



PROMOTING

ENERGY

Energy Efficiency Law

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Result Based Implementation and Management

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IN BUILDINGS

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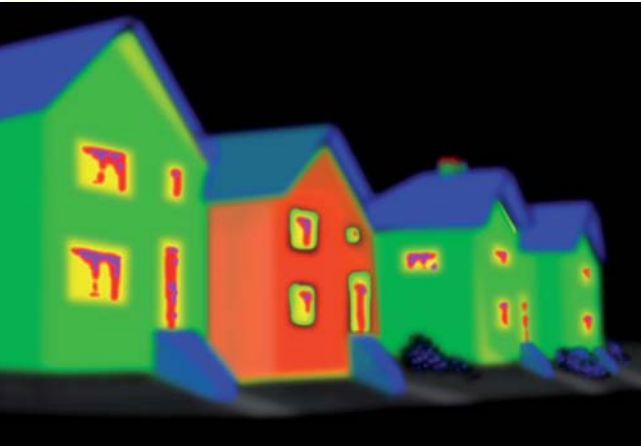
Population, Building Stock and Energy Consumption

The total population of Turkey increased from 56.5 million in 1990 to 75.6 million by the end of 2012. Along with the increase of the population, Turkey's urbanization rate increased from 52.9% in 1990 to 77.3% by the end of 2012.

As of the end of 2012, the building stock in Turkey is estimated around 8.8 million buildings; where close to 86% of the stock is residential buildings, and the number of dwellings is estimated around 20 million. Between 2000 and 2012, despite two economic crises in 2001 and 2008–2009, the building stock and the dwelling stock grew around 11.5% and 23.2%, respectively. Such rates of increase underline the importance of energy-saving measures in the building sector.

Turkey faces a considerable increase in demand for energy. Primary energy consumption continuously increased, from 52.6 Mtoe in 1990 to 114.5 Mtoe in 2011. A similar trend is anticipated until 2023 and the primary energy consumption is expected to continue increasing around 5% annually.

The total consumption of all final end-use sectors was 87 Mtoe in 2011. The industrial sector (that represented 35.5% of energy consumption) is the dominant end-user for the last 15 years. The building and services sector is the second largest energy-consuming sector with a 34.5% share of total consumption.



Why This Project?

Alongside the technological developments and thereby energy efficiency improvements, living standards will also continue to rise, linked to economic growth (including increased use of household appliances and air conditioning in buildings), together with an estimated increase around 9% in the national building stock until 2021. Therefore, in the future, it is expected that the trend of energy consumption in buildings sector will continue to be around this level.

Heating (heating and/or cooling) accounts around 75% of the energy consumption in buildings. Presently, Turkey has four climate zones but even this is not sufficient to represent the wide climatic diversity of the 81 provinces with widely varying seasons.

Considering that all buildings built before 2000 have not applied the latest standard on the thermal design of new buildings, the magnitude of the energy saving potential in the building stock is clear. Even assuming perfect implementation of the standard after 2000, that still leaves 93% of the existing building stock needing upgrades for energy efficiency.

New buildings in Turkey are required to perform to thermal standards similar to EU countries since 2000. In addition to this, the regulation on Building Energy Performance (BEP) is declared in Official Gazette in 2008 and BEP regulation is adapted in 2009 in line with the relevant directives of EU. Since 2011, in the context of mentioned regulation Energy Performance Certification is started to be implemented in new and existing buildings. BEP holds much promise for increasing the energy efficiency of a new building as it establishes energy efficiency requirements and sets limits of the energy consumption of the building. However, while the BEP holds much promise, it also presents many challenges in implementation.

In line with the Energy Efficiency Law put into act in 2007, the studies of appointing energy managers and setting up energy management systems for public, commercial and service buildings and the authorization of Energy Service Companies (ESCOs) to carry out energy efficiency services in building sector have been started.

In order to avoid energy deficit in the near future, the energy efficiency on both the supply and the demand sides should be encouraged. To ensure an energy efficient and sustainable growth, the careful planning and integration of effective demand side management measures are essential in the medium and long term.

Turkey needs a more aggressive strategy in buildings sector to recover approximately 35–40% energy efficiency potential. The Project on Promoting Energy Efficiency in Buildings is a viable attempt towards improving the energy efficiency in new and existing buildings by reviewing and developing the energy performance standards and strengthening applications in buildings.





Project Scope

The objective of the project is envisioned to be achieved by implementing numerous sub-activities under four main outcomes;

1- Improved energy efficiency in new and existing buildings by revising, enhancing and improving enforcement of building energy performance standards;

- Revision of regulations on building energy use and improvement of existing calculation methods under Building Energy Performance (BEP) regulation
- Preparation of MEPS (Minimum Energy Performance Standards) for buildings
- Development of a framework for Management Information System (MIS), including methodology, indicators and benchmarks; delivery of trainings in its use; development of a sample database
- Preparation of a feasibility study for retrofitting of existing buildings to improve energy performance (with Roadmap and Action Plan)
- Strengthening of the capacity of inspectorates regarding to energy efficiency regulations and implementations
- Development of financial models and mechanisms to promote "Energy Efficiency and Renewable Energy" applications in buildings
- Improvement of curricula for university students to incorporate the use of i) Integrated Building Design Approach (IBDA) and ii) energy efficiency tactics in building designs
- Development of training materials for energy management in buildings; and delivery of trainings for energy managers and maintenance technical teachers
- Enhancement of capacity of energy service providers (ESCOs); development of Energy Performance Contracting scheme

2- Cost-effective energy efficiency solutions showcased by introducing and adapting an Integrated Building Design Approach (IBDA) in Turkey and demonstrating the concept in two new buildings;

- Construction of three demonstration buildings using IBDA
- Development of an implementation strategy for use of IBDA in new public buildings

3- New tools developed and introduced to facilitate compliance with higher energy efficiency standards and promote best energy management practices;

- Development of "Monitoring, Inspection and Verification (MIV)" methodology and tools for Energy Performance Certification (EPC) system
- Development and adaptation of IBDA to Turkey
- Preparation of an IBDA handbook; delivery of trainings for architects and engineers
- Conducting market survey for domestically available and locally made equipment, materials and technologies; development of a communications strategy,
- Development of project website; development of online support system for stakeholders at Ministry of Environment and Urbanization website

4- Project results integrated into standard practice in the building sector by monitoring, quantifying and sharing the results with the relevant stakeholders;

- Development of methodology for monitoring and measurement of savings due to IBDA implementations, demo buildings and revised regulations
- Calculation of energy savings and emission reductions provided through the project
- Undertaking of market monitoring to report the increase in demand for businesses in energy efficient goods and energy efficiency services
- Mid-term and Final evaluations
- Sharing and dissemination of the project results

Project Office

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