		
			Oil		
			Gas		
		Non-renewable waste			
	From renewables	Electricity from biomass - total		Elettricità da biomasse	
			Biogas		
			Biofuels		
			Bioliquids		
			Solid biomass		
		Electricity from hydropower		Elettricità da idroelettrico	
		Electricity from wind power		Elettricità da eolico	
		Electricity from solar PV		Elettricità da fotovoltaico	
		Electricity from other renewables		Elettricità da altre rinnovabili	
Installed capacity for electricity from renewables	Electricity hydropower capacity		Capacità impianti idroelettrici		
	Electricity wind power capacity		Capacità impianti eolici		
	Electricity solar PV capacity		Capacità impianti fotovoltaici		
From nuclear	Electricity from nuclear energy		Elettricità da energia nucleare		
From others	Electricity from others		Elettricità da altre fonti		
Gross energy production for H&C	From fossil fuels	H&C from fossil fuels - total			
			Coal		
			Oil		
			Gas		
		Non-renewable waste			
	From renewables	H&C from biomass - total			
			Biogas		
			Biofuels		
			Bioliquids		
			Solid biomass		
		H&C from heat pumps - total			
			H&C from geothermal HP		
			H&C from aerothermal HP		
			H&C from hydrothermal HP		
	H&C from solar thermal				
	H&C from other renewables				
Installed capacity for H&C from renewables	H&C installed capacity for heat pumps - total				
		From geothermal HP			
		From aerothermal HP			
		From hydrothermal HP			
	H&C installed capacity for solar thermal				
From others	H&C from others				
Final energy consumption	By sector	Consumption of transport - total		Consumo finale trasporti	SI
			Road		
			Rail		
			Aviation		
			Other		
		Consumption of industry		Consumo finale industria	SI
		Consumption of residential		Consumo finale residenziale	Nei bilanci di sintesi è disponibile il dato civile (residenziale + servizi).
		Consumption of services		Consumo finale servizi	
		Consumption of agriculture/forestry		Consumo finale agricoltura	Nei bilanci di sintesi è disponibile il dato agricoltura + pesca.
		Consumption of fishing		Consumo finale pesca	
Consumption of the energy branch		Consumo settore energia	SI ma il consumo del settore energia non è un consumo finale.		
Consumption of others		Consumo finale altri settori	SI		
Energy transition	Hydrogen production by source	Green hydrogen production			
		Grey hydrogen production			
		Blue hydrogen production			
	Energy communities	Energy source(s)			
		Energy capacity of plants - total			
	E-mobility	Number of members			
Charging points for e/H vehicles - number					
Private e/H vehicles - number					
	Public e/H vehicles - number				

Category	Subcategory	Core data	Additional data	Dato BER ENEA	Dato GSE	Commenti - GSE
Energy balance	Energy balance	Primary production		produzione		
		Energy imports		importazioni		
		Energy exports		esportazioni		
		Gross inland energy consumption		Consumo interno lordo	I dati GSE sui consumi di fonti rinnovabili per ogni Regione e Provincia autonoma vengono inviati ad ENEA che li include nei BER	
Gross final energy consumption	From fossil fuels	Final energy consumption		Consumi finali energetici	I dati GSE sui consumi di fonti rinnovabili per ogni Regione e Provincia autonoma vengono inviati ad ENEA che li include nei BER	
		Gross final energy consumption		Consumo finale lordo di energia	Il dato è pubblicato nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale	
		Gross consumption from fossil fuels - total		Consumo lordo da combustibili fossili	Il dato è pubblicato nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale (file xls disponibili nelle pagine relative alle singole Regioni e Province autonome)	
			From solid fuels (coal)		Il dato è pubblicato nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale (file xls disponibili nelle pagine relative alle singole Regioni e Province autonome)	
Gross final energy consumption	From renewables		From oil		Il dato è pubblicato nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale (file xls disponibili nelle pagine relative alle singole Regioni e Province autonome)	
			From gas		Il dato è pubblicato nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale (file xls disponibili nelle pagine relative alle singole Regioni e Province autonome)	
			From non-renewable waste		Il dato è pubblicato nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale (file xls disponibili nelle pagine relative alle singole Regioni e Province autonome)	
		Gross consumption from renewables - total		Consumo lordo da energie rinnovabili	Il dato (Settore Elettrico) è pubblicato nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale (file xls disponibili nelle pagine relative alle singole Regioni e Province autonome)	La dicitura "For electricity" lascia immaginare ci si riferisca ai consumi di fonti rinnovabili per la produzione elettrica. In realtà immaginiamo ci si riferisca alla produzione elettrica da FER, altrimenti non sarebbero consumi finali ma consumi primari. suggeriamo una dicitura più generica "Electricity sector"
Gross final energy consumption	From electricity		For electricity		Il dato (Settore Elettrico) è pubblicato nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale (file xls disponibili nelle pagine relative alle singole Regioni e Province autonome)	La dicitura "For Heating and Cooling (H&C)" lascia immaginare ci si riferisca ai consumi di fonti rinnovabili per la produzione di calore. In realtà immaginiamo ci si riferisca ai consumi finali lordi di FER nel settore termico. suggeriamo una dicitura più generica "Heating and cooling sector"
			For Heating and Cooling (H&C)		Il dato (Settore Termico) è pubblicato nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale (file xls disponibili nelle pagine relative alle singole Regioni e Province autonome)	La dicitura "For Heating and Cooling (H&C)" lascia immaginare ci si riferisca ai consumi di fonti rinnovabili per la produzione di calore. In realtà immaginiamo ci si riferisca ai consumi finali lordi di FER nel settore termico. suggeriamo una dicitura più generica "Heating and cooling sector"
			For transport		Il dato non è attualmente calcolato su scala regionale, anche se è allo studio la possibilità di produrlo in futuro.	è disponibile il dato sui biocarburanti consumati in ogni regione, ma senza informazioni sulla tipologia (avanzati o non avanzati) e sostenibilità dei biocarburanti. Non sono disponibili informazioni sulla mobilità elettrica.
		Gross consumption from electricity		Consumo lordo da energia elettrica		NB: la definizione di gross final energy consumptions from electricity riportata nel pdf allegato è valida solo per il monitoraggio della quota fer del settore elettrico, e coincide con il Consumo Lordo di Energia elettrica, pubblicato da Terna. invece, il consumo finale di energia elettrica per il denominatore dei target complessivo è costituito dalla somma di consumi finali + perdite distribuzione + ausiliari di generazione, ed è pubblicato (sulla base di dati Terna) nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale (file xls disponibili nelle pagine relative ad ogni Regione/ Provincia)
Gross final energy consumption	From nuclear	Gross consumption from nuclear		Consumo lordo da energia nucleare		
		Gross consumption from others		Consumo lordo da altre fonti		
		Gross consumption for transport - total		Consumo lordo per il trasporto - totale	non produciamo questo indicatore. I consumi finali lordi complessivi sono suddivisi solo per prodotto e non per settore	
			Oil			
Gross final energy consumption	In the transport sector		Natural gas			
			Renewables			
		Electricity from fossil fuels - total			non disponibile	
			Coal		non disponibile	
Gross electricity production	From fossil fuels		Oil		non disponibile	
			Gas		non disponibile	
			Non-renewable waste		non disponibile	
		Electricity from biomass - total			Il dato (Settore Elettrico) è pubblicato nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale (file xls disponibili nelle pagine relative alle singole Regioni e Province autonome)	
	From renewables		Biogas		Il dato (Settore Elettrico) è pubblicato nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale (file xls disponibili nelle pagine relative alle singole Regioni e Province autonome)	
			Biofuels		Il dato (Settore Elettrico) è pubblicato nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale (file xls disponibili nelle pagine relative alle singole Regioni e Province autonome)	
			Bioliquids		Il dato (Settore Elettrico) è pubblicato nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale (file xls disponibili nelle pagine relative alle singole Regioni e Province autonome)	
			Solid biomass		Il dato (Settore Elettrico) è pubblicato nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale (file xls disponibili nelle pagine relative alle singole Regioni e Province autonome)	
		Electricity from hydropower			Il dato (Settore Elettrico) è pubblicato nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale (file xls disponibili nelle pagine relative alle singole Regioni e Province autonome)	La produzione è calcolata applicando la procedura di normalizzazione prevista dalla direttiva 2009/28/CE; non sono considerati gli apporti da pompaggio
		Electricity from wind power			Il dato (Settore Elettrico) è pubblicato nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale (file xls disponibili nelle pagine relative alle singole Regioni e Province autonome)	La produzione è calcolata applicando la procedura di normalizzazione prevista dalla direttiva 2009/28/CE
		Electricity from solar PV			Il dato (Settore Elettrico) è pubblicato nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale (file xls disponibili nelle pagine relative alle singole Regioni e Province autonome)	
		Electricity from other renewables			Il dato (Settore Elettrico) è pubblicato nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale (file xls disponibili nelle pagine relative alle singole Regioni e Province autonome)	
		Electricity hydropower capacity			dato pubblicato da Terna (Elettricità nelle regioni)	
		Electricity wind power capacity			dato pubblicato da Terna (Elettricità nelle regioni)	
	Electricity solar PV capacity			dato pubblicato nei rapporti statistici annuali GSE dedicati al settore fotovoltaico (https://www.gse.it/dati-e-scenari/statistiche)		
	From nuclear	Electricity from nuclear energy				
	From others	Electricity from others				
Gross energy production for H&C	From fossil fuels	H&C from fossil fuels - total				
			Coal			
			Oil			
			Gas			
	From renewables		Non-renewable waste			
		H&C from biomass - total			Il dato (settore Termico) è pubblicato nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale (file xls disponibili nelle pagine relative ad ogni Regione/ Provincia)	
			Biogas		Il dato (settore Termico) è pubblicato nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale (file xls disponibili nelle pagine relative ad ogni Regione/ Provincia)	
			Biofuels		Il dato (settore Termico) è pubblicato nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale (file xls disponibili nelle pagine relative ad ogni Regione/ Provincia)	
		Bioliquids		Il dato (settore Termico) è pubblicato nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale (file xls disponibili nelle pagine relative ad ogni Regione/ Provincia)		
		Solid biomass		Il dato (settore Termico) è pubblicato nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale (file xls disponibili nelle pagine relative ad ogni Regione/ Provincia)		
		H&C from heat pumps - total			Il dato (settore Termico) è pubblicato nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale (file xls disponibili nelle pagine relative ad ogni Regione/ Provincia)	
		H&C from geothermal HP			non disponibile	
		H&C from aerothermal HP			non disponibile	
		H&C from hydrothermal HP			non disponibile	
	H&C from solar thermal			Il dato (settore Termico) è pubblicato nella seguente pagina web: https://www.gse.it/dati-e-scenari/monitoraggio-fer/monitoraggio-regionale (file xls disponibili nelle pagine relative ad ogni Regione/ Provincia)		
	H&C from other renewables					
	H&C installed capacity for heat pumps - total			non disponibile		
	From geothermal HP			non disponibile		
	From aerothermal HP			non disponibile		
	From hydrothermal HP			non disponibile		
	H&C installed capacity for solar thermal			non disponibile		
Final energy consumption	By sector	H&C from others				
		Consumption of transport - total		Consumo finale trasporti	I dati GSE sui consumi di fonti rinnovabili per ogni Regione o Provincia autonoma vengono inviati ad ENEA che li include nei BER	
			Road			
			Rail			
		Aviation				
		Other				
		Consumption of industry		Consumo finale industria	I dati GSE sui consumi di fonti rinnovabili per ogni Regione o Provincia autonoma vengono inviati ad ENEA che li include nei BER	
		Consumption of residential		Consumo finale residenziale	I dati GSE sui consumi di fonti rinnovabili per ogni Regione o Provincia autonoma vengono inviati ad ENEA che li include nei BER	
		Consumption of services		Consumo finale servizi	I dati GSE sui consumi di fonti rinnovabili per ogni Regione o Provincia autonoma vengono inviati ad ENEA che li include nei BER	
		Consumption of agriculture/forestry		Consumo finale agricoltura	I dati GSE sui consumi di fonti rinnovabili per ogni Regione o Provincia autonoma vengono inviati ad ENEA che li include nei BER	
	Consumption of fishing		Consumo finale pesca			
	Consumption of the energy branch		Consumo settore energia	I dati GSE sui consumi di fonti rinnovabili per ogni Regione o Provincia autonoma vengono inviati ad ENEA che li include nei BER		
	Consumption of others		Consumo finale altri settori	I dati GSE sui consumi di fonti rinnovabili per ogni Regione o Provincia autonoma vengono inviati ad ENEA che li include nei BER		
Energy transition	Hydrogen production by source	Green hydrogen production			al momento non disponibile	
		Grey hydrogen production			al momento non disponibile	
		Blue hydrogen production			al momento non disponibile	
	Energy communities	Energy source(s)				al momento non disponibile
Energy capacity of plants - total					al momento non disponibile	
E-mobility	Number of members				al momento non disponibile	
	Charging points for e/H vehicles - number				al momento non disponibile	
	Private e/H vehicles - number				al momento non disponibile	
	Public e/H vehicles - number				al momento non disponibile	