

YENİ NESİL: Capacity Development for Future Builders

Contract Number:

TR2013/0327.05.01-02/114

Dates of Project:

15.09.2017 – 14.05.2018

Executive Summary:

Özyeğin University Center for Energy, Environment and Economy (CEEE) has developed in YENİ NESİL a number of different layers of teaching and training action items for more effective and long-lasting climate adaptation and mitigation plans in Turkey, particularly in Çekmeköy Region of Istanbul. So far, YENİ NESİL has been nominated by Türkiye İnşaat Malzemesi Sanayicileri Derneği (İMSAD; Turkish Association of Construction Material Producers) as winner of Investment Awards for the Future 2018. The main objectives of YENİ NESİL have been to train the trainers and teachers, to guide the construction sector and the municipalities on the following areas:

a. *Energy Efficiency Literacy*: raising awareness on low energy buildings, targeting a large range of citizens from different age groups and different professional background. Within the first month of the project a workshop has been organized among the members of the Governor of Istanbul, Çekmeköy Municipality and the project members; CEEE, Enerji Verimliliği ve Yönetimi Derneği (EYODER; i.e., Energy Efficiency and Management Association) and Enerji Verimliliği Derneği, İstanbul Şubesi (ENVER; i.e., Energy Efficiency Association of Turkey, Istanbul Branch). During the last two months of the project workshops have taken place both for members of the Governor of Istanbul, Çekmeköy Municipality, directors, field chiefs and teachers of Taşdelen İMKB Mesleki ve Teknik Anadolu Lisesi (1,301 students), Nesrin Uçmaklıoğlu Mesleki ve Teknik Anadolu Lisesi (598 students) and Hüseyin Avni Sipahi Mesleki ve Teknik Anadolu Lisesi (497 students).

b. *Energy Efficiency Infrastructure*: detailed monitoring and studying of energy performance of three educational buildings. The data collected from these activities have been compared with the data CEEE has collected previously. All data have been analysed and a road map has been created in the light of the outcomes, besides guidelines per beneficiary.

c. *Energy Efficiency Impact*: The guidelines prepared for the Governor of Istanbul and Çekmeköy Municipality have had the intention of affecting the works on setting standards and parameters of zoning legislation and upgrading daily construction habits. The positive effect on zoning plans are to be recognized by the other municipalities through networks and sharing common interests. The trainers of the vocational schools are going to train the 2,396 technical students in the schools, who very soon will be professionals in the sector, pioneering energy efficiency practice in their works.

Overall, YENİ NESİL contributes to low carbon urbanisation planning and/or implementing greenhouse gas mitigation activities; promoting efficiency and productivity by dissemination of realized best practices from FP7 and H2020 projects and is now followed and disseminated to ten cities in Southeast Turkey (Adıyaman, Batman, Diyarbakır, Gaziantep, Kahramanmaraş, Kilis, Mardin, Siirt, Şanlıurfa and Şırnak) at the first phase and to three countries in Africa (Tunisia, Mauritania and Niger) with the Islamic Development Bank (IsDB) funded NEXT-GEN project.

YENİ NESİL has major outcomes. First of all, CEEE has developed an *Energy Efficiency Module*. All works have been carried out in collaboration with the directors of Taşdelen İMKB Mesleki ve Teknik Anadolu Lisesi, Nesrin Uçmaklıoğlu Mesleki ve Teknik Anadolu Lisesi and Hüseyin Avni Sipahi Mesleki ve Teknik Anadolu Lisesi. Energy Efficiency Module of YENİ NESİL has been developed in line with MEGEP curriculum. The Vocational Education and Training System Strengthening Project (Mesleki Eğitim ve Öğretim Sistemini Güçlendirme Projesi / MEGEP) has been implemented in the schools in Turkey since 2005 and has been supported by the European Union (EU). Along with MEGEP, the 9th grade in schools has been accepted as common grade in all high schools and the same courses are in the curriculum for all schools. Vocational high school students take vocational courses in 10th grade and they continue their education by selecting branch courses at 11th grade. In addition, all students of the vocational schools graduate after completing the 12th grade. So, YENİ NESİL fits best to the scope of 9th grades.

The Energy Efficiency Module of YENİ NESİL consists of 14 hours theoretical training, 12 hours implementation and 14 hours individual training. The breakdown of the theoretical training is as follows: Introduction, Building Envelope, Heating, Cooling and Air Conditioning, Lighting, Control Systems, ICT and Renewable Energy Sources.

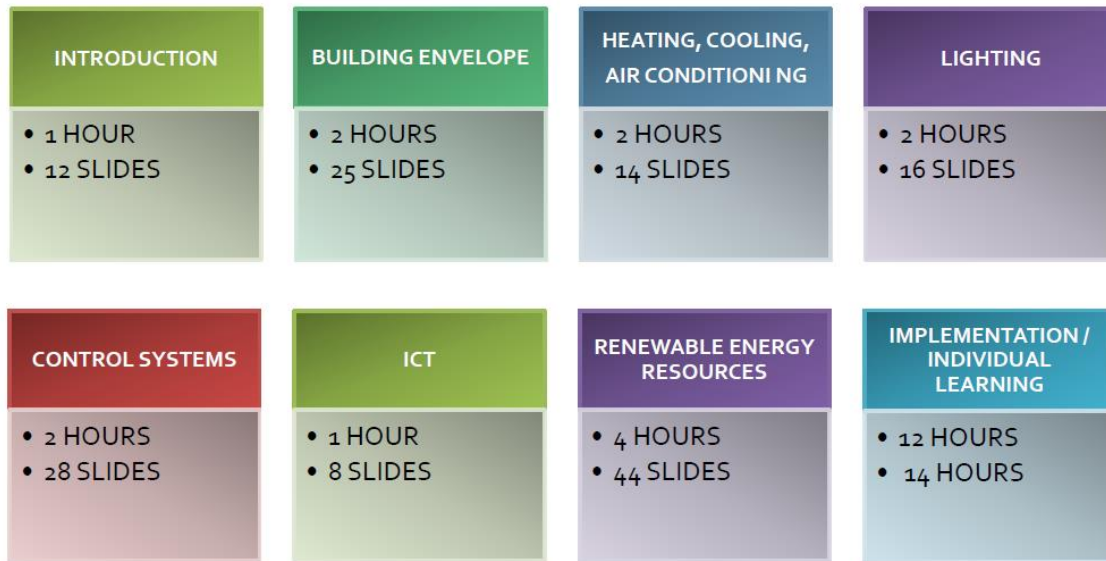


Figure 1 : Breakdown of the theoretical training

Secondly, CEEE has developed a *roadmap for energy efficient renovation for public school buildings*. In order to achieve this, CEEE performed long term energy monitoring during 15 November 2017 and 15 March 2018, besides energy audits in three schools have taken place.

The natural gas and electricity bills of the three vocational and technical schools have been collected for the years 2014, 2015, 2016 and 2017. For each demo site, a monitoring plan has been considered detailing the long-term parameters that will be continuously measured and monitored even after the project is completed. This is enabling the management of the schools to closely assess the building conditions and characteristics. These long term measurements have been complemented with short term measurements in order to gather information to check the appropriate performance of the buildings and give suggestions to improve them.

In Tables 3 and 4 definitions “basic” refer to activities taken place in three vocational and technical schools and definitions “extended” refer to activities taken place in three vocational and technical schools and two faculty buildings in Özyeğin University Campus.

Table 1 : Overview of Measuring Parameters for Long Term Measuring

	MEASURING PARAMETER	BASIC	EXTENDED
1	Space heating (direct)	X	
2	Space cooling	X	
3	Ventilation		X
4	Energy for air movement (fans)		X
5	Lighting	X	
6	Room temperature	X	
7	Room relative humidity	X	
8	Outdoor climate		X
9	RES production		X

Table 2 : Overview of Measuring Parameters for Short Term Measuring

	MEASURING PARAMETER	BASIC	EXTENDED
1	Air tightness building envelope		X
2	Insulation quality		X
3	Ventilation flows	X	
4	Building relative humidity		X
5	Light quality	X	
6	Thermal comfort	X	
7	Air quality		X

A detailed Return on Investment (ROI) presentation, indicating the relevance with National Energy Efficiency Action Plan (NEEAP) 2017-2023, has been submitted to the Ministry of Energy and Natural Resources. CEEE carried out a workshop with the Çekmeköy Municipality Zoning Directorate personnel and Technical Works Directorate personnel in Çekmeköy Municipality Building on 25 April 2018. CEEE collected and analysed the outcomes of the workshop and came up with the following process: Every five years, both the municipalities and the directorates of Ministry of National Education prepare and implement their 5 years strategic planning. Furthermore, the municipalities conduct their works on maintenance and repair in line with Municipality Law, numbered 5393 and dated 7 March 2005. The 5 year strategic plans are prepared within the first six months after the elections and start to be implemented right after sixth month. CEEE suggests a *joint decision and implementation process* among the two establishment for amalgamating the energy efficiency suggestions with the annual repair and renovation requests of the schools, in district level. The process flow is described down below:

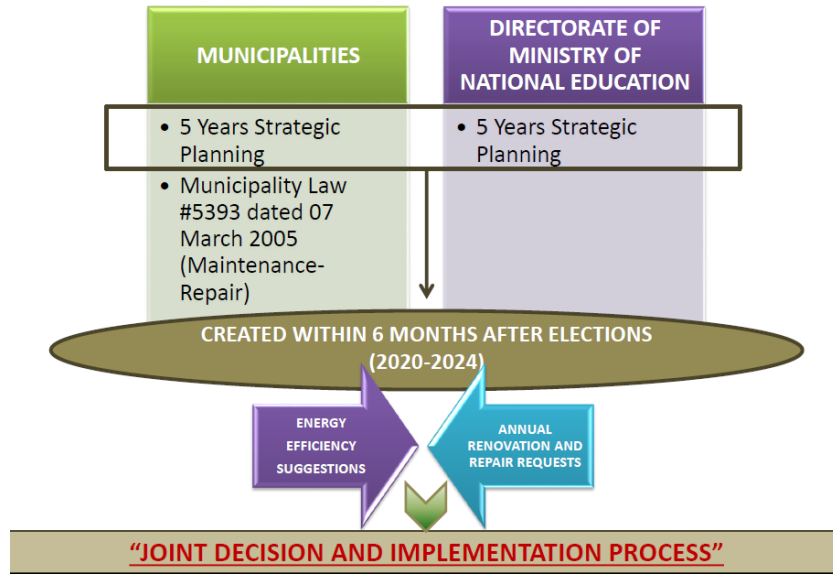


Figure 2 : The process flow of joint decision and implementation between municipalities and directorates of Ministry of National Education

An *Energy Efficient Renovation and Maintenance Catalogue* has been prepared in collaboration with the Çekmeköy Municipality Zoning Directorate personnel and Technical Works Directorate personnel. The 6-page user-friendly catalogue has been submitted to the municipality to distribute to the citizens, visiting the municipality.

www.yeninesilinsaatcilar.com is another important outcome of the project, for disseminating the project outcomes. Today, CEEE is a member of the Committee for Awareness-raising and Training on Energy Efficiency of the Ministry of Energy and Natural Resources, at which high level representatives of different ministries are taking part, which may enable to enforce the legislation beyond expectations indicated in YENİ NESİL.