National Readiness Report: Turkey

June 2020

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 840926
About CEDBIK

Turkish Green Building Council (CEDBIK) started its activities in 2007 with its 25 founding members. The main establishment objectives of CEDBIK can be listed as ensuring the development of the building sector in the light of sustainability principles, ensuring the spread of environmentally friendly green buildings, and raising social awareness. CEDBIK organizes introduction and technical training regarding some of the international green building certification systems that are widely used throughout the world. CEDBIK has also developed B.E.S.T (Ecological and Sustainable Design in Buildings) Residential Certification system, which can be implemented for new residential projects in Turkey.

The BUILD UPON² Project

We are in a state of climate emergency. We must act now to reach net zero carbon by 2050 - and cities can lead the way. To get there, cities must unlock the huge potential of their buildings - and building renovation in particular.

Deep building renovation has far-reaching benefits for society as increasing indoor comfort and air quality avoids illnesses and premature deaths associated with living in cold and damp homes. This in turn reduces pressure on healthcare and social services.

The EU Horizon 2020 funded BUILD UPON² project will empower cities across Europe to join forces with national governments and industry to decarbonise their existing building stock by 2050. BUILD UPON² will strengthen the local effectiveness and implementation of the national building renovation strategies required by the EU Energy Performance of Buildings Directive (EPBD).

www.worldgbc.org/build-upon
"Eskişehir Metropolitan Municipality considers the urgent need for sustainable energy and climate strategies through urban renovation attempts. Build Upon offers partner cities a new platform to see the variety and the potential common goals to build resilient strategies for the endless renovation process."

- HALE KARGIN KAYNAK
Head of Social Services Department Eskişehir Metropolitan Municipality

The critical question we answer today is: “How do we convert the existing stock of business-as-usual buildings to green buildings through retrofit?” Creating green buildings through retrofitting is the low cost, high volume solution to climate change.

Dr. DUYGU ERTEN, P.E.
President of the Board - Turkeco
Contents

List of Acronyms 6

Executive Summary 7

Introduction 8-11

Challenges & Opportunities 12-17

Supporting Actions Needed 18-23

Appendix 1: Build Upon² Draft Framework V.3 24-27

May 2020’s Workshop: List of Participants 28-29
Europe's cities are declaring climate emergencies.

Build Upon² helps cities lead the charge towards net zero carbon by 2050 by unlocking the huge potential of buildings - developing strategies and solutions to scale up energy efficient building renovation.
LIST OF Acronyms

CoM: Covenant of Mayors

SECAP: Sustainable Energy and Climate Action Plan

BEP: Building Energy Performance Regulation

EPC: Energy Performance Certificate

MoEU: Ministry of Environment and Urbanization

MENR: Ministry of Energy and Natural Resources
Executive Summary
Workshop Key Outcomes

The key outcomes of the workshop are such as there seems a lack of coordination between metropolitan and district municipalities, having little knowledge of SECAP process and lack of data related to building renovation. The starting point to capture the related data on indicators might be EPCs.

Potential main challenges while implementing the framework can be listed as below:
- Limited authorization of Municipalities on Renovation
  Although renovation starts with cities, most of the studies and work flow are carried at the national level.
- Delay of BEP By-Law compliance process for existing buildings
  According to the BEP, existing buildings had to obtain an EPC legally in Turkey, but there are still problems with receiving EPCs of existing buildings.
- Lack of data on existing building stock
  it is crucial to create a building inventory that will cover all existing buildings. Renovation works carried out without obtaining a permit is one of the main problems.
- The limited workforce of municipalities and Little knowledge on SECAP
INTRODUCTION

Build Upon² is the world’s largest collaborative project on building renovation. It is Europe’s foremost effort to establish a framework for national renovation strategies and build the commitment of local governments and companies to net zero emission buildings by 2050.

To achieve this objective, the project will work with cities, including Covenant of Mayors signatory cities, national governments and a wide range of key stakeholders to develop and test a Multi-Level Energy Renovation Impact Framework (the ‘Framework’). The framework will contain a suite of milestones and measurable progress indicators for building renovation strategies, integrating data and insights from the local authority level. This in turn will allow local authorities and central government to assess the impact of local energy renovation initiatives and better identify best practice. The framework will also serve as a tool for municipalities in delivering the Energy Performance of Building Directive and ensure that local initiatives are aligned with national and European policies.

To make it easier for cities, the framework will be integrated into Sustainable Energy and Climate Action Plans, prepared by Covenant of Mayors municipalities.

Framework Objectives

<table>
<thead>
<tr>
<th>Better align local and national government retrofit initiatives.</th>
<th>Enable the capturing of sound data and knowledge at the local level.</th>
<th>Better capture and use data on the co-benefits of energy renovation.</th>
</tr>
</thead>
</table>
BUILD UPON² in Turkey

In Turkey, CEDBIK work in close cooperation with Eskisehir, and three “follower” municipalities. These are Sakarya, Bursa, Izmir.

In Europe, CEDBIK and Eskisehir work closely with 7 other green building councils and cities, alongside the Building Performance Institute of Europe and Climate Alliance, part of the Covenant of Mayors’ office team.

The project partners are supported by a European advisory board and eight national steering groups, which have provided feedback on the first two versions of the framework.

Turkey National Steering Group

CEPHEDER
Aylin Kalav

SHURA
Değer Saygın

MEDIPOL UNI.
Duygu Erten

IZODER
Güneş Kocaoğlan
Yüzüğür

WRI
Meltem Bayraktar

IBB
Meryem Kayan

OZYEGIN UNI.
Neşe Ganiş Sağlık

ETKB
Oğuz Kürşat Kabakçı

EBB
Özgün Çalışkan

IZODER
Timur Diz

ETKB
Ümit Çalışkoğlu

MoEU
Yeliz Tanış
The versions 1, 2 and 3 of the draft Framework were developed by the project partners in close cooperation with the European Advisory Board and the eight national steering groups. The objective of the workshop organised on [add date of the workshop in your country] was to gather feedback.

1 The 8 pilot cities are Budaörs - Hungary, Dublin - Ireland, Eskişehir - Turkey, Leeds - UK, Padova - Italy, Valladolid - Spain, Velika Gorica - Croatia, and Wroclaw - Poland.
on the third draft version of the framework and to discuss actions required to support its implementation. The [add GBC name] team would like to thank all the participants who attended and contributed to the workshop. These are listed on page [add page number of the list of participants].

Seven similar workshops took place across Europe in May 2020. The feedback received will be used to update the draft Framework V.3. before it is tested by the 8 pilot cities between July and December 2020.
Challenges & Opportunities
The National Energy Efficiency Action plan (NEEAP), released in 2018, has been an essential step in energy efficiency by defining 12 different actions in the buildings sector. It may be an opportunity for the indicators defined in the Framework to be compatible with these indicators. The Framework will serve as a bridge for local and national authorities to work together.

EPCs and BEP-TR database can be a starting point on gathering the data. There are doubts about BEP-TR data being sufficient to see the whole picture on renovation. BEP-TR is the National Calculation Methodology and software for Building Energy Performance in Turkey.

"#private households retrofitting their homes annually" indicator is useful, but it may be difficult to capture due to the buildings that have not applied to a permit at the renovation process.

Energy poverty is a new term in Turkey. Roadmaps/Policies have not yet available on this subject.

There are doubts about how the private annual investments in renovation would be captured. On the other hand, a monitoring methodology is available for public investments and energy renovation upskilling trainings.
Making the Framework More Useful

The objective of the first session was to collect feedback on the draft Framework V.3., specifically in relation to the challenges and opportunities presented by its implementation in Turkey. During that session, participants worked together on how to make the Framework more useful, and how to improve environmental, social, and economic indicators. The group discussions are summarised below.

Collaboration with district municipalities is very crucial for the implementation of the Framework.

Ministries and municipalities should come together and get to know the framework, and seminars could be done to introduce the framework and make it more understandable.

Data gathering will be the most challenging part. District municipalities should support data gathering, and keep informed metropolitan municipalities on their current SECAP process. BEP-TR database would be accessible for local authorities, or an alternative database should be created.

At local level, working time to dedicate to data collection and data entering should be taken into account.

**What will it take for your organisation to use the framework?**

Collaboration with district municipality implementation of the Framework.
Environmental Indicators

Participants were asked to categorize all environmental indicators regarding their uses and usefulness:

**Easy to use and highly useful indicators:** Annual renovation rate, % total floor area of public buildings retrofitted each year, % renovated building reaching nZEB standard annually.

**Highly useful but difficult to use indicators:** Improvement of Net Space heating & Cooling Demand due to energy renovation, Reduction in direct annual CO2 emissions from renovation, Total additional energy produced from renewable resources on site/nearby as result of renovation.

The reasons participants found these indicators difficult to use are lack of data on buildings and EPC documents on both national and local level and difficulty in accessing the related data at the municipal level.

Collaboration with district municipalities is very crucial for the implementation of the Framework.

National Readiness Report: Turkey
Social Indicators

Participants were asked to categorize all social indicators regarding their uses and usefulness.

**Easy to use and highly useful indicators:** Improving average thermal comfort: # households living in renovated dwellings where actions have been taken to minimise overheating risks, # non-residential renovated buildings where actions have been taken to minimise summer overheating risk.

Participants suggested: the indicator should not focus only on the summer overheating risk. # non-residential renovated buildings where actions have been taken to maximize thermal comfort.

**Highly useful but difficult to use indicators:** Raising awareness: # private households retrofitting their homes annually, # sq. m² commercial buildings retrofitted annually, Improving IAQ: # residential and non-residential renovated buildings with a commissioned ventilation system.

The reason participants found improving IAQ indicators challenging to use is the fact that the number of houses working with a ventilation system in non-metropolitan cities is almost none.

**Difficult to use and not useful indicators:** Reducing energy poverty: % of households having arrears on utility bills.

At the national level, policy improvements needed to encourage citizens to renovate.
Economic Indicators

Participants were asked to categorize all economic indicators regarding their uses and usefulness.

**Easy to use and highly useful indicators:** Total annual public investment in renovation, # building professionals and construction workers taking part in energy renovation upskilling, # Public sector staff upskilling in energy renovation.

**Highly useful but difficult to use indicators:** Total annual private investment in renovation, Total annual investment in renovation, # graduates from 3rd level courses and technical training courses with focus on energy renovation, # companies involved in energy renovation.

The reason participants found “private investment in renovation” indicator challenging to use is the fact that a high percentage of renovation work carried out without obtaining a permit, which is challenging in tracking the data. Buildings subject to renovation must fulfill all requirements on statics, earthquake, acoustics, and fire apart from energy efficiency. That is why most of the household avoid obtaining a permit. At the national level, Policy improvements and incentives are needed to encourage citizens to renovate and register their houses. Participants thought here if the loans given by private banks for renovation purposes could help to gather the data.
Making the Framework Work In Turkey

Supporting Actions Needed
The following measures and actions to support the implementation of the Framework were highlighted.

- Involve district municipalities at the implementation phase and ensure they collaborated with metropolitan municipalities because of the building permit managed and granted by district municipalities.

- The EPC and the building permit processes are interconnected because getting a building permit requires the submission of the EPC document to the municipality.

- Explore the current building permit process managed by district municipalities and query for digital database availability. Improve internal policy to adopt a digitalized database.

- Explore the SECAP process for pilot city and designate compliant indicators with the Framework.

- For an existing building, the degree of renovation can be commented by looking at its year and class from the BEP-TR database. An extra study is required to do this.

- For some indicators, a clear target should be determined according to recent years, and then a comparison should be made accordingly.

- Education improvement and cooperation of authorized people from local and national governments and increase of initiatives and financial support mechanisms for renovation.

- An intensive policy/incentives are needed for renovation and increasing the awareness related to this.
Environmental Indicators

Participants were asked how to capture data on environmental indicators.

**Reduction in direct annual CO2 emissions from renovation (Tons of CO2/year):**

**Reduction of final energy consumption from renovation (kWh/m²/year):**

**Improvement of the net demand for heating and cooling due to energy renovation (kWh/m²/year):**

**Total additional energy produced from renewable resources on site or nearby as a result of renovation (kWh/year):**

- Buildings’ EPC records and building permits seem essential to capture related data on these indicators. According to the BEP, existing buildings had to obtain an EPC by 2017 legally in Turkey, but this postponed to 2020. In 2020, there are still problems with receiving EPCs of existing buildings.

Existing buildings (built in 2011 and after) have an EPC and thus CO2 emissions values. Although the number of buildings having EPC is quite low, to compare the CO2 emission of the buildings after the renovation, a comparison will be made by taking the building’s renovation date as a reference. Studies on the subject have started by the MoEU.

Since the municipalities do not have direct access to BEP-TR database, the indicators will be challenging to use. CoM signatory cities may specific actions on building renovation. In any case, a useful and digitalized database is needed to track the data at the local level.

Recommendation for choosing a pilot building: Efficiency comparison is possible by making measurements pre and post-renovation. Comparing the renovated building will give more accurate results. Since cumulative values cannot accurately reflect the actual data, choosing a pilot building to test the Framework may help.

**Annual renovation rate, % total floor area of public buildings retrofitted each year**

BEP-TR database does not include this data directly. However, the data can be calculated by obtaining information from the database. Also, some National and International Projects’ databases such as the KABEV may help to reach the data. (KABEV: Energy-efficient renovation program for public buildings funded by IBRD)

% of renovated buildings reaching nZEB standard annually: nZEB does not have a defined standard in Turkey but will be described within 2-3 months.

---

**Not available at this time. But the MoEU will provide the results in the coming months.**

**% of renovated buildings reaching nZEB standard annually**

---

**Final energy consumption reduction from renovation (kWh/m²/year)**

---

**Improvement of Net Space Heating & Cooling Demand due to energy renovation (kWh/m²/yr)**

---

**Total annual energy renovation rate %** (%based on dwellings - % based on sq. m² renovated)

---

**Reduction in direct annual CO2 emissions from renovation (Ton CO2/ year)**

---

**EPC Database: BEP-TR**

---

**Building permits: District Municipalities**

---

**% of the total floor area of buildings owned and occupied by the municipality retrofitted each year - % of total m² net floor area**

---

**Data is available: extra work is needed to gather the whole information**

---

**Accessible through EPCs: Extra work is needed.**
Social Indicators

Participants were asked how to capture data on social indicators.

Energy poverty: % households with arrears in payment of utility bill

The data collected by various electricity transmission companies. Capturing the cumulative data would be difficult since there are lots of transmission companies in each region. It should be noted the term “energy poverty” is a new term in Turkey. At local level, some municipalities provide fuel allowance to some households in line with their needs. Accessing this data is possible, but it is needed to check if there is a database.

IAQ - Ventilation systems

BEP-TR database has information regarding HVAC, and the data for the “improving IAQ” indicator can be captured, but it should be taken into consideration that mechanical ventilation systems are not very common for residential in Turkey.

Thermal Comfort – Satisfying heating requirements & Minimising summer overheating risks

One participant felt that the indicator seems to be evaluated only according to the temperature of the indoor environment, not include other factors. It is not guiding as it is because of depending on perception. The measurement should be based on calculation or survey.

Participants suggested: the indicator should not focus only on the summer overheating risk. More comprehensive definition would be made. # residential/non-residential renovated buildings where actions have been taken to maximize thermal comfort.

Raising awareness: #private households retrofitting their homes annually:

Even if a building renovated, the work done without any records/permit will create uncertainty. Instead, they said it would be easier to periodically track the number of buildings with EPC C or above class.

At the national level, arrangements should be in place to encourage citizens for renovation and increase awareness. We can reach precise information such as the number of applications, with regulations that will facilitate obtaining the building permit.
Economic Indicators

Participants were asked how to capture data on economic indicators.

**Total annual investment in renovation**

For P and SH, Strategy and Budget Directorate declares public investments in the investment program report yearly. Local authorities have information on their direct investment in the renovation. The annual public investment in the renovation is accessible and easy to measure. On the other hand, private investments are difficult to capture on a household basis. Energy Efficiency consulting firms may have data. The participants questioned the scope of private investments.

**# Companies involved in energy renovation**

To carry out energy efficiency services, MENR gives authorization to Energy Efficiency Consulting Companies (EEC) and publish these companies through a database yearly.

**# of building professionals and construction workers taking part in energy renovation upskilling annually**

MENR monitors the data related to the number of building professionals taking part in energy renovation upskilling annually. However, it may be challenging to reach professionals and construction workers working on energy renovation for residential buildings. At this point, support is needed from Ministry of Education -Vocational and Technical Education General Directorate and professional chambers. At the local level, municipalities have data of trained staff and type of training.

**# graduates from 3rd level courses and technical training courses with focus on energy renovation**

Energy efficiency trainings carried out by the MENR within the scope of training-audit activities are presented in the annual reports and published on its website. Additional information can be obtained from the professional chambers and the Ministry of Education. A database containing cumulative data is needed.
Build Upon² will play a key role in tackling one of Europe's biggest climate challenges, the renovation of its existing building stock. The Framework will effectively measure the environmental, social and economic impact of deep building renovation at local authority level.
Appendix 1. Build Upon² Draft Framework V.3
<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>GOAL</th>
<th>NATIONAL</th>
<th>MUNICIPAL</th>
<th>Unit of Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental</td>
<td>Contribute to EU Targets</td>
<td>Greenhouse gas emission reduction: 50% by 2030 compared with 1990 level and carbon neutrality by 2050</td>
<td>Reduction in direct annual CO2 emissions from renovation compared to 1990 levels</td>
<td>&gt; Ton CO2/ year (total building stock) &gt; Breakdown by building type from total number (%)</td>
</tr>
<tr>
<td>Environmental</td>
<td>Final energy consumption reduction from renovation</td>
<td>Final energy consumption reduction from renovation</td>
<td>Improvement of Net Space Heating &amp; Cooling Demand due to energy renovation</td>
<td>kWh/m²/year</td>
</tr>
<tr>
<td>Environmental</td>
<td>At least 32.5% improvement in energy efficiency by 2030 - relative to the 2007 modelling projections for 2030.</td>
<td>Improvement of Net Space Heating &amp; Cooling Demand due to energy renovation</td>
<td>Total annual energy renovation rate % &gt; Of which light renovation &gt; of which medium renovation &gt; of which deep renovation</td>
<td>kWh/m²/yr (total building stock) &gt; kWh/m²/yr (for each building type)</td>
</tr>
<tr>
<td>Environmental</td>
<td>Total additional energy produced from renewable resources on site or nearby as a result of renovation</td>
<td>% of renovated buildings reaching nZEB standard annually</td>
<td>% of renovated buildings reaching nZEB standard annually</td>
<td>% of renovated buildings</td>
</tr>
<tr>
<td>Environmental</td>
<td>% of the total floor area of buildings owned and occupied by central government retrofitted each year</td>
<td>% of the total floor area of buildings owned and occupied by the municipality retrofitted each year</td>
<td>% of total m² net floor area</td>
<td></td>
</tr>
<tr>
<td>Environmental</td>
<td>At least 32% share of renewable energy by 2030.</td>
<td>Annual energy renovation rate %</td>
<td></td>
<td>kWh/year</td>
</tr>
<tr>
<td>CATEGORY</td>
<td>GOAL</td>
<td>NATIONAL Progress Indicators</td>
<td>MUNICIPAL Progress Indicators</td>
<td>Unit of Measure</td>
</tr>
<tr>
<td>----------</td>
<td>------</td>
<td>-----------------------------</td>
<td>-------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Social</td>
<td>Contribute to EU Targets</td>
<td>% of households having arrears on utility bills</td>
<td>% of households having arrears on utility bills</td>
<td>% of households</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Actions to improve indoor air quality post renovation works</td>
<td># households living in renovated dwellings with commissioned ventilation system</td>
<td># households</td>
</tr>
<tr>
<td>Social</td>
<td></td>
<td></td>
<td># non-residential renovated buildings with a commissioned ventilation system</td>
<td># buildings</td>
</tr>
<tr>
<td>Social</td>
<td>Empowering citizens - Ensuring citizens are at the centre of the transition</td>
<td>Actions to improve average thermal comfort post renovation works</td>
<td># households living in renovated dwellings where calculations demonstrate that post renovation condition will satisfy heating requirements</td>
<td># households</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td># non-residential renovated buildings where calculations demonstrate that post renovation condition will satisfy heating requirements</td>
<td># non-residential buildings</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td># non-residential renovated buildings where actions have been taken to minimise summer overheating risk</td>
<td># non-residential buildings</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td># private households retrofitting their homes / year</td>
<td># private households retrofitting their homes / year</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td># sq. m² commercial buildings retrofitted annually</td>
<td># sq. m² commercial buildings retrofitted annually</td>
</tr>
<tr>
<td>CATEGORY</td>
<td>GOAL</td>
<td>NATIONAL Progress Indicators</td>
<td>MUNICIPAL Progress Indicators</td>
<td>Unit of Measure</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------</td>
<td>---------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Economic</td>
<td>Contribute to EU Targets</td>
<td>&gt; Total annual investment in energy renovation&lt;br&gt; &gt; Total annual public investment in energy renovation&lt;br&gt; &gt; Total annual private investment in energy renovation</td>
<td>&gt; Total annual investment in energy renovation&lt;br&gt; &gt; Total annual public investment in energy renovation&lt;br&gt; &gt; Total annual private investment in energy renovation</td>
<td>€</td>
</tr>
<tr>
<td>Economic</td>
<td>Increasing investment in energy renovation</td>
<td># companies involved in energy renovation&lt;br&gt; # graduates from 3rd level courses and technical training courses with focus on energy renovation</td>
<td># companies involved in energy renovation&lt;br&gt; # graduates from 3rd level courses and technical training courses with focus on energy renovation</td>
<td># companies</td>
</tr>
<tr>
<td></td>
<td>At least 32.5% improvement in energy efficiency by 2030 - relative to the 2007 modelling projections for 2030.</td>
<td># building professionals and construction workers taking part in energy renovation&lt;br&gt; &gt; of which # Public sector staff upskilling in energy renovation</td>
<td># building professionals and construction workers taking part in energy renovation&lt;br&gt; &gt; of which # Municipality staff upskilling in energy renovation</td>
<td># graduates</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td># building professionals and construction workers</td>
</tr>
</tbody>
</table>
Thank you to all our workshop participants
Workshop Participants Analysis

Thirty-one people joined the Build Upon² National Focus Group meeting in Turkey. Local authorities, central government, and NGOs were the strongest represented community on the day, followed by research and academia, energy sector, and consulting.
Work With Us!
As 2020 is the start of the decade of climate action, we are inviting all cities, regions and companies to work with us on solutions in the building sector.

The Build Upon² project is welcoming cities to join our work on renovation strategies, and would love to hear more about impactful renovation initiatives you are running in your city - which we can put on the European stage.

The pilot cities we are working with are: Velika Gorica, Croatia - Budaörs, Hungary - Dublin, Ireland - Padova, Italy - Wroclaw, Poland - Valladolid, Spain - Eskişehir, Turkey - Leeds, UK.

We are calling on leaders across the public and private sector to join the Net Zero Carbon Buildings Commitment ahead of COP26 - to really make Europe’s renovation wave a reality.

Read more about the project and get in touch with the team via the links and details below.
Platinum Members

Kale

Garanti BBVA

Mortgage

SAINT-GOBAIN

Email
info@cedbik.org /
busra.celik@cedbik.org

Web
www.cedbik.org

Twitter
@cedbik  #BUILDUPON