Project Title: Energy Efficiency Market Study & Design, and the Knowledge Tree Development of Energy Efficiency Market Comprehensive Study

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Project Necessity:

Due to the restrictions of non-renewable energy resources and the fact that the most dominant part of energy supply is fulfilled from these resources, as well as the simultaneous growth of the global energy demand, and the concerns about the increasing detrimental effects of greenhouse gases, energy efficiency solutions are in the center of attention. However, the experience of various countries in the implementation of energy efficiency policies indicate that the definition and applying market based instruments has been more effective in tending the energy consumers and suppliers to the energy savings attitudes. Hence, market-oriented approaches towards the energy efficiency measures are studied in this project. Furthermore, in order to help researchers to cover the existing research gap in this area in Iran, the knowledge tree of the comprehensive studies on the energy efficiency market is also developed.

Project Goals:

The aim of this project is to gain insight into the Energy Efficiency Market, and to design energy efficiency market framework by the gained insight. In the project, the knowledge tree of the comprehensive studies on the energy efficiency market is also developed.

Abstract:

In this project, having reviewed the basic concepts of energy efficiency market, the necessity of the consideration of energy efficiency in various economic and industrial sections was clarified. Then, due to the main role of Energy Service Companies (ESCOs) in energy efficiency markets, they were introduced and their functions were expressed.

In addition, due to the importance of energy efficiency contracts, different kinds of these contracts were introduced and studied. Next, from the perspective of Iran Energy Efficiency Association (IEEA), the status of ESCOs and energy efficiency projects in Iran were identified and their challenges are described.

Furthermore, request for proposal, auction, and standard offer were introduced as energy efficiency procurements. Energy efficiency market models were described in the next stage: 1- capacity markets, 2- energy efficiency credits, 3- demonstration projects. It was followed by introducing some case studies for each model.

The role of government in the establishment of energy efficiency market was another subject that was studied. For this aim, energy efficiency policy-making instruments and various classifications of these instruments were described. Moreover, the initiatives of Iranian government to launch an energy efficiency market through establishing the required regulations and institutions were explained. The most salient and prominent initiative of the government was approving of the bylaw for establishing Market for Energy Efficiency & Environment (M3E), in which the entities and organizations that are in charge of designing and monitoring the market are introduced and their associated responsibilities are depicted. These entities are as follows: Committee for Energy Efficiency & Environment (CEEE), Iranian Fuel Conservation Company (IFCO), Renewable Energy and Energy Efficiency Organization (SATBA), Department of Environment, Vice Presidency for Science & Technology (VPST). In the next step, the role of energy efficiency market in the achievement of energy efficiency targets was discussed.

Another significant area to be studied was energy efficiency governance. In this study, we shed a light on energy efficiency governance concept from three dimensions: enabling frameworks, institutional arrangements, and coordination mechanisms.

In the next step, energy efficiency markets of 10 jurisdictions (Austria, France, Germany, Italy, Netherland, Spain, Sweden, England, Cyprus, and Ireland) were surveyed and analyzed. Energy efficiency market worth, the number of ESCOs in the market, and pre-defined targets of these markets were introduced, followed by the status of Energy Performance Contracts (EPCs) and Energy Supply Contracts (ESCs) and surveying energy services on the demand-side. Besides, market potentials and impediments, supporting policies and initiatives from ESCOs, as well as informing energy consumers about the merits of energy efficiency projects were analyzed.

Next, the energy efficiency main market components, main market players (including energy consumers, ESCOs, third-party auditing entities, banks and financial institutions, government, producers/manufacturers of energy-intensive appliances, suppliers of energy-intensive appliances (including retailers, wholesalers and importers), energy distribution companies) and their mutual responsibilities and communications in the market, as well as their corresponding commitments were reviewed.

Next, on the basis of the results of previous-mentioned studies, energy efficiency market framework was designed. In the final step, having studied the drivers of energy efficiency market, the energy efficiency research tracks and their corresponding research projects were defined, described, and their required resources were estimated. The following research tracks were drawn on this basis: 1- determining the existing potentials of and the capacity building for launching an energy efficiency market, 2- energy efficiency market rules and regulations, 3- energy efficiency market players, 4- the side-effects of energy efficiency market on other markets (especially energy markets and carbon markets), 5- energy-efficient and low-carbon technologies. In each research track, some research projects were defined, and finally all together 25 research projects were drawn.

Steps and Methodologies:

1- Identification of the basic concepts and principles of energy efficiency market

1-1- Energy Efficiency Definition and its requirement for industrial and economic sectors

1-2- Determining of the role of government in the promotion of energy efficiency initiatives

1-3- Identification of energy efficiency governance and its corresponding mechanism design with emphasis on the role of energy savings market

1-4- Determining the position of the design of energy savings markets in the achievement of energy efficiency targets

2- Study and elaboration of the global energy efficiency markets

2-1- Inroduction of energy efficiency markets throughout the world

2-2- Identification of energy efficiency market players, their communications, and their corresponding responsibilities and commitments

2-3- Introduction of the components of the energy efficiency market

3- Development of the knowledge tree of energy efficiency market comprehensive study

3-1- Definition of the energy efficiency research tracks (themes)

3-2- Deveplment of the knowledge tree of energy efficiency market comprehensive study, and the definition and description of energy efficiency markets' projects and the development

Main Results (technical outputs, patents, papers, books, reports, etc.):

- "Introduction to Basic Concepts of Energy Efficiency Market" Report, Electric Power & Energy Economics Department, NRI, June 2019.
- "The Study of Global Energy Efficiency Markets" Report, Electric Power & Energy Economics Department, NRI, September 2019.
- "The Development of the Knowledge Tree of the Comprehensive Studies on the Energy Efficiency Markets" Report, Electric Power & Energy Economics Department, NRI, April 2020.