



Coordination and Support Action
H2020-LC-SC3-EE-2019

Validation of streamSAVE platform: Training Module

Deliverable D4.4 – first round of PA

Version N° 1

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Disclaimer

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Abbreviations & Acronyms

| Acronym | Description |
|---------|--|
| BACS | Building Automation and Control System |
| EED | Energy Efficiency Directive |
| PA | Priority Action |
| WP | Work Package |
| CSF | Capacity Support Facility |



Summary

This document aims to provide useful information to the users of the streamSAVE platform, and in particular, to Training Module users where all the methodologies developed to date are included as a tool to facilitate the calculations in terms of Article 3 and Article 7 of the EED. Within this Module, the calculation tools are arranged in such a way that the user can perform the savings calculations either in the online version or by downloading an excel file.

The Knowledge Facility of streamSAVE is developing streamlined calculation methodologies for savings actions, the so-called Priority Actions: despite their high potential for energy savings, a lack of experience, practices and data is hindering the adoption of these actions by several Member States. This streamSAVE facility develops 10 Priority Actions over two cycles of experience sharing and capacity building. The results of testing and validating the Training Module presented in this document are based on the methodologies developed during the first round. To this respect, the first round included 5 actions, showing a total of 8 methodologies:

- Heat recovery (district heating and excess heat from industry):
 - o Feedback of excess heat into a process
 - o Use of excess heat for on-site applications
 - o Heat recovery for feed-in to a district heating grid
- Building Automation and Control Systems (BACS) in residential and non-residential buildings
- Commercial and Industrial Refrigeration System – energy efficient compression refrigeration units
- Electric Vehicles (private & public EVs) – fuel switching to Electric Vehicles
- Lighting Systems and public lighting – energy efficient road lighting systems:
 - o Engineering approach
 - o Simplified approach

The testing and validation of the platform were based on the feedback and experiences of different users. For this purpose, stakeholders covering multiple EU countries were invited to participate in this process. These users had the opportunity to test the tools according to their interest in one or more Priority Actions. Once they were able to test these tools, a questionnaire was distributed to get their feedback. The comments received were analysed and shared with the project consortium to reach a consensus on which actions to implement in the Training Module. The feedback as well as resulting improvements are described in this report. The main objective of the **testing and validation of the Training Module was to provide the streamSAVE community with a robust, clear, and user-friendly tool** that could be useful for their activities.

Note: In this intermediate deliverable, the first round of Priority Actions is described. In the second part of the project, the assessment of five new Priority Actions will be included.





Keywords

Validation, testing, questionnaire, feedback, improvements, training module, Platform





Chapter 1 Introduction

To support public authorities and key stakeholders, the streamSAVE platform facilitates the exchange of knowledge and experiences among Member States according to three axes: knowledge facility, peer-to-peer dialogues, and capacity support facility. In this respect, the platform is structured in three modules:

- **Knowledge and support facility.** This module includes all resources on streamSAVE activities concerning energy savings' calculations. streamSAVE aims to assist Member States in their efforts to deliver rapidly scalable savings and increase their chances of successfully meeting energy efficiency targets under Article 3 and 7 of the Energy Efficiency Directive. A series of activities are carried out with the intent of improving the energy saving methodologies capacities and skills of stakeholders across Europe. Here, the user can find more information and outcomes of these activities.
- **Online forum.** This module promotes the exchange of knowledge and experiences among stakeholders to extend the peer-to-peer dialogues per PA and to increase the feeling of community, as well as the ownership of the streamSAVE platform, among the key stakeholders. Public authorities, technology experts and market actors are brought together in dialogue groups to foster this transnational knowledge exchange on technical PA across Europe. The forum enables discussions among the actors or stakeholder registrants (confidential, anonymous posts allowed).
- **Training module** to discover and practice the streamSAVE methodologies for each PA on energy savings estimations and cost effectiveness. In this respect, streamSAVE project is providing assistance to Member States to align energy savings estimates with actual energy savings achieved to increase energy savings across Europe. Given the importance of deemed savings approaches in Member States' EED reporting, streamSAVE is focused on the bottom-up calculations methodologies of technical actions and define guidelines to estimate the cost effectiveness of each action. The user can discover and practice the methodologies for each Priority Action in the Training Module. In order to access this module, it is necessary to register on the streamSAVE platform.
- For the first round of Priority Actions, 8 savings calculation methodologies were developed by the consortium, and it is expected that the number of methodologies will be extended towards the end of the project as a second round of actions will be integrated as well.

The testing and validation process referred to in this document mainly concerns the Training Module as being a critical activity, namely the support to the development and use of BU calculation methodologies by Member States. Once the Training Module became available, in order to validate it, a test was carried out to detect faults and aspects to be improved to further increase the user-friendliness, understanding and credibility of the platform.





This document is therefore summarizing which needs were transmitted by the users who tested the module so far, and what actions have been taken by the consortium to address the suggestions collected.

For this purpose, all the suggestions and comments received were considered and analysed in order to subsequently agree on the actions to be carried out within the project.

The following chapters of the document detail how the testing and subsequent validation of the actions agreed for the first round of PA was carried out.

streamSAVE COLLABORATIVE PLATFORM Knowledge and support facility **Training** Forum Give feedback More ▾

Training

Discover and practice the streamSAVE methodologies for each Priority Action on energy savings estimations and cost effectiveness.

streamSAVE will help Member States align energy savings estimates with actual energy savings achieved to increase energy savings across Europe. Given the importance of deemed savings approaches in Member States' EED reporting, streamSAVE will focus on the bottom-up calculations methodologies of technical actions and define guidelines to estimate the cost effectiveness of each action. You can discover and practice the methodologies for each Priority Action in this Training Module.

- Refrigeration systems** [Calculate](#)
This methodology is valid for new installations of air- or water chilled central compression refrigeration units in compliance with the new Ecodesign regulations. It is based on the Seasonal Energy Performance Ratio (SEPR) of high-temperature process chillers at the rated refrigeration capacity of the unit.
- Building Automation & Control Systems** [Calculate](#)
This methodology is valid for calculating the impact of installing or upgrading BACS on the energy demand of building(s). It is based on the BAC factor method and can be used for calculating savings in residential and non-residential buildings, for five types of end-use (heating, cooling, domestic hot water, ventilation and lighting) and for the three climate regions. A factor for rebound effects is foreseen.
- Electric vehicles** [Calculate](#)
This methodology targets the fuel switching between conventional and electric vehicles. The conventional options include vehicles using diesel, petrol and LNG, as well as hybrid options. The more efficient options include electric vehicles. Therefore, the savings are not only ensured with higher conversion efficiency but also with the ensured fuel switching between the use of fossil fuels and electricity, which is increasingly generated based on renewable resources. Therefore, such fuel switching is able to ensure a reduction of fossil fuel consumption, with the associated primary energy savings and reduction of GHG emissions.
- Lighting systems** [Simplified Approach](#) [Engineering Approach](#)
This methodology deals with the replacement of existing road lighting systems to more energy efficient technologies. It provides two different formulas for the calculation of energy savings of the implementation of measures that account not only for the replacement of existing light points but also for the installation of lighting control technologies. The methodology can be applied in all Member States, following the provided indicative values and indications.
- Heat recovery** [On-site applications](#) [On-site process](#) [District heating](#)
Savings calculation methodologies covered by this Priority Action focus on heat recovery from industrial processes used on-site and in district heating grids. There is a wide spectrum of heat consuming applications in industry that are suitable for heat recovery actions; therefore, it is not feasible to define one representative application. Methodologies have been prepared for the following three cases:
 - Heat recovery for on-site use in industry - use of excess heat for on-site applications
 - Heat recovery for on-site use in industry - feedback of excess heat into a process
 - Heat recovery for feed-in to a district heating grid

Figure 1. Training Module within streamSAVE platform.



Chapter 2 Questionnaire

To collect the feedback from the streamSAVE stakeholders while testing & validating the Training Module, a questionnaire was developed as part of the project activity. The testing aimed to gather information to support following purposes:

- To achieve better trust between the platform and the users.
- To improve the interaction between the platform and the users.
- To illustrate the overall satisfaction of the users.
- To validate the importance of the platform.
- To detect aspects that are not understood or are not correctly reflected in the Training module to carry out the calculations.

The questionnaire has been designed with a clear structure consisting of three sections. The sections covered the user's basic needs in terms of navigation experience and overall satisfaction to be able to perform the savings calculations correctly:

- User-friendliness and Navigation
- Level of Clarity and Credibility for the PA that you tested
- About giving value

The template of the questionnaire is included in **Annex 1** of this report and was available to stakeholders via the streamSAVE partners or could be downloaded from the platform. Some of the questions are answered with “Yes/No” answers, while others are used to rate a particular feature on a scale from 0 to 10 (least to most satisfactory). In addition, there is the possibility to comment on a particular feature and give suggestions on how to improve it.

For the testing, public authorities and key stakeholders in the ten partner Member States were consulted via this questionnaire. For the Priority Actions they were interested in, each respondent was able to rate and show their opinion of the module in general within the section “About User-friendliness and Navigation”; while in the following sections, they could rate the Training Module for the specific methodologies or actions they have tested. However, respondents were promoted to test and validate as many methodologies as the Training Module includes.

In the next Chapter, the collected feedback is summarized, so areas for improvements, and the validity or credibility of the methodologies could be identified.





Chapter 3 Summary of comments received from CSF

With the participation and support of the consulted stakeholders in several Member States, it was possible to collect 11 valid questionnaires. This section shows the results of the testing the Training Module based on these 11 answers. Depending on the needs and requirements of the Member States involved, each response could cover one or several PAs. Electric Vehicles was by far the PA that raised more interest, as the number of responses shows.

| Priority Action (1 st Round) | Heat Recovery | BACS | Refrigeration | Lighting | Electric Vehicle |
|---|---------------|------|---------------|----------|------------------|
| Number of responses | 3 | 4 | 1 | 3 | 8 |

Table 1. Level of testing of PA.

For each of the sections, stakeholders were asked to rate (0-10) their overall satisfaction on:

- The usability of the website
- The clarity of the content
- Probability of website recommendation

In this respect, considering all the questionnaires collected, the average score for each of the sections is shown in the table below.

| About User-friendliness and Navigation | Level of Clarity and Credibility for the PA that you tested | About giving value |
|--|---|--------------------|
| 7,5 | 7,8 | 8,3 |

Table 2. General score by section.

With the aim of improving the user-experience and validity of the methods on the Training Module, all collected feedback was reviewed. As previously mentioned, some of the respondents considered several actions, so the level of clarity and credibility, as well as about giving value, were evaluated for different PA. In that sense, some comments could be cross-cutting and cover either the Training Module as a whole, or specific calculation methodologies.

After reviewing all questionnaires, all comments were collected for further evaluation. These comments resulted in a list of actions shown in the next chapter.

3.1 Priority Comments

All the received comments were analysed by the consortium from two different points of view. On the one hand, the functionality of the module in general, and on the other hand, the understanding and use of the contents of each of the methodologies analysed. Therefore, within the streamSAVE consortium, those responsible for each of the PA, together with the technology partners responsible for the platform, rated certain comments as priorities to improve the Training Module.



The comments agreed as a priority are listed below. Some of them are cross-cutting, affecting the general functionality of the platform and the Training Module.

3.1.1. Cross-cutting comments

- The need to check the data and values provided as input values in the calculations of the different methodologies
- Try to facilitate the movement and use of the training module with a restart/edit button
- Within some methodologies, the tables do not have titles and it is not known what they refer to.
- The list of Energy Carriers is not well understood and does not distinguish between technologies, what is critical for some PAs.
- Need more information or explanation about the behavioural factors
- Lack of understanding of the meaning of some variables in the formulas.
- Requirement to show examples of both the use and typical values to be used in calculations (e.g. the difference between indicative and project values)
- Possibility of including user guide
- Doubts and technical aspects of the methodology. Request for FAQ section within the Training Module or add specific questions of the Training Module in the FAQ section of the streamSAVE Platform
- Improve visual aspects of the module, such as highlighting the boxes to be filled in by the user, including graphs or showing the results in a more visible way.

3.1.2. Comments concerning actions

- **Heat Recovery:** Some input data are considered complex. Waste heat recovery is considered by some users to be a very complex measure, as in many cases it combines the processes itself, space heating and heat injection into district heating.
- **Building Automation Control Systems:**
 - o Need for clarification or explanations of the variables used
 - o need for clarification for the behavioural effects factor
 - o The selection of the EU region is a bit complicated
- **Industrial and commercial Refrigeration:** Make it possible to limit the values entered for the power of the equipment analysed, according to the technology introduced, since the methodology is developed for power ratings up to 600kW in the case of air-chilled, and up to 1500kW for water-chilled
- **Lighting systems**
 - o Road Lighting Engineering Approach. Need to include headings in both the excel and training module. Review of the indicative values for operating time, seeing what values would need to be included. As suggested by a user, it





could be the maximum number of hours per year, to give maximum freedom in the calculation, or be more restrictive. In addition, we may need a different approach when using indicative values.

- Road Lighting Simplified Approach. Check the value range.
 - Lack of understanding of some assumptions, e.g., the use of a defined value in lm/W, for the sake of simplicity.
- **Electric Vehicle**
- Energy carrier's menu should be adapted to this technology.
 - More detailed information about the factor of behavioural measures.
 - Make the specific case of PHEV clearer. It is no possible to evaluate the implementation of PHEV versus ICE vehicle.
 - Deeper explanation about the behavioural factors.
 - Possible option of obtaining or inserting information in other units, namely tep.



Chapter 4 Improvements of the Platform

Once all received feedback was analysed and translated into possible changes to be applied to the platform and the calculation methodologies within the Training Module, the streamSAVE consortium implemented the agreed changes. The changes, and updates implemented so far are listed below – Status 4th of April 2022 – covering the first round of PA.

1. New button with “Refresh/Reset” action

With this improvement, all inputs are reset, and users can go back to their inputs and modify only what they want to update or change, instead of removing or modifying all information.

Central compression refrigeration units

Share my result

This methodology is valid for **new installations of air- or water chilled central compression refrigeration units** in compliance with the new Ecodesign regulations. It based on the **Seasonal Energy Performance Ratio (SEPR) of high-temperature process chillers** at the rated refrigeration capacity of the unit.

This seasonal performance metric measures the seasonal energy efficiency of process chillers by calculating the ratio between annual cooling demand and annual energy input; therefore, it offers the possibility to compare the efficiency of refrigeration units at different operation points regardless of their implementation area, both from a technical and a climatic point of view giving a more realistic indication of the real energy efficiency and environmental impact of the cooling system.

The **following criteria** have to be met to use the methodology described:

- the **compressors** must be powered by electrical energy
- cooling systems using **free cooling or heat recovery are not covered**

SEPR values for reference- and efficient cases are available for **water-chilled systems with the installed cooling power of up to 1500 kW** and **air-chilled systems with the installed cooling power of up to 600 kW**. Cooling power and full-load hours have to be provided project-specific.

Practical Guidance

Empty excel template

Download results for Excel

New calcul from this data

Give methodology feedback

Calculated on 2021-11-04 by

Alberto MORENO FL
ajmoreno@fcirce.es

Article 7 | Total final energy savings (TFES)

$$TFES = n \cdot Pc \cdot h_{FL} \cdot \left(\frac{1}{SEPR_{ref}} - \frac{1}{SEPR_{eff}} \right) \cdot f_{BEH}$$

Article 3 | Total final energy savings (TFES)

$$TFES = n \cdot Pc \cdot h_{FL} \cdot \left(\frac{1}{SEPR_{ref}} - \frac{1}{SEPR_{eff}} \right) \cdot f_{BEH}$$

Article 3 | Effect on primary energy consumption (EPEC)

$$EPEC = FEC_{Baseline} \cdot f_{PElectricity} - FEC_{Action} \cdot f_{PElectricity}$$

GHG | Greenhouse gas savings (GHGsav)

$$GHGSav = TFES \cdot f_{GHG,electricity} \cdot 10^{-6}$$

Figure 2. Refresh/Reset button in the calculation tool.





Data Input

Indicative Values **i** Technology **i**

National values Water chilled

Energy carriers

| Before implementation i | Share [%] | After implementation i | Share [%] |
|--------------------------------|----------------------|-------------------------------|----------------------|
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

| | Project specific values | indicative calculation values |
|------------------|---------------------------------|------------------------------------|
| i n | <input type="text" value="-"/> | <input type="text" value="-"/> |
| i PC | <input type="text" value="kW"/> | <input type="text" value="kW"/> |
| i hFL | <input type="text" value="h"/> | <input type="text" value="h"/> |
| i SEPRref | <input type="text" value="-"/> | <input type="text" value="8,76"/> |
| i SERPeff | <input type="text" value="-"/> | <input type="text" value="11,41"/> |
| i tbeh | <input type="text" value="-"/> | <input type="text" value="1"/> |

My National values

| Energy Carrier | Emission factor (gCO2/kWh) |
|------------------------------------|----------------------------|
| Electricity | <input type="text"/> |
| District heat | <input type="text"/> |
| Natural gas | <input type="text"/> |
| Gas/Diesel oil | <input type="text"/> |
| Motor gasoline | <input type="text"/> |
| Biodiesels | <input type="text"/> |
| Biogasoline | <input type="text"/> |
| Other liquid biofuels | <input type="text"/> |
| Biogas | <input type="text"/> |
| Wood/wood waste | <input type="text"/> |
| Other primary solid biomass | <input type="text"/> |
| Kerosene (other than jet kerosene) | <input type="text"/> |
| Liquefied petroleum gases | <input type="text"/> |
| Naphtha | <input type="text"/> |
| Natural gas liquids | <input type="text"/> |

Figure 3. Refresh of the data input.

2. Button with link to Training Module in the other platform modules

Previously it was only at the top of the Forum page. To further improve the functionality, it was added to other sections as well, such as in the Knowledge and support Facility.

streamSAVE COLLABORATIVE PLATFORM Knowledge and support facility Training Forum Give feedback More

Knowledge and support facility

You can find here all resources on streamSAVE activities concerning energy savings calculations

You can find a preview of the knowledge & support facility on this page, and consult documents under the sections. The page will be further developed during the project

Keyword research Training module

Sort by date ↑↓

Filter by Priority actions

Heat recovery BACS Refrigeration systems Electric vehicles Lighting systems General

A series of activities are carried out with the intent of improving the energy saving methodologies capacities and skills of stakeholders across Europe. Here, you can find more information and outcomes of these activities.

The knowledge and support facility module will integrate the streamSAVE resources and guidance concerning energy savings calculations. Member States will be able to use these resources however they would like in their Energy Efficiency Directive (EED) reporting process.

Summary of the dialogue activities of July-December 2021

Dealing with additionality in the context of Article 7 EED: Experiences about monitoring and energy

3rd Meeting of the Dialogue Groups on Electric Vehicles
The Meeting 3 of the Dialogue Groups on Electric Vehicles

3rd Meeting of the Dialogue Groups on BACS & Road Lighting

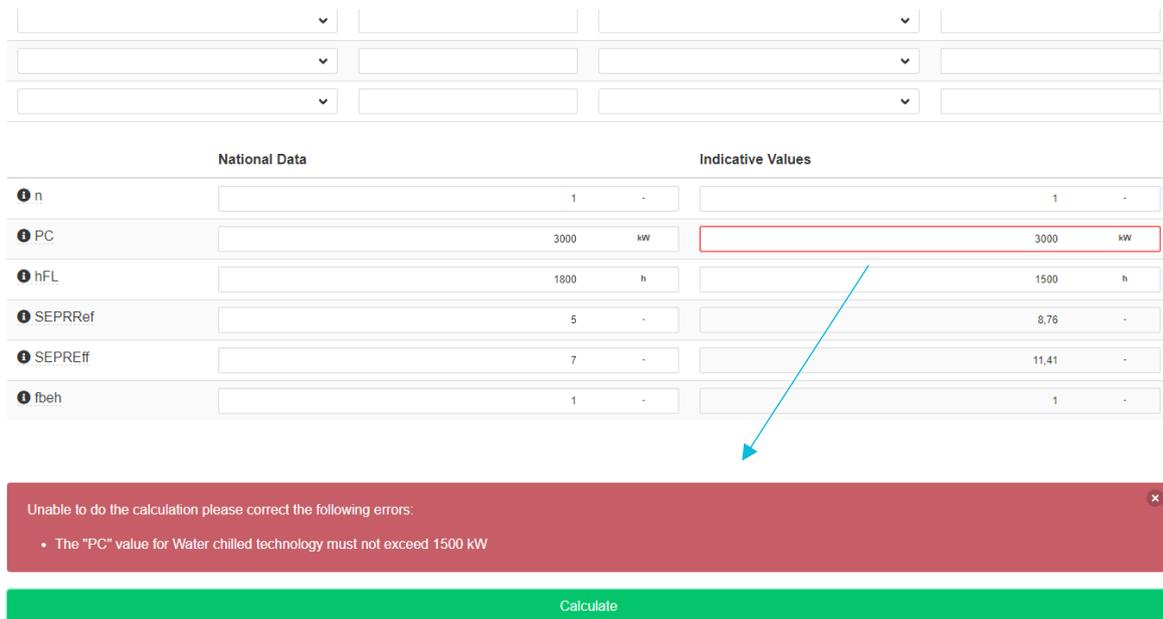
Figure 4. Link to the Training Module.





3. Update of the Calculation Methodologies.

Particular sections of the excels templates, describing the calculation methodologies and integrated in the Training Module, were modified. With the aim to facilitate data input, as well as to avoid possible mistakes in the calculations, the excels associated to each methodology have been reviewed to integrate programming changes into the calculation tools. In this way, the aim is to ensure that no mistakes are made when entering data, and to prevent the user from entering erroneous data (i.e., out of range data) (see Figure 5). The user is also provided with a practical guide detailing each of the methodologies, their application, formulas, and reference values. At the same time, for each of the values to be entered, an information tab is available by hovering the mouse over the information sign .



| | National Data | | Indicative Values | |
|--|-----------------------------------|----|--|----|
|  n | <input type="text" value="1"/> | - | <input type="text" value="1"/> | - |
|  PC | <input type="text" value="3000"/> | kW | <input style="border: 2px solid red;" type="text" value="3000"/> | kW |
|  hFL | <input type="text" value="1800"/> | h | <input type="text" value="1500"/> | h |
|  SEPRRef | <input type="text" value="5"/> | - | <input type="text" value="8.76"/> | - |
|  SEPREff | <input type="text" value="7"/> | - | <input type="text" value="11.41"/> | - |
|  fbeh | <input type="text" value="1"/> | - | <input type="text" value="1"/> | - |

Unable to do the calculation please correct the following errors:

- The "PC" value for Water chilled technology must not exceed 1500 kW

Figure 5. Improvements to the input of data for the calculations (example: Refrigeration methodology).

Moreover, some titles and names have been renamed to make them easier to understand.





Data Input

Indicative Values **i** Old title Region **i** Sector **i**

Building Type **i** End-use Type **i** BAC target **i**

Share of energy carriers

| Before implementation i | Share | After implementation i | Share |
|--------------------------------|----------------------|-------------------------------|----------------------|
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

Data Input

Conversion factors **i** Update title Region **i** Sector **i**

Building Type **i** End-use Type **i** BAC target **i**

Share of energy carriers

| Before implementation i | Share | After implementation i | Share |
|--------------------------------|----------------------|-------------------------------|----------------------|
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

Figure 6. Renamed titles.

In addition, the explanations included in the information points have been more detailed to improve the understanding of indicators.

GHG | Greenhouse gas savings (GHGSAV)

$$GHGSAV = TFES \cdot f_{GHG,electricity} \cdot 10^{-6}$$

EU values for GHG emissions and conversion factors from final to primary energy savings are provided by streamSAVE. If you want to use national values, please select above and fill in the values relevant for the energy carriers used in the corresponding table.

Conversion factors **i** Light source technology **i** Light source power **i** Dimming **i**

Energy carriers

| Before implementation i | Share [%] | After implementation i | Share [%] |
|--------------------------------|----------------------|-------------------------------|----------------------|
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

Figure 7. Improved information boxes.

4. Training module FAQs

Questions for clarifications that were raised quite often by the respondents, are included into the FAQ section of the streamSAVE platform, to increase the user-friendliness and understanding of the Training Module.



We are here to answer your questions.

Q

| | |
|---|---|
| Are the training results saved on the streamSAVE platform? | Training |
| Which are the required steps to do a calculation in the Training Module? | Training |
| Which are the different methodologies developed in the Training Module currently available? | Training |
| What is the purpose of the Training Module? | Training |

The Training Module is a streamSAVE resource where you can discover and practice the streamSAVE methodologies for each Priority Action on energy savings estimations and cost effectiveness.

In this way, Member States can consult and use the streamSAVE output data and methodologies in the way they prefer to comply with own needs and EED reporting obligations.

| | |
|---|--|
| What is a Dialogue Group? | Other |
| What are Priority Actions? | Other |
| Where can I change my interest for specific Priority Actions? | Sign up My account |
| When I follow a discussion topic on the Forum, what does that mean? | Forum |
| How to react on a discussion topic in the Forum? | Forum |
| How to add an item or new discussion topic in the Forum? | Forum |

Figure 8. FAQ section in the streamSAVE platform – New questions on Training Module.

Question 1 - What is the purpose of the Training Module?

The Training Module is a streamSAVE resource where you can discover and practice the streamSAVE methodologies for each Priority Action on energy savings estimations and cost effectiveness.

In this way, Member States can consult and use the streamSAVE output data and methodologies in the way they prefer to comply with own needs and EED reporting obligations.

Question 2 - Which are the different methodologies developed in the Training Module currently available?

The Training Module provides 8 newly developed bottom-up calculation methodologies featuring indicative calculation values, data on costs and estimations of GHG emission reduction. The following methodologies have been prepared:

- Heat recovery for on-site use in industry - feedback of excess heat into a process
- Heat recovery for on-site use in industry - use of excess heat for on-site applications
- Heat recovery for feed-in to a district heating grid
- Building Automation and Control Systems in residential and non-residential buildings
- Energy efficient compression refrigeration units
- Fuel Switching to Electric Vehicles
- Energy efficient road lighting systems – engineering approach





- Energy efficient road lighting systems – simplified approach

The second round of actions, focusing on 5 new Priority Actions, is already ongoing since March 2022:

- Feedback and tailored advice for behaviour changes
- Small-scale RES for heating (including domestic hot water)
- Accelerated replacement of inefficient electric motors
- Modal shift for freight transport –road to rail
- Energy efficiency measures alleviating energy poverty

Question 3 - Which are the required steps to do a calculation in the Training Module?

STEP 1: Select the methodology for one Priority Action and click on the button 'Calculate'.

STEP 2: Fill info and do the calculation. Each of the calculation forms has the following elements:

- *Practical guidance.* A detailed description of each methodology (including data sources) can be found in the report “Guidance on savings calculation methodologies, including indicative values”.
- *Excel template.* For each methodology, the savings calculation can be done either online, or downloaded via a blank excel template.
- *Data input & Energy Carriers.* Once the calculation of a methodology is accessed, the main information on the methodology, main characteristics, calculation hypotheses, necessary considerations, and the formulas are visualised. For each of the data inputs or automatically generated values, an information signal “i” is available, which by passing the mouse cursor over it, launches an explanatory message about the data to be included. Whenever possible, streamSAVE has prepared **indicative calculation values based on EU-averages** in order to help with a rough assessment of savings that can be achieved. However, it is **advised to use national data** (in case available) in order to increase the accuracy and the level of detail of the calculations. The Training Module, therefore, offers two columns to complete, one for entering National Data, and the other including the suggested EU indicative values. The calculation can be performed as long as at least one column is filled out completely. For the calculation of primary energy and CO₂ savings, national data or EU averages can also be used to calculate the conversion factors corresponding to the energy carriers used.
- *Calculate.* Once the values have been entered, press the Calculator button to go to the results page. All your calculations are saved within the streamSAVE platform, but only accessible via your user account.

STEP 3: Download results (.xlsx file)

Regardless of the selected methodology, it is possible to identify the following elements:





- Share my result. Pressing the "Share my result" button will generate a link in your clipboard with which you can share the results tab. Only registered users will have access to this functionality.
- Practical guidance. Same as in step 2
- Excel template. Same as in step 2
- Download results for Excel. By pressing the "Download results for Excel" button, it is possible to download the spreadsheet with the results for greater convenience.
- New calculation for this data. The "new calculation for this data" button allows you to come back to the calculation form page and make modifications to your calculations.
- Give methodology feedback. A questionnaire download will be launched to be fulfilled.
- Data input. The section data input shows the values introduced in the calculation form.
- Calculation results. The calculation results section shows indicators obtained for your calculation case.
- Cost related to the action. The costs section shows indicative values for the actions described.

Question 4 - Are the training results saved on the streamSAVE platform?

Yes. Registered users can save the results of their calculations (only visible to the registered user). In this way, the user can compile multiple scenarios or estimates. Furthermore, there is the possibility of eliminating those results that are not interesting by clicking on the trash icon in the upper right corner.

5. Energy listing considerations

The most conventional energy sources are introduced at the beginning of the selection list, so users can more easily find relevant energy carriers for their action.

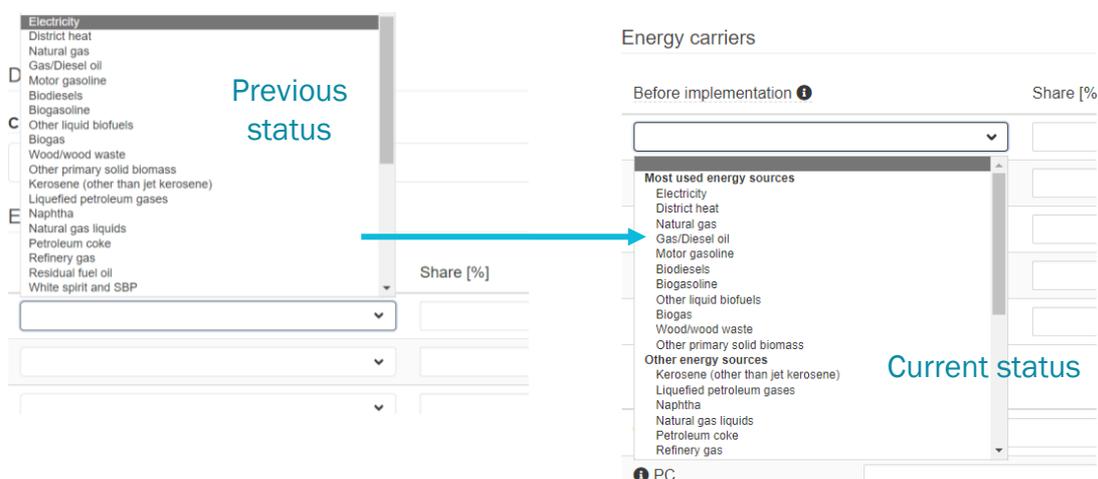


Figure 9. Updated list of energy sources to be selected.





Conclusions

After extensive work in the project to determine a set of bottom-up calculation methodologies during the first round of five PAs, the project has carried out different actions to promote and share the work done with public authorities and other key stakeholders.

In order to test and validate the results presented in the Training Module, as well as its usability, the streamSAVE consortium appreciates the feedback from all stakeholders received. Feedback about the use of the Training Module have been expressed by filling in a Word questionnaire. Thanks to the support and collaboration of the users who have tested the platform, it has been possible to make several modifications to improve the Training Modules' functionalities.

This document reflects the feedback received, as well as the updates to the functionalities that have been implemented in the platform so far (April 2022), covering the first round of the project. It is expected that further improvements will be introduced after the second round, with the new methodologies, towards the end of the project.





Annex 1 – CSF Word form questionnaire

The Training Module of the streamSAVE platform provides 8 newly developed bottom-up calculation methodologies for our first round of Priority Actions featuring indicative calculation values, data on costs and estimations of GHG emission reduction. In order to improve the performance of our streamSAVE methodologies on the platform, we would like to know your feedback about the current state of the Training Module. Hereto, it would be much appreciated if you can test the methodologies for multiple Priority Actions and complete this short 5-minutes questionnaire. If you have any questions, don't hesitate to ask to the streamSAVE partners.

We would like to thank you in advance for your input!

The Training Module can be found here: <https://streamsava.flexx.camp/training>

Completed questionnaires and technical questions can be sent to feedback@streamsava.eu

| | |
|----------------------------|----------------------------------|
| Name of your organisation? | Click or tap here to enter text. |
| Country | Click or tap here to enter text. |

About User-friendliness and Navigation

| | |
|--|--|
| On a scale of 0-10, how would you rate the usability of our website? Could you easily complete the methodology for your specific action or policy? | |
| What elements of the Training module should become more user-friendly? Click or tap here to enter text. | |
| Were you able to find links easily? Were you able to navigate to other pages easily? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| If NO, please indicate how we can improve Click or tap here to enter text. | |
| Is the organization of the website intuitive? When selecting your preferred option(s), did the selection boxes work well? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| If NO, please indicate how we can improve Click or tap here to enter text. | |
| Could you easily share and/or download your results (in excel)? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| If NO, please indicate how we can improve Click or tap here to enter text. | |





Priority Action n° X

| | |
|-------------------------------------|---|
| Which use case did you test? | |
| Which priority action did you test? | NAME |
| Which specific savings methodology? | General |
| Which values did you test? | <input type="checkbox"/> National values <input type="checkbox"/> EU indicative values <input type="checkbox"/> Both national and EU indicative values |

Level of Clarity and Credibility for the PA that you tested

| | |
|--|--|
| On a scale of 1-10 how do you rate the clarity of the content? | |
| Overall | 1-10 |
| Related to the standardized savings methodology (formula) | 1-10 |
| Related to the data input & indicative values, incl. cost parameters | 1-10 |
| Related to the results | 1-10 |
| Please indicate how we can improve the clarity Click or tap here to enter text. | |
| Are the following elements of the platform credible or not? | |
| standardized methodology (formula) | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| data input | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Results | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| If NO, can you please specify what didn't work well and/or how we can improve? Click or tap here to enter text. | |
| Does it cover all elements you expect from a standardized methodology? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| If NO, please indicate how we can improve Click or tap here to enter text. | |
| Are the methodologies described at a sufficient level of detail? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| If NO, please indicate how we can improve Click or tap here to enter text. | |



About giving value

| | |
|---|--|
| Did this page help you? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| If NO, please indicate how we can improve Click or tap here to enter text. | |
| On a scale of 1-10, how likely are you to recommend our website to your colleagues? | 1-10 |
| Will you use the methodology to apply or to improve the savings' estimations of your specific action or policy measure? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Please explain Click or tap here to enter text. | |
| Do you have any other suggestions or comments? | |
| Click or tap here to enter text. | |



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