

D.T3.5.3 EVALUATION REPORT OF PILOT ACTION

Italy

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Author: Maria-Anna Segreto (ENEA)





1. General information about the pilot

1.1. Aim of pilot activities

Pilot programme is a small-scale version of a larger project. It allows testing proposed approach, identifying problems and preventing them from escalating. When identified, problematic issues might be solved, and the programme adjusted. Pilots reveal unforeseen challenges and help the staff involved in the programme to get prepared for a full-scale implementation. The aim of evaluation of pilot programmes is to verify whether objectives defined for the pilot phase are met, and to propose recommendations how to improve the programme before launching it in a full-scale. It is done by reviewing activities performed and evaluating whether they allowed for achieving the objectives.

The aim of FEEDSCHOOLS pilot activities was to test and evaluate the FEEDSCHOOLS toolkit: ERE App, Financial App, and the database of best NZEB practices. When validated, apps should allow non-experts for development of an energy renovation plan for school. ERE App should provide qualitative data on current energy performance of a building and compare it with other buildings in a given country in terms of energy consumption. It should be followed by a list of improvement measures that would allow for reaching the nZEB standard. Data on energy savings, emissions avoided, financial costs, and carbon footprint of a renovation should be also available. Using these results, the Financial App should suggest an optimal financing plan, i.e. combination of using own funds, credit/loans, subsidies, ESCO and PPP. Database of best practices should allow for getting more information about innovative solutions that have been successfully implemented in other public building in the Central Europe region.

Pilots have taken place in 6 countries: Croatia, Czech Republic, Hungary, Italy, Poland, and Slovenia. 8 schools from each country have been involved. In each school three different functional zones were targeted: classroom, sport hall, and canteen. Pilot consisted of the following activities:

1. Data collection - preliminary data, such as historical energy consumption and building technical schemes, have been collected.
2. On site energy audits - pilot schools have been visited and energy audits have been conducted. As a result, reports describing building energy performance have been drafted.
3. Improvement options - based on on-site energy audits results, energy efficiency measures have been proposed so that nZEB standard could be reached.
4. Optimal financing schemes - using the Financial App, plans of financing the renovation measures have been proposed.
5. Carbon footprint of restoration - using the ERE App, the improvement of building carbon footprint has been calculated.
6. Open lessons for behavioural change of school staff and students - in each school participating in the project lessons activating energy saving behaviour have been organised. Lessons targeted students, teachers and technical staff.
7. Improvement and validation of the apps - results of the ERE App and Financial App have been compared with results of on-site audits, so that Apps could be improved.

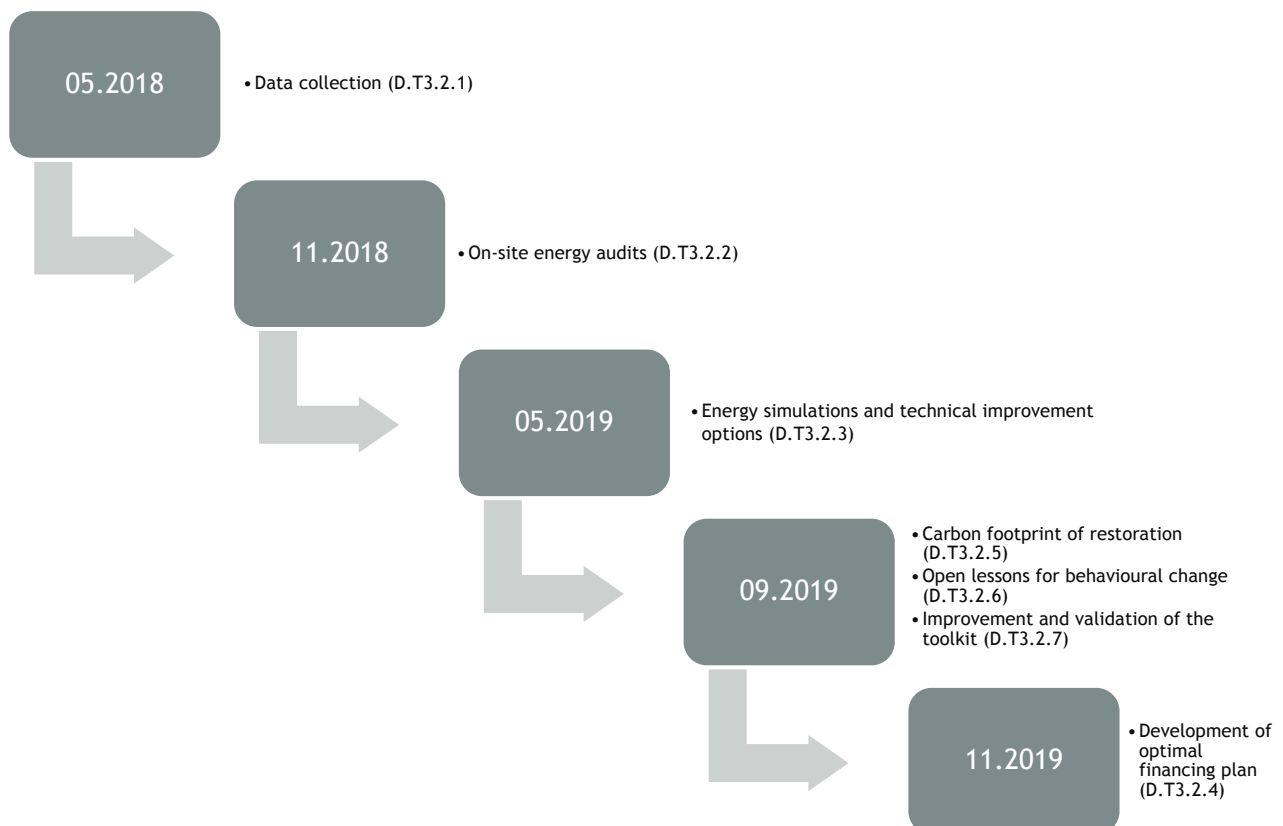


The aim of activities 1-3 was to collect on-site data and perform calculation using traditional energy auditing approach usually used in a given country. Results got in this process have been considered then as a reference level for apps validation and improvement within activity 7. When developed, ERE App was used for development of financing plan (activity 4) and carbon footprint calculations (activity 5).

1.2. Schools selected for pilot activities

School ID	Building name	Street, number, city and postcode
IT_06	CARDUCCI	via Dante, 3/5, Bologna, 40125
IT_07	FERRARI	via Cesare Pavese, 15, Bologna, 40141
IT_08	ZANOTTI	via Del Giacinto, 39, Bologna, 40133

1.3. Pilot timeline





1.4. Partners involved in Pilots

- > **Partner name: ENEA**
 - Country: ITALY
 - Partner type: technical/institutional
 - Partner description: technical partner coordinating Pilots and supervising work done by the subcontractor. ENEA is the National Agency for New Technologies, Energy and Sustainable Economic Development, a public body aimed at research, technological innovation and the provision of advanced services to enterprises, public administration and citizens in the sectors of energy, the environment and sustainable economic development. ENEAS is divided in Department involved in different sectors. DUEE and SSPT Departments are involved in FEEDSCHOOLS project and main fields of experience of these two Departments are sustainable energy, energy efficiency and environmental sustainability. Since its foundation in the 1960s, ENEA's strengths have been applied research, technology transfer and technical-scientific support to companies, associations, territories, central and local administrations: for this reason - unlike other research institutions - the Agency depends on the Ministry of Economic Development. DUEE (Energy Efficiency Unit Department) of ENEA is the Agency for Energy Efficiency, established by the Italian legislative decree n° 115 of 30th May 2008, as transposition of directive 2006/32/EC on energy end-use efficiency and energy services and repealing Council Directive 93/76/EEC, which offers technical and scientific support to companies, supports the public administration in the preparation, implementation and control of national energy policies, and promotes training and information campaigns for the dissemination of energy efficiency culture.
 - Main role and duties in Pilots: : technical partner coordinating Pilots in Bologna and supervising work done by the subcontractor. Lead partner of the project managing all activities.
- > **External Energy Expert - Arch. Giovanni Margareci**
 - Country: Italy
 - Partner type: external
 - Partner description: Technical professional (energy auditor), providing professional assistance and expertise in the field of energy auditing and energy efficiency improvement of buildings, factories and processes.
 - Main role and duties in Pilots: subcontractor responsible for audit conducting.

2. Pilot evaluation

2.1. Pilot implementation

- 1) Which part(s) of the pilot did go well? Which could be improved?

The application of the FEEDSCHOOLS methodology developed by the project has led to good results allowing for an in-depth analysis of the three school buildings. It was possible to evaluate energy consumption, to define energy structures and systems very precisely and, consequently, to identify needs with the aim of hypothesising targeted improvement actions.

Certainly to be improved is the acquisition of historical consumption data (both electrical and thermal). It has not always been possible to find the data of the last three years and this can create



difficulties for energy analysis because there is no important information relating to how consumption changes according to specific boundary conditions.

- 2) What advantages and disadvantages do you find of FEEDCHOOOLS approach, compared to other energy efficiency programmes?

The approach used in FEEDSCHOOLS project and pilot actions is very similar to what we normally use in our energy analysis activities. The common approach helps to better understand common points and differences regarding the situation of individual countries.

The shared approach in the project has as main objective the standardization of the methodology in all Europe. This approach cannot have disadvantages or downsides.

- 3) Which of the seven pilot activities do you consider as the strongest? Which one the weakest?

Phases 3 and 6 are definitely the strongest ones as they allow you to know the real condition of the buildings and to find the most suitable solutions to improve them from an energy point of view. In addition, this is done by evaluating also the most effective financial mechanisms.

Phase 6 must certainly be improved as it acquires a sense when it is applied on a large scale. Knowledge by users and by those who implement improvement actions is essential because improvement actions become effective only if accompanied by an integrated behavioral change

- 4) What were main difficulties with the pilot implementation?

There are three main difficulties in implementing the pilot:

- a) the definition of nZEB is not common in all countries and this creates confusion in the technicians and difficulties in comparing the energy conditions of the school buildings of the different countries;
- b) as already highlighted, it is difficult to find certain consumption data and for a continuous period. The technical standards require at least 3 years of historical consumption and this is useful to verify how the conditions vary with the variation of some contour parameters such as the external climatic conditions or the number of pupils or with varying the fuel used. In our pilots it was not always possible to find these data completely and this forced the technicians to make assumptions based on other information found by the users of the school;
- c) the energy analysis is carried out for three different areas (classes, canteen and gym) but there are no separate electrical panels or thermal collectors therefore it is difficult to proceed with a correct breakdown of consumption for the individual areas and it was necessary to proceed by making physical-technical assessments calculation and not real based on consumption

- 5) Are there any elements of the pilot that in your opinion should be avoided in the future?

More than avoiding some aspects, it is necessary to improve some elements, one in particular: the analysis involved the study of classes, refectory and gym but as it was not possible to divide the building into thermal zones, perhaps it would have been better to analyse energetically the building as a single complex structure.

2.2. Relevance

- 1) Did the pilot action test procedures, instruments and ways of co-operation, that may become part of standard tools and instruments for energy performance improvements of school buildings towards nZEB standard in Central Europe ? Which ones in particular?



The standardized methodology can pave the way for a common application of energy audits in Europe. All states apply similar and all valid methodologies, but standardizing them could help the European Community in the decision-making process to effectively evaluate and compare the needs of the various Countries by better addressing the available resources.

Even the application of the tool on a large scale at European level (perhaps adding other countries to the current webtool) can help standardize the initial energy analysis that allows evaluating the school building needs about a thorough energy audit.

A further possibility that opens up thanks to the results of the project is regarding the standardization of nZEB definition. Thanks to the critical issues identified, in fact, the revision of the current directive could be proposed at European level by identifying common standards regarding the nZEB requirements.

- 2) Did the pilot action have a clear European dimension in terms of its implementation?

FEEDSCHOOLS project was applied with pilot actions in in 6 European countries (Croatia, Czech Republic, Hungary, Italy, Poland, and Slovenia) for a total of 48 pilots involved. Municipality, local authorities, school managers, and sectoral agencies have been involved in the working groups in each country. All these actions indicate that the project has reached a European dimension and can further expand its range in the coming months of activity.

A further element of transnationality and wide impact of the project is the review of the pilot actions: the evaluation was done by transnational visits and a transnational expert team peer review which allowed a constructive comparison between technicians from all FEEDSCHOOLS partner Countries.

- 3) What was the local stakeholder engagement?

The project involved Municipalities, Regions, Provinces, principals, energy agencies, school stakeholders and national representatives of the Covenant of Mayors. This made it possible to analyse the real needs of Italian school buildings. Furthermore, through the open lessons, students and teachers were also involved: these stakeholders are very important as they are those who can mainly indicate the needs of users related to the use of the building

- 4) Did the pilot action reflect societal, scientific and/or economic needs, calling for an integrative, coordinated approach? Which ones in particular?

The pilot has been useful to identify common needs of different countries. Through a specific integrated analysis have emerged similar needs:

- a. need for standardised nZEB requirements
- b. need for skills (human resources) that integrate technical and financial aspects both within schools and the Municipalities
- c. need to make paperwork for access to incentive mechanisms and tenders less bureaucratic

2.3. Transnational added value

- 1) Did the pilot action address an issue that clearly profits from a transnational approach, as compared to national actions?

The approach followed to standardize and use a common analysis methodology is certainly a winning point of the project. The analyses carried out can bring useful suggestions in the European context regarding the review of the current directives allowing the standardization of the definition nZEB.



- 2) Did the pilot action contribute to avoiding duplication at the national, and creating critical mass at the Central European level?

The innovative methodology developed in FEEDSCHOOLS project is going to lead to new policies and strategies that were initially validated in a local context and then will be shared among partners and disseminated to national authorities and policy makers, to be dealt with in an integrated taking into account the different national needs but with a single common goal: the energy efficiency of school buildings in an nZEB class. Transnational cooperation in this field is pivotal for conceiving relevant strategies and action plans and reaching the critical mass and the links useful for the economies of scale.

- 3) Did the pilot action explore and/or utilize supranational synergies and complementarities? Which ones in particular?

The supranational synergy most explored within the project was the collaboration with the national leaders of the Covenant of Mayors (CoM). It is the world's largest movement of cities for climate and energy actions and the signatories of the Pact undertake to adopt an integrated approach to mitigation and adaptation to climate change.

Synergies with the CoM is of great importance because it can support the project on several aspects:

- a) disseminate the results on a national scale by pushing their use by the Municipalities in the drafting of the SEAPs
- b) to disseminate the results and considerations that emerged from the project in the European context in order to get the criticalities that have emerged and push for a review of the current standard
- c) Support the project for the large-scale application of the developed tools

2.4. Impact

- 1) Did the pilot action impact on societal, economic, scientific, technological and/or political drivers of importance to the goals and objectives of the Energy Performance of Buildings Directive? Which ones in particular?

The pilot actions had important implications on the national territory as some schools were facilitated in the participation in regional POR-FESR calls. Further positive impact was given to the application of the EPBD and to the requalification in the nZEB class, in fact, many decision-makers had clearer information and understood that, in Italy, it is possible to fully cover the requalification expenses by taking advantage of national incentives (Thermal Account which covers 65% of non-repayable expenses) and regional (POR-FESR calls which cover 35% of non-repayable expenses).

- 2) Did the pilot action establish structures or processes that facilitate future collaboration of partners in Central Europe? Which ones in particular?

The main process launched is synergy with CoM. The European Commission recognizes the National Covenant Coordinators as important allies to support the signatories of the Covenant of Mayors in achieving their goals and to increase the impact of the Covenant. In Italy this role is covered by ENEA and this gives an important added value to the FEEDSCHOOLS project.

Similarly, relationships of mutual trust were born with the project partners which could be useful for future joint actions in the European context.

- 3) Can the improvement options recommended in the pilot action be conducted with the current capacities and resources of the local stakeholders?

In Italy it is possible using Thermal Account and POR-FESR tenders.



The Thermal Account encourages interventions for the increase of energy efficiency and the production of thermal energy from renewable sources for small plants. The beneficiaries are mainly public administrations. Thanks to the Thermal Account it is possible to refurbish buildings to improve their energy performance, thereby reducing consumption costs and quickly recovering part of the expenditure incurred. The percentages of non-refundable incentives vary according to the implemented improvement actions. For the refurbishment of school buildings in nZEB class, the Thermal Account returns 65% of the non-repayable investment.

The POR-FESR calls are funds for regional development with a line dedicated to the efficiency of public buildings and provide for a non-refundable loan of 35%.

POR-FESR and Thermal Account tenders can be combined for public administration

- 4) Has the pilot action delivered tangible outcomes for local stakeholders? Which ones in particular?

Many Municipalities are interested in the results of the project and ask for more information on the use of the tool to make decisions on refurbishment.

The Italian CoM is preparing a platform with various tools useful to end users (private and public administration) and asks to be able to use the FEEDSCHOOLS webtool to disseminate it to the LA.

- 5) Are the improvement options recommended in the pilot action likely to deliver outcomes in a relatively short term (< 2 years)?

No, it is impossible if our goal is to reach nZEB class.

3. Summary

The pilot action was very useful in bringing out the needs of the stakeholders but also in identifying what resources are needed to undertake a massive path to improve the school buildings energy conditions. It is clear that schools represent an element of enormous energy consumption, which often translates into waste, as energy management is not applied correctly.

The pilot action highlighted that in Italy the principals do not have the power to manage the energy improvement actions; the bodies in charge are the Municipalities and/or the Provinces that decide on the basis of annual budgets. Municipalities often do not have internal skills or enough human resources to deal with planning and finding the necessary funds. Often the excessive bureaucracy makes the municipalities desist from participating in the calls to find funding.

In Italy the State and the Regions provide funds that can fully cover the costs of energy improvement (65% fund derive from Thermal Account and 35% derive from POR-FESR call for tenders) but do not provide support for participation in calls for tenders to small Municipalities. So, absurdly, there are financial resources but there is a lack of knowledge and skills to make the best use of them.

In conclusion, it is possible to affirm that there is a strong need for support from political decision-makers so that access to finance scheme is made easier also through the support of new human resources competent in energy and economic matters.