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Extract of the project data from the LIFE KPI webtool

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NS4nZEBs New Skills for nearly Zero Energy Buildings

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SUMMARY

	All country's – End Value	BE – beyond 5 yr	IT – beyond5 yr	ES – beyond 5 yr	BG – beyond 5 yr	EL – beyond 5 yr	NEU - beyond 5 yr	All country's – beyond 5 years value
1. Primary Energy Savings								
Public buildings	0	50 GWh/yr	50 GWh/yr	50 GWh/yr	50 GWh/yr	50 GWh/yr	50 GWh/yr	300 GWh/yr
2. Final Energy								
Public Buildings	0	49 GWh/yr	49 GWh/yr	49 GWh/yr	49 GWh/yr	49 GWh/yr	49 GWh/yr	296 GWh/yr
3. Renewable Energy generation								
Public Buildings	0	25 GWh/yr	25 GWh/yr	25 GWh/yr	25 GWh/yr	25 GWh/yr	25 GWh/yr	150 GWh/yr
4. GHG emissions								
Public Buildings	0	5500 Tons of CO2eq / year	5500 Tons of CO2eq / year	5500 Tons of CO2eq / year	5500 Tons of CO2eq / year	5500 Tons of CO2eq / year	5500 Tons of CO2eq / year	33000 Tons of CO2eq / year
5. Investments in sustainable energy								
Public Buildings	0							0
6. Legislation & policy	**0**							**0**
7. Market introduction	1							1
8. Implementation sites	1							1
9. Skills	360 People	300 people	300 people	300 people	300 people	300 people	300 people	1800 people
10. Communication	14080 people	4693 people	4693 people	4693 people	4693 people	4693 people	4693 people	28160 people
11. Employment	0							0

1. Primary Energy Savings

We estimate that a heat pump can be installed in 2 days by a team of 2 installers. This assumption is based on a survey conducted with several installers. Thus, each installer can typically install two heat pumps per week. These installations are usually carried out during the summer, leading to an active season of 5 months. Over a year, this means 1 professional can install 40 heat pumps.

40 heat pumps x 10 KW (average) x 8 working hours per day x 200 days = 0.6 GWh/year

The energy savings of a heat pump compared to a are calculated as follows:

1. Heat demand: 10 kW of heat capacity

2. Heat Pump Efficiency: we assume an average Coefficient of Performance (COP) value of 4. Therefore, to generate 10 kW of heat, a heat pump requires 2,5 kW of electrical energy. With an estimated operating time of 2000 hours per year, the annual electricity consumption is: 2,5 kW x 2000 hours = 5,000 kWh/year

3. Primary Energy Consumption: To compare with natural gas, we apply a primary energy factor of 2,5 resulting in: 5,000 kWh x 2,5 = 12,500 kWh/year

4. Condensing Boiler Efficiency: Condensing boilers have an average efficiency of 90% due to oversizing, resulting in 11,1 kW of input for 10 kW of heat pump output. Given an annual operating time of 1200 hours, this equates to:

   11.1 kW x 1200 hours= 13,333 kWh/year (primary energy consumption).

The goal of the project is to ensure that the electrical energy required by the heat pump (5,000 kWh) is generated by using PV panels, eliminating the primary energy factor. This would result in a total energy gain of a heat pump: 13,333 kWh – 5,000 kWh = 8,333 kWh/year

If a single installer installs 40 units per year, the resulting primary energy savings amount to:

40 units x 8,333 kWh = 333 MWh/year per installer

We aim to train 180 installers annually, and over five years, this will create a pool of 900 installers. With each installer contributing to primary energy savings of 333 MWh/year, the total project impact is:

333 MWh x 900 installers = 299,700 MWh

This means a primary energy saving of almost 3000 GWh for all country's and 500 GWh per country.

2. Final Energy Savings

After consultation with our partners, it was decided to maintain the primary energy factor at 2.5. The reason for this decision is clear; the European directive still specifies a PEF of 2.5. During the preparation of the project application, the PEF factor was 2.5 and the partners have agreed to adhere to this value.

However, it is anticipated that this factor will decrease in the future as renewable energy production continues to grow. Current studies predict a potential reduction to 2.0 or 2.1.

Justification of the COP value

During the writing of the project, we assumed that installers would receive comprehensive, high-quality training, enabling them to maximize the efficiency (COP value) of the heat pumps. Therefore, an ambitious COP value of 4 was adopted. While using a SCOP value might have been more appropriate, this project involves various climate zones. Since the savings are reported in kWh (MWh-GWh), the project management team remains confident that the project savings can be achieved.

To heat the same home (assuming 10 kW installed power), a heat pump with a COP value of 4 requires 5,000 kWh of electrical energy, while a gas boiler would need 13,333 kWh of fossil association heat. This results in an energy saving of 8,333 kWh per installation. Additionally, we aim to reach 900 installers over the next 5 years, which would translate to a cumulative energy saving of 296 GWh for all countries and 49 GWh per country.

This figure corresponds directly to the primary energy savings, which is logical, given that we assumed the electricity required for the heat pumps would be generated by PV panels.

3. Renewable Energy generation

To determine renewable energy generation, we assume that a 10 kW heat pump requires – 2.5 kW of electrical energy. This electrical energy will come 80% (this figure was established by the PMT team of the LIFE project nNS4nZEBs) from PV panels. In our previous calculations, we estimated that each installer would handle 40 installations. Therefore, each installer will generate:

40 installations * 2.5 kW * 80% = 84 kW of renewable energy.

Assuming a runtime of 2,000 hours, this translates to a renewable energy generation of 168MWh per installer annually. We anticipate training 180 installers per year, which would result in the generation of over 150 GWh of renewable energy each year for all countries and 25 GWh per country.

4. GHG emissions in tCO2eq/year

Burning fossil fuel releases CO2. For natural gas, the CO2 emissions amount to 178 gramCO2/kWh. In determining the KPIs, we consistently assumed a house with an installed capacity of 10 kW for heating and preparation of domestic hot water. When this energy is supplied by a condensing gas boiler with an annual efficiency of 90%, we need 13.333kWh of heat energy per year. This energy is generated through the combustion of fossil fuels.

In contrast, when using a heat pump, we utilize electricity as the energy source, which we assume is generated locally from renewable sources. Given that each trained installer can handle 40 installations per year, we anticipate training 180 trained installers during the duration of the project and a total of 900 installers 5 years after the end of the project. This leads to a greenhouse gas (GHG) saving of over 2,135 kTonCO2or nearly 33 kTonCO2 each year for all countries and 5500 TonCO2 per country.

5. Investments in sustainable energy

No investments in sustainable energy will be made during the project. The focus is on retraining and upskilling existing professionals rather than introducing new energy solutions or technologies.

6. Legislation & policy

No adjustments will be made to legislation and policy as part of this project. The objective is to update the skills of current installers and engineers, not to influence or change any legislative frameworks or policy guidelines.

7. Market introduction

Heat pumps and photovoltaic (PV) panels have already been on the market for some time. Therefore, the goal of this project is not to introduce new products to the market. Instead, the project aims to enhance the marketing of existing technologies, which can be considered a market introduction of these appliances from an updated perspective.

8. Implementation sites

The project does not focus on physical implementation sites, as it primarily targets the retraining and upskilling of professionals. Training will be conducted across various countries, but no new installations or adjustments to buildings will be made under this initiative.

9. Skills

A total of 360 installers will be trained or retrained during the project, spread across all participating countries. The goal is for this number to increase fivefold within the next five years, ensuring that a large pool of skilled professionals is available to meet the growing demand for energy-efficient technologies.

10. Communication

By the end of the project, the communication activities will have reached a total of 14,080 individuals across all participating countries. This will be achieved through a variety of communication channels, as outlined in the report:

- Social Media posts; 15 posts in English/60 posts in national languages in total 85 posts will engage an estimated **6,000** followers
- Media Coverage; Publications on national and European levels such as in industry journals and platforms will have a minimum of 10 publications reaching **500** individuals across participating countries
- Dedicated Project Webpages and Newsletters; we estimate the project website will have **6,000 visits** with regular updates, blogs and project deliverables. Additionally, 4 newsletters will be distributed to stakeholders, reaching an estimated **500** individuals
- Publication on National/European network/platforms targeted on social media by mentioning in posts; **50** individuals
- Publication of brochures targeted to specific audiences: **30** individuals
- Events;
    - Participants in national and international events; **500** individuals across 24 events
    - Participants in round tables; **220** individuals across 18 round tables
    - Participants in online seminars for awareness-raising: **220** individuals across 18 seminars
    - Final Conference: **60** attendees

5 years beyond the initial project timeline, the impact of the communication activities is expected to persist, with the value of 28,160 representing the projected total number of people reached over the next five years.

This long-term reach will be driven by the sustained visibility of the project's outcomes and the ongoing engagement of stakeholders through:

- Continued social media activity with the project's growing follower base of **6,000**.
- Ongoing media coverage through publications, which will continue to reach additional audiences in national and European outlets.
- Project webpages and blogs will remain accessible, drawing additional visits and maintaining awareness among a global audience.
- Network platforms will facilitate continued collaboration and knowledge sharing.

By reaching **28,160** people within five years of the project's conclusion, the dissemination efforts will ensure that the project's results and knowledge continue to influence the industry and raise awareness about nearly zero-energy buildings.

11. Employment

This project does not aim to create new employment opportunities. The primary purpose is to ensure that current installers and engineers are equipped with the latest knowledge and skills for nearly zero-

energy buildings, enabling them to stay competitive in the industry. By remaining up to date with the latest techniques, they can continue their professional activities for the foreseeable future.