



D1.10 Updated IEE Common Performance Indicators

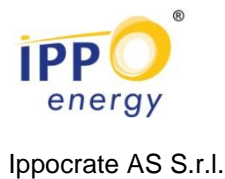
Author: LEITAT
Date: February 2017



Co-funded by the Intelligent Energy Europe
Programme of the European Union

Step2Sport Project *STEP by STEP renovation towards nearly zero energy SPORT buildings* is co-financed by the **Intelligent Energy Europe Programme of the European Union.**

Project Partners:





Co-funded by the Intelligent Energy Europe
Programme of the European Union

Table of Contents

1. Introduction.....	4
2. IEE Common Performance Indicators.....	4
3. Conclusions.....	7

1. Introduction

This report aims at providing an update of the Intelligent Energy Europe Common Performance Indicators (CPIs) for the STEP-2-SPORT project, informing EASME on the energy related impact of the project within its duration (2014-2017) and beyond its lifetime (2020), by using a set of common performance indicators. IEE performance indicators are common for all IEE funded projects and demonstrate the contribution of each action to the EU energy targets. The CPIs are the following:

- cumulative investment made by European Stakeholders in sustainable energy (EUR)
- renewable energy production triggered (toe/year)
- primary energy savings compared to projections (toe/year)
- reduction of greenhouse gas emissions triggered (t CO₂e/year)

2. IEE Common Performance Indicators

The baseline scenario was estimated in the first months of the project, before knowing the energy consumptions of the pilot sport buildings participating in STEP-2-SPORT project. The baseline scenario was calculated based on benchmarks from relevant European and national projects and studies dealing with sports facilities. According to these sources, for the extrapolation it was considered that the average final electricity consumption of one sport building was 455 kWh/m²-year, while the average final thermal consumption was about 855 kWh/m²-year. The average size per sport building considered for the extrapolation was 4000 m². According to these assumptions, the final energy consumption estimated in the beginning of the project for 22 pilot sport buildings was about 114.459 MWh/year.

However, after collecting the energy data from the 27 pilot sport buildings participating in the project, we realized that the final energy consumption was significantly lower than initially foreseen. Based on the real energy consumption of the 27 pilots, a corrected baseline scenario for 22 pilots has been calculated, since the target was to implement energy improvement measures in at least 22 pilots (see Table 1). The different sport building typologies analyzed (indoor pools, sport halls, gyms and ice rink arena) within the project, the particularities of the different countries and especially the limited data available from literature are the main reasons of the differences between the initial baseline scenario and the real one.

Table 1. Baseline scenario estimated in 2014 for 22 pilots vs. real baseline scenario for 22 pilots based on the average energy consumption of the 27 pilots that have participated in Step-2-Sport project.

Baseline scenario	Baseline scenario estimated in 2014	Corrected baseline scenario
Nº of pilots	22 pilots	22 pilots
Final electricity consumption (MWh/year)	40.061	8.024
Final thermal consumption (MWh/year)	74.398	14.347
Final energy consumption (MWh/year)	114.459	22.371
Primary electricity consumption (MWh/year)	100.151	20.060
Primary thermal consumption (MWh/year)	74.398	14.347
Primary energy consumption (MWh/year)	174.549	34.407

The energy savings and greenhouse gas emissions reduction achieved by the end of the project in the pilot sport facilities participating in the project are shown in Table 2.

Table 2. IEE Common Performance indicators within the project duration.

Within the duration of the action				
Common Performance indicator	Planned target		Actual achievement	Comment on performance
	Initial baseline	Corrected baseline		
Cumulative investment (Euro)	7.500.000	7.500.000	3.982.988	<ul style="list-style-type: none"> ✔ Until February 2017, nearby €1,2 M have been invested to improve the energy performance of 13 pilot sport buildings. ✔ In addition, 3 additional pilots have launched public tender procedures for their energy renovation with a total amount of nearby €2,8 M. ✔ In total, Step-2-Sport has triggered nearby €4 M in the pilot sport facilities.
Renewable Energy (toe/year)	1.279	250	131	<ul style="list-style-type: none"> ✔ The main reason of the big difference between the planned target (initial baseline) and actual achievement is due to that energy consumptions considered in the beginning of the project to define the baseline scenario were higher than the real ones of the pilots. For this reason, a corrected baseline has been calculated.
Primary energy savings (toe/year)	5.253	1.035	684	<ul style="list-style-type: none"> ✔ By the end of the project (February 2017), the RE production has been increased more than 1.178 MWh/year (101 toe/year), achieving 2.353 MWh/year (202 toe/year) of primary energy savings and avoiding 591.290 kg/year of CO₂ emissions in the 13 pilot sport buildings that have implemented measures.
Reduction GHG emissions (t CO ₂ e/year)	14.715	2.894	1.738	<ul style="list-style-type: none"> ✔ Further energy and emissions savings will be achieved thanks to the measures that will be implemented soon in the 3 additional pilots that have secured funding. By the end of 2017, the total savings expected to be achieved are: <ul style="list-style-type: none"> - 131 toe/year of RE production - 684 toe/year of primary energy savings - 1.738 t CO₂e/year

Table 3 presents the planned targets and expected achievement by 2020 thanks to the activities conducted during STEP-2-SPORT project.

Table 3. IEE Common Performance indicators by 2020.

Common Performance indicator	Planned target		Actual achievement	Comment on performance
	Initial baseline	Corrected baseline		
	By 2020			
Cumulative investment (Euro)	114.000.000	114.000.000	111.041.009	<ul style="list-style-type: none"> ✔ More than €7M will be invested in the 27 pilot sport facilities by 2020 according to the Actions Plans developed. ✔ Furthermore, 398 EU sport facilities have been identified for replication. It has been estimated that nearly €103 M are required to improve the energy performance of these facilities. ✔ In total, more than €111 M could be invested by 2020.
Renewable Energy (toe/year)	26.226	5.126	6.313	<ul style="list-style-type: none"> ✔ The main reason of the big difference between the planned target (initial baseline) and actual achievement is due to that energy consumptions considered in the beginning of the project to define the baseline scenario were higher than the real ones of the pilots. For this reason, a corrected baseline has been calculated. ✔ By 2020, the following savings will be achieved in the 27 pilot sport facilities according to the action plans developed: <ul style="list-style-type: none"> - 224 toe/year of RE production - 1.333 toe/year of primary energy savings - 3.650 t CO₂e/year
Primary energy savings (toe/year)	114.270	22.525	28.094	
Reduction GHG emissions (t CO ₂ e/year)	316.335	62.210	77.559	<ul style="list-style-type: none"> ✔ Thanks to replication activities conducted during Step-2-Sport, the following savings have been estimated for the 398 EU sport buildings engaged: <ul style="list-style-type: none"> - 6.090 toe/year of RE production - 26.761 toe/year of primary energy savings - 73.909 t CO₂e/year ✔ In total, the expected savings achieved by 2020 are: <ul style="list-style-type: none"> - 6.313 toe/year of RE production - 28.094 toe/year of primary energy savings - 77.559 t CO₂e/year

3. Conclusions

STEP-2-SPORT results will provide very useful energy data for future energy efficiency projects in sport facilities. Before STEP-2-SPORT project, there was limited public information about the energy consumption of different sport building typologies. This lack of data made difficult the definition of an accurate baseline scenario, data that was used for the definition of the project targets.

Within the project duration, energy improvement measures have been implemented in the pilots following a step-by-step renovation approach. In most of the pilots, it was proposed to implement gradually, within a 10 year period and until 2025, a package of energy improvement measures. Until February 2017, the investment made in 13 EU pilot sport buildings has been around €1.2 M, achieving primary energy savings of 202 toe/year and increasing the production of renewable energies more than 101 toe/year. During the project duration, 3 additional pilots have launched public tender procedures for their energy renovation with a total amount of nearly €2.8 M, meaning that approximately €4 M will be invested for the energy renovation of 16 pilot sport facilities. 684 toe/year of primary energy savings, 131 toe/year produced with renewable energies and 1.738 t of CO₂e avoided per year are the expected savings associated to the interventions in the 16 pilots. The fact that not all the pilots were able to implement the energy improvement measures proposed (due to lack of appropriate funding mechanisms and other administrative and/or financial challenges) has also contributed to the non achievement of the ambitious targets of the project.

By 2020, it is expected to reach the targets of the project because of the replication activities conducted within STEP-2-SPORT (e.g. training sessions, guided visits, engagement of sport facilities, ...) and also considering the next measures to be implemented in the 27 pilots. Significant savings are expected to be achieved: 28.094 toe/year of primary energy savings, 6.313 toe/year produced with renewable energies and 77.559 t of CO₂e avoided per year.