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Thesis

Community Participation in Neighborhood Energy Retrofits
The Case of Güzelyalı Neighborhood, IZMIR, TURKEY

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UMD 6

Executive Summary

The interest of this dissertation rises from the new regulation that the National Government of Turkey accepted in December 2009. As a European Directive, this regulation looks into both new and existing buildings, and promotes the improvement of the building stock for energy efficiency. The attempt is promising, since focusing on the existing built environment is a new and desired approach. So far, the regulations have often concentrated on the new constructions which are also crucial and inevitable; however, it should not be disregarded that the majority of the existing built environment continues to function unsustainable. Therefore, the regulation is an important step, although not sufficient to achieve sustainable development. The present structure and the method of operation of the national and local authorities are insufficient to generate sustainable and positive outcomes for energy efficiency in the existing building stock. This is obviously not due to a lack of technology or know-how since they are widely and worldwide available. However, energy retrofitting is still a big challenge for Turkey as well as for many other countries.

During the last decades, the focus has been on the development of new technologies. Today, energy retrofitting, which refers to *improving the existing buildings with energy efficiency equipment*, requires new and innovative approaches and this is obviously beyond the technicalities. Community participation is an important component in realizing retrofits due to the fact that energy retrofits will be feasible, adequate and easy if the community is involved. With community participation, it is more likely to understand the local context, address fundamentals, get over the resistance and implement necessary measures. Technical solutions cannot generate the solutions alone. Communities, by participating, can see the benefits and contribute positively to the final outcome.

This research aims to investigate how community can participate in neighborhood energy retrofits. *Community participation* is often disintegrated into the overall program, remaining as an add-on most of the time. The new and innovative retrofitting approach should look into integrating the concept to the process which can be done through the analysis of different elements. Therefore, the first objective in this study is to look into these elements that lead to the development of a framework for community participation in neighborhood energy retrofits. Later, the research intends to analyze the potentials and limitations for a selected area located in Güzelyalı neighborhood, Izmir.

Izmir, with its unique context, is an important case for the role of the community in local environmental planning and management. Güzelyalı, as one of the better-off neighborhoods, is selected for this research to conduct the fieldwork due to its social context and the established community networks. A pilot area within the borders of Güzelyalı neighborhood is further selected for an in-depth study.

This research is an exploratory and descriptive type. The approach of the study is developed through the review of relevant literature by looking into different concepts for community participation in neighborhood energy retrofits. The study

is further developed through the analysis of potentials and limitations from different perspectives including the community, local government, non-governmental organizations and the community-based organization with in-depth interviews in the selected pilot area in Güzelyalı.

The results which are classified under the aspects of institutional environment, community capacity and existing networks show that there are both potentials and limitations in realizing community participation in neighborhood energy retrofits. By providing relevant regulations and removing the barriers, the institutional environment in Izmir is already enabling participation in energy retrofits. However, the lack of integration of different regulations, related to energy efficiency improvement and community participation is still an important limitation. The city's experience in participatory local environmental planning and management is considerable, yet, it will be correct to say that in Izmir, participation has often been seen as participating in the action but not in decision-making since there is no official obligation for government officials. The decision-making on how to involve community mainly depends personal initiatives which often results in an insufficient level of participation by the communities.

Community capacity is another important aspect to analyze and in this research it is studied in terms of level of awareness and level of commitment. Despite the unfamiliarity to the concepts of energy retrofitting, a high level of awareness for neighborhood and environmental issues in the pilot area is observed together with a high level of commitment. Accordingly, the neighborhood has even a platform where the community is gathered with the aims of improving the environmental conditions of Güzelyalı. The role of such community based organizations is essential in decision-making whereas the research shows that the interaction with the community through community platforms has not been established properly yet. Instead, the local authorities use formal networks to reach the community which is also considered as an important limitation for the city.

The research looks into these opportunities and challenges in detail. Derived from the analysis of relevant literature and the findings from Güzelyalı neighborhood, the study aims to see whether it is possible to carry out a pilot project for *community participation in neighborhood energy retrofits* in the selected area. In doing this, in order to open the way forward and provide guidelines, the research reviews five relevant projects from Europe.

Key words: Energy efficiency, energy retrofitting, urban retrofitting, community participation, community participation in local environmental planning and management, Güzelyalı, Izmir

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About the Author

Melis Varkal (born in 1984, Turkey) holds a Bachelor degree in Architecture from Middle East Technical University, Ankara, with one-year educational experience in Universitat Politécnica de Valencia. After her undergraduate studies, she attended a postgraduate diploma program on Eco-efficient Housing Design in Univeristat Pompeu Fabra (ELISAVA), Barcelona, where she worked on housing retrofits for resource efficiency.

She has more than 2 years of experience in several architectural firms in Turkey as architect, and more than 4 years of international experience in NGOs about project management in Turkey and Spain (European Students Forum- AEGEE; Architects without Borders - Catalonia).

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Abbreviations

CBO	Community Based Organization
ÇEVKO	Environmental Protection and Packaging Waste Recovery and Recycling Trust (Çevre Koruma ve Ambalaj Atıkları Değerlendirme Vakfı)
EPB Directive	Energy Performance of Buildings Directive
EMO	Chamber of Electric Engineers (Elektrik Mühendisleri Odası)
EPM	Environmental Planning and Management
ETKB	Ministry of Energy and Natural Resources (Enerji ve Tabii Kaynaklar Bakanlığı
GDP	Gross Domestic Product
GGIP	Güzelyalı Göztepe Beautification Platform (Güzelyalı Göztepe İyileştirme Platformu)
GHG	Greenhouse Gas
IZSU	Izmir Water and Sewerage Administration (Izmir Su ve Kanalizasyon İdaresi)
LA 21	Local Agenda 21
LG	Local Government
MMO	Chamber of Mechanical Engineers (Makina Mühendisleri Odası)
NER	Neighborhood Energy Retrofit
NG	National Government
NGO	Non-Governmental Organization
OECD	Organization for Economic Co-operation and Development
SWM	Solid Waste Management
SWOT	Strengths, Weaknesses, Opportunities, Threats
TEDAŞ	Turkish Electricity Distribution Company (Türkiye Elektrik Dağıtım Anonim Şirketi)

Conversions

1 Euro = 1.92 TL (Turkish Liras) (by September 2010)

1 US Dollar = 1.50 TL (Turkish Liras) (by September 2010)

Chapter 1 | Introduction

1.1. Background

The world's population became mostly urban for the first time in history by the year 2008. Cities are growing fast, offering great opportunities and challenges for communities. Today, urban areas attract more people than yesterday and will attract even more tomorrow. Such rapid transition into urban areas has created high pressure on the creation of built environment in cities. Consequently, the urban areas started to function poorly creating several environmental problems; whereas cities could also benefit from this rapid transition to change things (Leduc & Rovers 2008).

Today, with a growing interest and awareness in environmental issues, many cities have already adopted strategies to change their future by focusing mainly on new urban environments. The new urban environments provide focus for innovation and sustainable practices, but it should not be disregarded that the large majority of the built environment exists and functions unsustainably. The concept of urban retrofitting[1] comes into use at this point which refers to renewing the existing urban areas to be more sustainable in terms of resource use. For sustainable development, it is vital to understand that retrofitting is inevitable.

On the other hand, urban retrofitting is an umbrella term covering the improvement of resource efficiency in general. As one of the pillars of urban retrofitting, energy retrofitting has attracted relatively more attention due to drastic increase in its consumption over the last decades. Today, as the most important component of the built environment, the building sector alone accounts for 25-40% of all primary energy consumption in OECD (Organization for Economic Cooperation and Development) countries; 40-45% in Europe (UNEP 2007), and by the year 2008, 36% in Turkey (TMMOD 2009). Most of these buildings are residential, which consume four times more energy than the commercial sector and seven times more than public administration (Roberts 2008). This shows the large and hidden potential for energy savings in housing and calls for action. However, individual buildings alone cannot provide the solution by themselves. Planning on the neighborhood scale is necessary and such planning requires more than improved technology.

Likewise in Turkey, the amount of people living in urban areas has almost doubled during the late 20th century. Rapid transition from rural to urban areas created severe impacts in the built environment. Today, high energy consumption is one of the main problems in Turkish cities, which has significantly increased over the last decades. This increase created gaps between a higher demand for energy and the total amount of production, and led to more energy imports. Such increase and the overall high energy use are not the signs of development since the consumption per capita is still lower than the world and the OECD countries' averages, which demonstrates the inefficient use of energy in Turkey. In such high and inefficient consumption, the share of the buildings in the overall primary

[1] Retrofitting simply refers to fitting existing things in and will be mentioned in the coming sections.

energy consumption is considerable to study which is increasing continuously (TMMOD 2009) and calling for regulations in order to improve energy efficiency in the building sector. At this point, energy retrofits provide the possible measures as the most cost-effective of all climate solutions (Delhagen et al. 2009).

The technology and know-how to improve energy efficiency in the building sector through energy retrofits are widely available but retrofitting is still a big challenge for cities. Governments need to develop new frameworks, while realizing energy retrofit programs in cities to generate sustainable outcomes. New and innovative approaches are urgently needed and community participation lies at the heart of such approaches. By engaging the community in neighborhood energy retrofits, the benefits of retrofitting are made clear which enables the process by overcoming the resistance. Moreover, with local knowledge and experience, the fundamentals are addressed adequately by forming new partnerships and working from bottom-up (Delhagen et al. 2009). As the new participatory approach in local environmental management suggests, the improvement of the technology and technical regulations cannot provide the solutions alone. The concept of community participation is an important aspect in the improvement of the buildings, not as an add-on but integrated to overall framework as one of the main components of neighborhood energy retrofits.

The research aims to capture all these issues while developing ideas for a future framework on community participation in neighborhood energy retrofits. In doing this, the research highlights the concepts of energy retrofitting and community participation separately and in depth, and later, combines these two concepts in order to investigate how community can participate in neighborhood energy retrofits. Güzelyalı locality is studied to understand the topic and to analyze the potentials and limitations for community participation in energy retrofitting for a selected pilot area in the neighborhood.

1.2. Problem Statement

On the way towards the improvement of energy efficiency in the building sector, Turkey has recently prepared the 'Energy Performance of Buildings (EPB) Directive' which targets new and existing buildings with different guidelines. Although this is an important step in achieving sustainable outcomes from the building sector, passing them from the Congress is not sufficient. Decision-making on how the regulation will be implemented gives the real response to see whether these regulations will help cities solve the problems they are supposed to address (Kraft 2007).

The present structure and the method of operation of the national and local government are insufficient to generate sustainable and positive change for energy efficiency in the existing building sector. As will be argued in the coming chapter, community participation is an important aspect to consider in the implementation of neighborhood energy retrofits. The concept of participation is not a new topic for the country and especially for the city; however, diverse regulations for energy retrofits and community participation are not sufficient to expect community to participate in the process. A framework which combines different concepts and

elements is missing in the present structure. Such a framework is crucial in order to implement energy retrofits in the most proper way, and this requires an integrated approach, more than improved technology and technical regulations.

1.3. Rationale of the Study

The research is undertaken at the right moment since the Government of Turkey has recently accepted the 'Energy Performance of Buildings (EPB) Directive' in December 2009. Although the regulation is new to the local authorities, there is not much time on getting used to it since the regulation obliges the existing buildings to be retrofitted by the year 2017.

The research builds on the policy approaches for retrofits as well as the policies regarding community participation in local environment planning and management (EPM). Participatory approach is not new in Turkey; yet building on the existing policy environment, the research aims to encourage the development of an integrated approach for future implementations.

This paper, thus, addresses the necessity of developing a framework to ease and realize the implementation of energy retrofits in neighborhoods. This thesis is expected to be relevant reference material to the local authorities (Izmir Metropolitan Municipality and Konak District Municipality), private companies who carry out the retrofit works, and the community members of Güzelyalı locality in order to understand the overall framework and realize the neighborhood energy retrofits in a proper way. In addition, the paper contributes to the existing relevant literature with a broad analysis of different concepts and a fieldwork, where community participation in neighborhood energy retrofits is studied through primary and secondary data.

1.4. Description of the Research Area

Güzelyalı, located in the city of Izmir is a strategic choice of the researcher to study community participation in neighborhood energy retrofits. Located along the coast of Aegean Sea and in the western part of Anatolia, Izmir is the third biggest and the most developed city of Turkey according to a study conducted by different parties (Milliyet 2005).

Izmir, with its unique context, is an important case for environmental issues and the role of the community in environmental management. In 1997, when the project of 'The Development and Encouragement of Local Agenda (LA) 21 initiatives in Turkey' was approved, Izmir was one of the first municipalities that promoted the LA 21 process by developing a long term strategic plan in order to cope with sustainability issues on the local level (Palabıyık & Toprak 2000). Since then, the city achieved milestones in local EPM in water and waste, constituting a sample for other Turkish cities. In addition to the choice of Izmir, Güzelyalı neighborhood is also a strategic choice due to the existing community networks and the relations between people in the area.

Therefore, Izmir has been the main choice because of the LA 21 initiatives and previous experiences in local environmental management. Later, the focus has

been narrowed down into the neighborhood 'Güzelyalı' due to the community network it involves which is important and not very often seen in Izmir and in other Turkish cities.

1.5. Research Objective

The aim of the research is to look into the concepts *energy retrofitting* and *community participation* separately; and later to analyze their combination to understand how community can participate in neighborhood energy retrofits. It looks into the opportunities and challenges for participation in Güzelyalı in order to analyze the possibility of conducting a pilot project in the neighborhood and generate ideas for future frameworks. The main motivation is to make a contribution to the implementation of the new regulation (EPB Directive) and create further impacts on the local EPM in future.

Research Objective
The main objective of the research is to analyze how community can participate in neighborhood energy retrofits.

1.6. Research Questions

Derived from the research objective, the main research question is structured as:

'How can community participate in neighborhood energy retrofits?'

From the research question, two sub-research questions are derived in order to guide the research and give a complete overview:

Sub-question 1
Energy retrofitting can be realized through the design of distinct measures. However, energy retrofits will be more effective if community is involved in the process in a proper way. In order to realize this, a framework should be developed with the clear understanding of its elements. Within the scope of this research, these elements are the concept of energy retrofitting together with the rationale behind and the strategies used for energy efficiency, and the concept of community participation with the analysis of different models, stakeholders and approaches. The following question seeks to understand these elements.

'What are the elements to be analyzed in order to involve community participation in neighborhood energy retrofits?'

Sub-question 2
In addition to the analysis of the elements that lead to the development of a framework, the research aims to identify the opportunities and challenges for community participation to analyze whether a pilot project can be conducted in Güzelyalı neighborhood. This is explored through the following sub-question:

'What are the potentials and limitations for community participation in neighborhood energy retrofits in Güzelyalı neighborhood?'

1.7. Research Scope

The research aims to develop ideas to prepare a framework for community participation in neighborhood energy retrofits. Although the scope of the research is community participation in neighborhood energy retrofits; in the first part, the researcher makes a review on the urban retrofitting concept consciously to understand resource efficiency in a broad sense, and reviews the approaches to water and waste. In part two, they are analyzed in the context of Izmir with the city's previous experiences in participatory local EPM.

It is important to point out that the researcher does not look into the technical characteristics of energy retrofitting; instead, the concept is studied with the rationale behind and the strategies followed. The broad approach to this concept is conscious with the idea that in Turkey, the concepts of energy retrofitting and urban retrofitting have not been internalized properly yet.

1.8. Research Methodology

The research is an exploratory and descriptive study which has been structured in two broad parts. The first part looks at the literature whereas the second part is a case study looking forward to answer the research question through fieldwork.

The research is a qualitative study, and a case study approach is utilized as the main strategy. The qualitative data is collected from literature review and in-depth interviews, which were conducted with experts through purposive sampling and with community members through stratified random sampling. In addition, policy documents, government data and photographs are also used in gathering qualitative data. The overall research is completed in approximately eleven months; yet, the primary data through in-depth interviews is collected in one month during the fieldwork in July 2010.

1.9. Thesis Structure

The research is structured under six chapters together with the introduction. Chapter two looks into available literature on the concepts of energy retrofitting and community participation. It makes a broad analysis on the urban-retrofitting concept and the rationale behind. Later, the chapter looks into the concept of community participation by analyzing different models and the community members to define the forms and levels of involvement. The chapter continues with the combination of two concepts and the international cases. Chapter two ends with the analytical framework which presents a summary of the reviewed literature and the methodology for further analysis.

Chapter three looks into the research methodology applied for the study and gives an overview on how the research process is designed and implemented. It also demonstrates the details of the methods to respond the research questions, data collection and the analysis of the collected data. The chapter ends with the limitations of the research.

Chapter four sets the background of the city and the neighborhood studied in two sections by presenting an overview on the physical, socio-cultural, economic, political-institutional and environmental contexts.

Chapter five describes the findings collected from the fieldwork and the relevant desk research.

Chapter six discusses the findings from the research based on acquired knowledge from the literature review and fieldwork. The report concludes with recommendations for future implementation and research.

Chapter 2 | Literature Review

2.1. Introduction

This chapter reviews the existing literature on the concept of urban retrofitting while setting the base of the study. It looks at the concepts of energy retrofitting and community participation and analyzes how community can participate in neighborhood energy retrofits in a critical way. The chapter aims to answer the research sub-question one which is:
'What are the elements to be analyzed in order to involve community participation in neighborhood energy retrofits?'

The chapter is divided into three sections. The first section makes a general introduction for the rationale behind the retrofits in today's urban context and analyzes the concept. The second section reviews the concept of community participation from different approaches and highlights the issue of identification and analysis of stakeholders in local environmental planning and management (EPM) and neighborhood energy retrofits (NERs). The third section combines the first two parts and illustrates the international cases for community participation in NERs. The chapter ends with the development of the analytical framework.

2.2. Urbanization, Built Environment and Resource Efficiency

'In 2008, for the first time in history, more people will in cities than in rural areas.'

UN State of the World Population, 2007

Cities are growing fast, offering great opportunities for communities. In 1950, 25% of the countries in the world had almost half of their total population living in urban areas, whereas by the year 2000, this percentage increased from 25% to almost 50%. By 2030, it is estimated from the annual urbanization growth rates that approximately 75% of the countries will have about half of their population in urban areas (UN 2007). In Turkey, the situation is even more drastic because between the years 1980-1998 the ratio of people living in the urban areas increased from 44% to 74%, much higher than the world average shift which was from 40% to 46% (World Bank 2000). These facts indicate that the urban areas become the attraction point for more and more people every day. Such increase in urbanization rate is obviously parallel with the creation of the built environment. High urbanization rates together with the increasing lifestyle expectations in urban areas put high pressure on the built environments, and consequently higher demand on the resources which end up with environmental, social and economic problems in cities.

Bartuska (2007, p.5) defines the built environment as '*everything human made, arranged, or maintained to fulfill human purposes and to mediate the overall environment with results that affect environmental context'*. The term which emerged in 1980s and came into use during 1990s has many definitions but it mainly refers to human-made structures as opposed to nature. Due to the rapid growth of cities throughout the late 19th and 20th centuries, built environments had to be developed rapidly, resulting in low quality urban areas. As a consequence,

built environment started to function poorly, generating several environmental problems. Energy consumption, resource exploitation, health problems and transportation congestion are some of the impacts built environments have created due to such rapid urbanization. However, rapid urbanization might not always be a limitation. Cities can make use of rapid urbanization to change things by seeing the urban areas as a closed system with distinct sources, and usable flows and cycles (Leduc & Rovers 2008).

With the increasing environmental consciousness, many cities have already become aware of the ample possibilities to change the future of cities. Among many themes highlighted in urban environment agendas, some ideas remain constant and relatively dominant. Improvement of the overall urban built environment is one of those highlighted ideas in European urban agendas (Mega 1996). Mega refers to 'Charter of European Cities and Towns towards Sustainability' (1994), and reminds that the cities and towns hold the responsibility for many environmental problems mankind is facing. Today, urban economies should set the priorities in order to conserve the natural capital which is already very limited. The priority should be given to the investments that encourage the growth of natural capital by reducing the high levels of current exploitation, lessening the pressure on stocks and improving the efficiency of resources (Aalborg Charter 1994). Similarly, Jones (2008) states that cities are the most extravagant consumers of natural resources and the biggest polluters. He mainly focuses on the implications of finite resources which are now the major driving forces that challenge the whole urban environment in cities. Buildings as the most important components of the built environment, today, they account for the largest share in the use of natural resources. Indeed, they have the capacity to build the foundation of sustainable development by integrating with other infrastructure and social systems, and by seeking solutions for energy use and greenhouse gas (GHG) emissions, water consumption and discharge, waste generation, construction materials use and recycling (UNEP 2007).

Brundtland Committee's Report (WCTR 1987) defined sustainable development as the '*development that meets the needs of the present without compromising the ability of future generations to meet their own needs and without degrading the natural environment*.' For sustainable development, the building and construction area is the key sector. Buildings alone are already the biggest opportunity for resource efficiency together with other elements of the built environment (UNEP 2007; IPCC 2007). They alone have considerable potential for positive change; yet, there is no one universal solution for sustainability. There are guidelines to make the built environment more efficient in terms of resource use which requires more than improved technology, but like new frameworks and behaviors by the governments, business and citizens (Cheng et al. 2008).

Therefore, it is likely to say that being the primary cause of many environmental problems; cities will provide the solutions themselves. Jones (2008) suggests looking for city-wide solutions to tackle with many environmental problems. However, these solutions are not easy. In spite of being a focus for innovation, cities might not be seen responsive to many opportunities due to the longstanding nature of their built form and incremental changes in its fabric *(*Pinnegar, Marceau

& Randolph 2008b). However, it is important to remember that crucial changes will be incremental and such transformation is needed. Technology and know-how to achieve urban transformations are already widely available; cities only need more government support and individual initiatives (Ritchie 2009a). Decisions made now will be very fundamental to set up the frameworks for the future generation of innovative good practices.

2.3. Urban Retrofitting

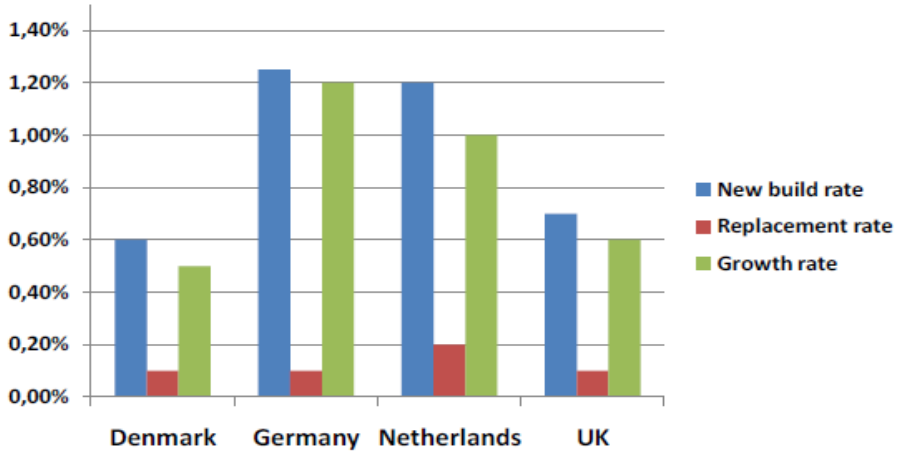
Box 2. 1: Definition of Retrofitting

Retrofit: the act of adding a component to something that did not have it when it was manufactured or constructed.

Retrofitting: The term *retro* refers to things of the past, and when combined with the term *fitting*; it simply refers to fitting existing things in. (Oxford Dictionary 2010)

Urban retrofitting is one of the innovations that cities require. Retrofitting the urban areas to acquire more sustainable outcomes is the most important change that challenges the urban built environment (Pinnegar, Marceau & Randolph 2008a). To achieve sustainable development in cities, urban areas need to be more responsible in terms of resource consumption. Today, the resources flow through the cities and buildings in a linear process of *exploitation*, *conversion*, *use* and *disposal* (Ritchie 2009b). However, due to the limited nature of resources, linearity of resource use needs to be replaced by cyclic processes, both in new and existing built environments. New buildings provide focus for innovation by the improved building standards, expectations of developers and increased awareness for sustainable practices. Yet, the large majority of the built environment exists and functions poorly in terms of sustainability. It is argued that over the next 20 years, the form of the cities will not change much. Thus, cities will require more focus on the existing structure in order to function more efficiently and sustainably (Pinnegar, Marceau & Randolph 2008a).

Fig.2. 1: Percentages of new build, replacement and growth in the total stock in Europe



Source: Bell, 2004, p. 2

Although the emphasis on new buildings and/or urban spaces is totally true and inevitable, this should not be overstated due to the fact that each year, only 1% of the building stock is new in Europe (Bell 2004) (Figure 2.1). Birkeland (2008) builds on this and states that with 2% annual construction rate in new building stock, the acceleration of energy utilization would only decrease by 0.04% if all new buildings were designed to be green. Therefore, it is essential to understand that sustainability cannot be accomplished by leaving things as they are, or constructing new green structures to replace the existing ones (Birkeland 2009). Retrofitting is inevitable in a way towards the sustainable development.

In Turkey during the 1960s, there was a drastic increase in the number of new residential building stock. Especially between the years 1964-65, the number of dwellings increased by 127.4%. Later, between the years 2000-2008, (although it is hard to mention about a consistent rate of change due to the varying policies of the government) the average rate of change in the number of dwellings became approximately 8%, while the annual rate of replacement of the existing stock remained around 1-1.5% (TSI 2009a). These analyses show that existing building stock requires attention and will be the key in order to achieve sustainable development in the energy sector.

Although 'building retrofits' is the common term used for the improvement of energy efficiency in the built environment, it would be misleading to limit urban retrofitting with buildings. The Commission for Architecture and the Built Environment (2007) states that most of the carbon emissions of a person occur due to shared infrastructure and services. Design and the management of the individual buildings cannot be the only solution, therefore planning and design should be considered on the neighborhood, district and city scales. Similarly, Edwards (2000) indicates that over the past decade, the attention for sustainable environments has shifted from low energy houses to environmentally sustainable neighborhoods. Recently, individual dwellings are secondary concerns in retrofitting on the urban scale.

Birkeland (2005) suggests a similar term, 'eco-retrofitting', and refers to the adaptation of buildings and urban areas to generate net positive social, economic and environmental impacts. Eco-retrofitting requires renovations of the existing structures to the greatest practical degree, sometimes even aiming to be resource autonomous. By eco-retrofitting buildings and neighborhoods with adequate design technology, it is likely to reduce the health costs, increase productivity and save natural resources. Moreover, good design can improve the quality of living standards and natural services that support life, while creating sustainable economic growth.

The concept suggests various eco-solutions to reduce the consumption of resources, while transforming the built environment into a healthier and more secure place. Water and sewage treatment for water efficiency, building material choice, recycling, climate mitigation¸ enhancing soil productivity, vertical farming to improve food accessibility, air cleaning by vertical gardens, lighting efficiency, improvements in heating and cooling, electricity production, fire and flood prevention, biodiversity protection and transport are some of the design concepts

and technologies that can be applied to eco-retrofitting in different scales such as building, neighborhood and the city (Birkeland 2009).

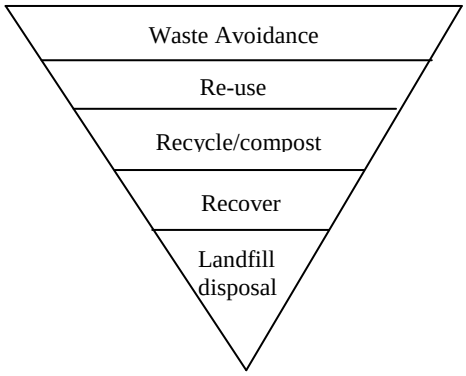
Ritchie (2009a) highlights the importance of resource flows and suggests that in order to understand the flow of resources, one should look at energy, water and material flows in urban areas and ask the following questions: '*where does it come from?; how does it get there?; who looks after it?; what does it do?; and where does it go?'* (Ritchie 2009a, p. 7) Figures 2.2 and 2.3 exemplify some strategies as guidelines in order to enhance resource efficiency in the built environment. The figures suggest the reduction of demand at the first place for resource efficiency, and later they recommend actions such as the integration of rainwater or recycling at the later stages.

Fig.2. 2: Guidelines for water retrofits

5. Choice of vegetation due to amount of irrigation necessity in summer
4. Consideration of rain water and grey water recycling
3. Organization of the site for maximum rainwater collection
2. Ensure the quality of water for each use; no lower, no higher
1. Reduce Demand

Source: Derived from Ritchie & Thomas, 2009

Fig.2. 3: The Waste hierarchy



Source: Derived from Ritchie & Thomas, 2009

A broader range of resource efficiency-related criteria should be included in the planning and management of the existing built environment. It is obvious that retrofitting existing urban areas for resource efficiency is a big challenge, yet many cities have already adopted different strategies and measures to ensure that neighborhoods perform better in terms of social, economic and environmental aspects (Pinnegar, Marceau & Randolph 2008a). General knowledge about the possibilities is gradually increasing as well as the idea of working together of urban professionals on local level; such as planners, architects, and engineers. In addition to the collaboration among professionals, the concept of participation of users in the urban environment to collaborate with local authorities is also growing (Ritchie 2009c). Although the idea of community participation in retrofits is still very new, many practices show that the concept is becoming more and more common, establishing the foundation for strong communities.

2.4. Energy Retrofitting

The Brundtland Report (1987) states that future development mainly depends on the long-term availability of energy sources that are dependable, safe and environmentally clean, and highlights the importance of sustainable use of energy. However, in contrast to the report, energy consumption has increased drastically over the last decades. This drastic increase created gaps between the rising demand for energy and the total amount of production. Especially between the years 1995-2007, the demand was doubled in Turkey, while the production

remained almost the same which ended in more dependency on energy imports (Kilic 2008). As a consequence, efficient use of energy became one of the topical issues, leaving the discussions about other natural resources relatively behind and taking the primary place in government agendas.

Among many sectors that focus on efficient use of energy, energy retrofits in buildings and urban areas are emerging as a high priority in a growing number of cities (Delhagen et al. 2009). As will be discussed in detail in the coming section, buildings account for the greatest share in all primary energy consumption in many countries which demonstrates the considerable potential for positive change. However, the reasons for prioritizing energy retrofits are not restricted with energy savings. Energy retrofits have also multiple benefits for the environment, society and economy (Edwards & Turrent 2000). It is stated that energy retrofits meet environmental, economic and social goals that is quintessentially 'the sustainable triangle' mentioned in the Brundtland Report (Delhagen et al. 2009).

In addition to the considerable amount of energy savings, enhancement of building energy efficiency through retrofits also plays an important role in reducing total carbon dioxide emissions in cities. Analyses show that among many actions, energy retrofitting is the most cost-effective of all climate solutions (Delhagen et al. 2009). Beyond the energy savings and greenhouse gas (GHG) emissions abatement, a great deal of money can be saved by retrofits which would have positive impacts on micro and macro levels due to rising energy prices. For households, the money to be spent on energy bills can be allocated somewhere else, whereas for countries, the money remains in the national economy rather than being exported to energy producing countries (Delhagen et al. 2009).

Energy retrofits can play a crucial role in determining the country's dependency on energy imports. To exemplify, in Turkey, 51% of the total energy used was being imported in 1990 and this amount increased to 72% in 2006 (World Bank 2009). By the enhancement of energy efficiency, it is obvious that the country's dependency on energy imports is lessened. In addition, energy retrofits contribute to the local and national economies by providing new fields in the construction sector. It is widely accepted that large-scale building retrofit programs generate new sectors and jobs.

Apart from social and economic benefits aforementioned, especially in the business sector, companies are interested in energy retrofits for mainly improved indoor quality. Many studies show that the major concerns for energy retrofits in business sector are healthier indoor quality and enhanced workforce productivity which also helps create a better public company image (Delhagen et al. 2009).

2.4.1. Energy Efficiency

Being the major aim of energy retrofitting, many definitions have been made for energy efficiency. One of them is made by the US Department of Energy (2010) which argues that energy efficiency refers to the enhancement of a service/activity with a given amount of energy input, or a given service/activity is provided with reduced amount of energy input. Another definition states that energy efficiency

refers to reducing the amount of energy input for the provision of a service/activity without budging from the quality of economic development and social welfare (EIE 2008). Energy efficiency is also highlighted in the Brundtland Report (1987) where it is stated that for sustainable development, national energy policies should consider energy efficiency as the cutting edge. In doing this, buildings have an important role due to their enormous potential for energy savings, which is also the main concern of this research.

Energy intensity, as the main indicator of energy efficiency in a particular service/activity, has an inverse relationship with energy efficiency. Having a high energy intensity value means that there is low efficiency in the energy used for a particular service/activity (US Department of Energy 2010). Table 2.1 demonstrates the energy intensity values of different countries in order to make a comparison between the energy uses. The table shows that in Turkey, even though per capita energy consumption is lower than the average of the world and OECD countries, the energy intensity is higher which proves the inefficient use of energy.

Table.2. 1: Energy Intensity Values for Different Countries

Regions	Population (Million)	Energy Consumption (MTEP[2])	Energy Consumption per capita per annum (kgoe/a[3])	Energy Intensity (TEP[4]/Thousand Dollars)
World	6268	10578	1688	0,32
OECD	1154	5395	4675	0,20
Middle East	177	446	2520	0,66
Japan	128	517	4039	0,11
Turkey	71	79	1113	0,38

Source: International Energy Agency, 2005, pp.48-56

Since the 1990s, Turkey has been taking action to improve energy efficiency in different sectors. In the 7th Five Years Development Plan, it is stated that due to the insufficient national energy resources, expensive imports and environmental problems created by high consumption, the energy intensity should be lowered and energy efficiency in all sectors should be improved (SPO 1995). Similarly, in the 8th Five Years Development Plan, the necessity of efficient energy use was once more highlighted (SPO 2000). These ideas were supported with the Renewable Energy Law in 2004 and the Energy Efficiency Law in 2007, which aimed the efficient use of energy and the prevention of unnecessary use in order to reduce the burden of energy costs on the national economy, and protect the environment (EIE 2008). Finally in 2009, with the Energy Performance of Buildings (EPB) Directive, measures were defined, aiming to reduce the energy demand and integrate the potential renewable sources to both new and existing

[2] MTEP refers to Million-Ton Equivalent of Petroleum.

[3] Kgoe/a refers to kilograms of oil equivalent per year.

[4] TEP refers to Tones of Equivalent Petroleum.

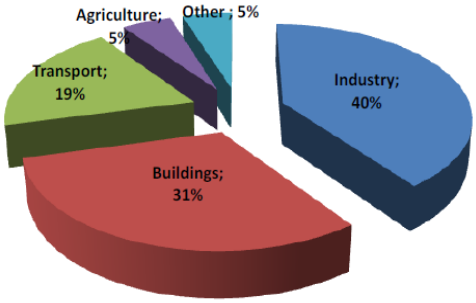
building stocks with consideration of local conditions. The EPB Directive also highlighted the importance of efficient and effective use of energy with focus on the reduction of GHG emissions through various measures.

2.4.2. Energy Efficiency in the Building Sector

It is a universal fact that the buildings account for the largest share in energy consumption as well as in other resources. In OECD countries, buildings account for 25-40% of all primary energy, whereas in Europe the amount of energy consumed by buildings is around 40-45%, which make this sector a significant source of carbon dioxide emissions (UNEP 2007).

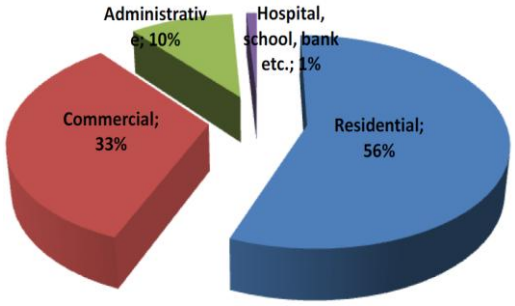
Similarly in Turkey, buildings are responsible for 31% of total energy consumption (Figure 2.4). Such a large share in the overall consumption has directed the attention towards energy efficiency in the building sector. However, the recent data show that despite the attention, the share of energy consumed by the building sector even increased more and reached to 36% in 2008, while the share of industry decreased to 33% (TTMD 2009). Despite the fact that various regulations have been prepared in the building sector since the 2000s, this does not mean that the country achieved important milestones in terms of energy efficiency. Since the activation of the regulations which dates back to the 2000s, 10-15% of the new building stock has been built accordingly, while the rate of energy retrofits has been around 3-5% in the existing building stock. In brief, the improvement of energy efficiency is achieved in only 1-2% of the total building stock in the country (TMMOB 2008).

Fig.2. 4: Energy Balance in Turkey



Source: ETKB, 2006

Fig.2. 5: Electricity consumption in Turkey



Source: TEDAŞ, 2006

Although the regulations regarding energy efficiency in the building sector have often considered the new building stock, the numeric facts show that the existing building stock has a considerable potential for energy efficiency in Turkey as well as in other countries. Furthermore, among the existing buildings, residential sector is one step ahead due to its large share in the overall electricity consumption (Figure 2.5).

In Turkey, the residential has become the most electricity consuming building sector during the last decade which is followed by commercial and administrative buildings (TSI 2009b). Indeed, this is a universal fact. The world over, due to the improved levels of comfort and the use of daily routine operation of domestic

appliances, heating, cooling and illumination, the domestic sector started to consume four times more energy than the commercial sector and seven times more than public administration (Roberts 2008). Edwards (2006) suggests governments to indicate the domestic energy consumption as a priority in their agendas. It is widely accepted that the biggest potential for enhancing energy efficiency and the most understood means in doing this are in the houses and offices, as even stated in the Brundtland Report in 1987. This is a valid argument for Turkey, since by the year 2009 the number of residential dwellings in Turkey has finally reached 18.4 million. Considering the number of residential units in major cities as around 10 million, with low cost retrofits in buildings, energy savings would be around 50% for the energy consumed in heating and cooling the buildings (Izocam 2010; TTMD 2009).

Although there are policy initiatives regarding energy retrofitting for energy efficiency in the building sector, the design of the implementation of these policies is as important as making them. It is not enough passing law through the Congress; instead, decision making on how these policies will be implemented gives the real response to see whether they help solve the problems they are supposed to address (Kraft 2007). At this point, it is important to mention about possible strategies since they can play a crucial role in decision-making for the implementation. The strategies mentioned in the coming section are majorly used for low energy buildings; however, they are also utilized for energy retrofits to generate guidelines.

2.4.3. Strategies behind Energy Retrofitting

Why is setting strategies necessary in energy retrofit programs? Why would governments prefer following strategies instead of deciding on the available technologies to be used? During the last decade, the means to develop energy efficient buildings has changed a lot. A couple of decades ago, the improvement of a certain technique was dominant in making buildings energy efficient, whereas now, such transformation requires an integral design approach. Integral design approach looks for well balanced choices where the design and the realization of are considered together with the interactions with the building and the users by setting the performance criteria. The traditional approach often focused on the partial optimization, whereas the new integral design seeks to achieve a total optimization of all disciplines. For instance, investments and the communication with the end-users are important aspects of this approach (Op't Veld & Demollin-Schneiders 2007). The integrated approach, thus, requires strategies in order to bind all the aspects it looks for. Entrop and Brouwers (2005) argue that it will be easier for governments to make policy by focusing on strategies rather than distinct measures. Additionally, the cooperation between the architect, the constructor and the user will be enhanced due to being more systematic, and the measures taken will fit better in the construction's functions.

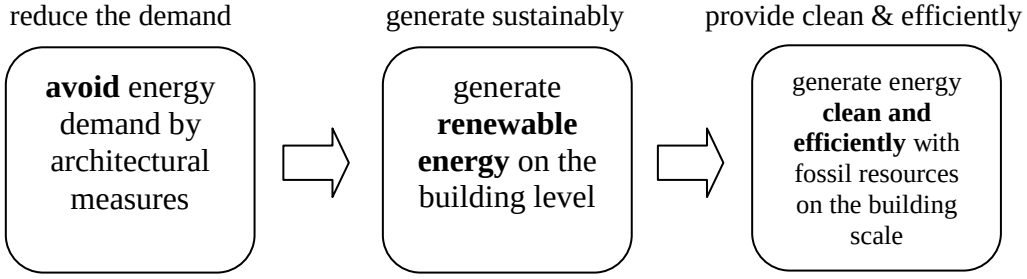
However, there are some counter arguments against setting strategies for energy retrofits. Smith (2000) brings out a counter argument saying that the retrofit programs should consider realistically calculated energy savings instead of following theoretical models. Specific measures should be established at the

neighborhood level by assessing the costs on a particular area, where short and long term benefits are considered. Although the argument made by Smith (2000) is valid for many cases, strategies are still crucial in order to adapt to the changing technology more easily. The technology is changing every day, so do the tools for such improvements. However, the ideas behind often remain the same or can simply be modified. This can be achieved through strategies while improving the long term validity of the policies and projects.

Among many strategies, *Trias Energica* is probably one of the most known which has been dominant in sustainable approaches for urban areas since the 1990s. Lysen (1996) introduced the strategy after Charles de Montesquieu's 'Trias Politica' in 1752. Trias Energica is based on three steps that are the improvement of energy efficiency, higher use of sustainable energy sources, and cleaner and more efficient use of fossil fuels, without any sequence in terms of degree of sustainability (Entrop & Brouwers 2005). Building on Lysen (1996), Duijvestein (1997) developed a more structured method with a sequence of sustainability where the three steps were located in terms of their favorability. This modified concept is called *Trias Energetica* (Figure 2.6). The final form provides a more sequential and hierarchical approach of sustainability with the following steps:

1. Limit the demand of energy by rethinking the general energy consumption (prevention)
2. Use more sustainable sources of energy, as much as possible (substitution)
3. If there is still demand, use fossil fuels in a clean and efficient way (efficiency)

Fig.2. 6: Trias Energetica

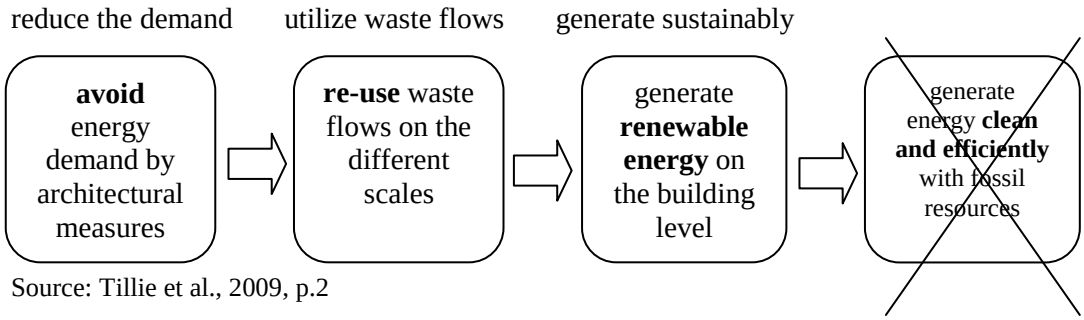


Source: Tillie et al., 2009, p.2

In Trias Energetica, the main focus is on the first step which is the prevention (Leduc et al, 2008). The first step suggests taking measures that reduce the building's energy consumption through proper insulation, efficient ventilator systems, exploitation of day-lighting, energy efficient lighting systems, etc. (Entrop & Brouwers 2005). The second step focuses on maximizing the use of sustainable sources to meet the energy demand. Integration of solar power and the use of wind energy are renewable energy sources that are potential measures for this step. If the first two steps are not sufficient to meet the energy demand of the building, then the step three looks for efficient and clean ways of using fossil fuels (Entrop & Brouwers 2005). Trias Energetica is an approach that has been internationally adopted and used (Entrop & Brouwers 2009).

Rotterdam Energy Approach and Planning (REAP) is an urban planning method which was based on the Trias Energetica. The three-step strategy has not been found sufficient for sustainability requirements of today, and therefore, has been modified (Figure 2.7). Building on the Trias Energetica, REAP suggested the *New Stepped Strategy* which inserts an essential intermediate step between the reduction of demand and the use of renewable energy sources, by suggesting a waste output strategy (Tillie et al. 2009). The New Stepped Strategy suggests that the second step makes use of waste material, waste water and waste heat optimally on the building, neighborhood, district and city scales. By doing this, the strategy argues that the last step, which is the clean and efficient use of fossil fuels on the building scale, is not desired and required anymore.

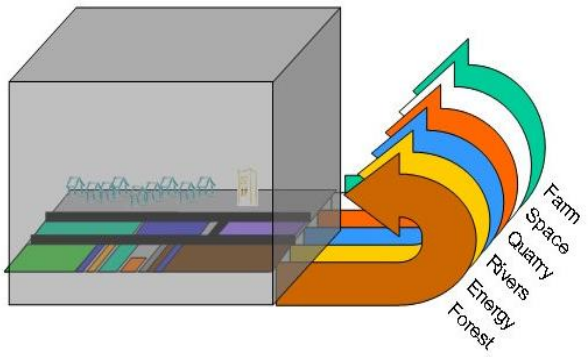
Fig.2. 7: The New Stepped Strategy



Source: Tillie et al., 2009, p.2

Likewise the New Stepped Strategy, the *Urban Harvest Approach* has been developed with parallel concerns. Similar to what has been discussed by Ritchie (2009) about cyclic processes of resources in eco-retrofitting, *closed energy cycle*, is also the starting point of the Urban Harvest Approach. Rovers (2007) suggests that the flow of the resources should be studied as input, consumption, and output, offering a closed cycle where the input and output are connected. Within this framework, *Urban Harvest Approach* has been developed to search for harvest potentials in the built environment and to investigate all possible options to re-use the full output (Rovers 2007).

Fig.2. 8: The built environment as a closed system



Source: Rovers, 2007, p.4

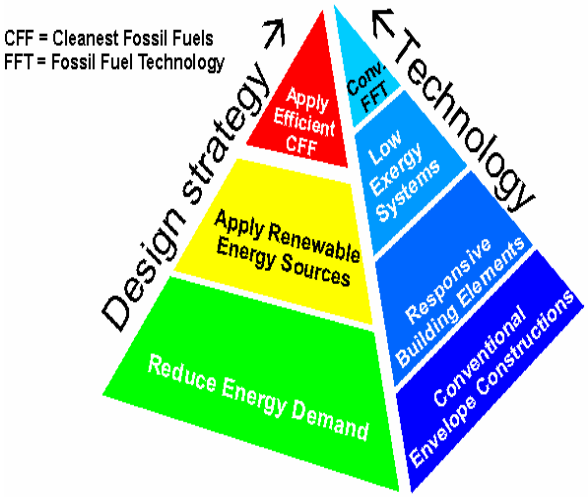
The Urban Harvest Approach focuses on closing the cycles of resources on the output side by changing the system from linear to cyclic. To reduce the environmental load and the burden on resources, everything is kept within the system and re-used. For energy, the approach is also known as 'exergy' which refers to the energy that is available to use (Rovers 2007) (Figure 2.8).

The strategy looks for investigating the un-used resources and the flows, and suggests building up a model to examine the harvest potentials, develop technologies for harvest and study adaptations of the urban environment to make

best use of harvests. To exemplify, the solar energy can be analyzed in a simple way. The urban built environment receives the solar energy which is often not used. Rovers (2007) suggests that the urban environment should make use of these sources in relation to the useful urban area to harvest. Roofs of the buildings and roads are given as potential urban areas that are available for solar energy harvest.

Based on the Trias Energica (Lysen 1996) and the Trias Energetica (Duijvestein 1997), the Kyoto Pyramid has been developed as an integrated design strategy in Norway for the design of low energy buildings (Dokka and Rødsjø 2005). The difference from the other triplets is that Kyoto Pyramid combines the design strategy with technical solutions. The design strategy is located on the left side of the pyramid, and on the right side, the potential and applicable technical solutions for each step are demonstrated (Heiselberg 2008) (Figure 2.9). Kyoto Pyramid has a hierarchical order and starts from the bottom level. Like Energy Trias, the first step is the main focus which is the reduction of energy demand.

Fig.2. 9: Kyoto Pyramid



Source: Menkveld, 2008, p.3

Heiselberg (2008) suggests that the main benefit of the method is the focus on the importance of limiting the energy load before inserting new systems for energy supply. Different technological solutions can be added to the design, but it must be ensured that they are integrated and interacted, but not added next to each other (Menkveld 2008). The technology is changing quickly; therefore the right side of the pyramid can change very often. Yet, the design strategy remains the same which improves the long-term validity of the projects.

The mentioned strategies for low energy houses and energy retrofitting do not have to be limited only with energy. Based on the Trias Energetica, new concepts have already been derived for water and materials, since the energy consumption is not the only feature that affects the environment. Being influenced from the same strategy of prevention, substitution and efficiency, more triplet visions have already been developed for other aspects of the built environment as well, such as water (Trias Hydrica), materials (Trias Hylica), land-use (Trias Toponoma), and transport (Entrop & Brouwers 2009).

To summarize, strategies for energy retrofitting are various, and in this section some of those have been analyzed as the important elements of the framework for community participation in energy retrofits. As discussed, strategies are crucial for an integral approach and can be binding for the cooperation of different stakeholders.

2.4.4. Moving to Scale: Beyond Individual Buildings

Although there is an impression that energy retrofitting is relevant to the building scale, research shows that reducing emissions is not only about the design and management of individual buildings. In the past, individual buildings were important, therefore architects and engineers were working on the development of prototypes. Today, the concept of self sustaining community is on the focus due to the fact that the vast majority of an average individual's carbon emissions come from shared infrastructure and services (CABE 2007; Edwards 2000). Planning and designing at the neighborhood scale is now valid in many retrofit projects to assess resource efficiency in the built environment and in its components.

Neighborhoods are physical environments where dwellings and households are clustered. They offer residential functions, enable non residential functions in a built environment, and allow the common use of infrastructure services and interconnection among neighbors. The neighborhood level, in a way, depends on the collective impacts of individual behaviors, but at the same time, is affected by the built environment that enables and binds people, as well as facilitates connection with larger scales (Bijoux, Saville-Smith & Lietz 2008).

Regarding energy efficient retrofit measures, it would be misleading to disregard the building scale. In relation to the abovementioned strategies, reducing the energy demand sounds relevant to the building scale. On the other hand, sustainable energy, which is often the second step of many strategies, would be feasible only if they are considered on a bigger scale than building. Additionally, the neighborhood scale can generate diverse alternatives whereas there are particular measures that an individual building can take. The energy is still produced by the centralized systems, yet, there is a shift from central production to on-site energy generation. On-site production, where the electricity is generated and distributed with less energy loss, requires planning on the neighborhood level to be feasible; and within the neighborhood, centralized systems (like district heating) are far more efficient than individual heating systems.

Last, but not least, in terms of acceptance, conducting the retrofits on the neighborhood level can be also easier due to the relations among the community members, easing the dissemination of the project.

2.4.5. Beyond Design: Community Participation in Neighborhood Energy Retrofits

'We can't solve problems by using the same kind of thinking we used when we created them.'

Albert Einstein

Common sense approaches play a big role in providing practical solutions for re-thinking the aspects of the city elements from external urban spaces to infrastructure. Innovative community-based solutions are essential to achieve urban sustainability, which involve ordinary people at the grassroots level who are willing to contribute to the environment and the quality of life of urban communities (Roseland 2005). Rogers (1997) states that cities require a new form

of citizenship in order to respond to the needs of today's urban areas. This asks for more emphasis on community participation in decision-making so that the built environment can be a part of education. Cities are live laboratories, and participation can make citizens think about respecting and improving their everyday urban environment. Environmental sustainability is located at the core of such education for which governments are supposed to make funds available to teach good citizenship to young and old, and to listen to communities.

Teelucksingh (2007) argues that community participation has the capacity to involve alternative structures of governance aiming transparency, democratic involvement and local knowledge sharing in order to achieve urban sustainability. Many realized samples show the need for participation in neighborhood development projects like the Neighborhood Sustainability Framework, which has been prepared by a research consortium to measure the neighborhood sustainability in New Zealand. The study shows why neighborhood sustainability cannot be assessed by only looking at the built environment, and states that the residents' perceptions and behavioral needs are also essential to integrally measure the sustainability of the neighborhood. This kind of approach to neighborhood built environment projects is very common worldwide providing opportunities for the community to interact, create community sense, and enhance engagement. Built environment projects can be utilized as catalyst for local people to come together, identify, and set the retrofit priorities and options for neighborhoods (Bijoux, Saville-Smith & Lietz 2008).

Rogers (1997) argues that the challenge faced is the shift from a system that uses technological development for pure profit to one that has sustainable objectives. Fundamental changes in human behavior are required in order to make the urban environment sustainable, and such changes can be generated by the participation of the citizens. Regarding the energy retrofits, such participation not only generates behavioral changes, but also enables the retrofitting process. The resistance to energy retrofits is 80% cultural and 20% technical, which can be overcome by involving the people (Edwards 2000). It is much easier to accelerate and expand building energy retrofits if there is a willing community. People need to have enough knowledge about the programs and comprehend the benefits in order to enable the process.

Therefore, involving and empowering the residents are essential to overcome resistance, address the fundamentals, work bottom-up and form new partnerships. It is a challenging task for cities to find the right mix of policies, strategies, education, and marketing campaigns in order to encourage participation in, and demand for neighborhood energy retrofits (Delhagen et al. 2009). This will lead the governments to find new, exciting, radical and sustainable solutions. Greater efforts are required to involve participation in all the stages, from the design and drawing up plans to handling over keys, or even beyond. A sense of ownership should be built through participation in order to create more sustainable communities which will happen by the effective contribution of people who are being affected by the ultimate decisions (Armstrong 2000).

2.5. Community Participation

'Definitions are hazardous.'
Samuel Johnson

Langton (1978) builds on this quote and says; '*bad definitions are worse*'. He adds that '*what is dangerous about bad definitions is not their absence or vacuousness, but rather their narrow identification of one characteristic to the exclusion of others*' (Langton 1978, p.15).

This has often been the situation in defining community participation. Since the 1960s, there has been a rising pressure from different stakeholders which changed the traditional top-down decision making. This shift was parallel to the shift in the definition of the participation concept and in its characteristics (Jackson 2001). Former ideas about participation in the form of public consultation have been transformed into shared power where stakeholders are asked to make collaborative decisions and take more elaborate roles in the planning process. The problem in most definitions is that one often has the risk of excluding some instances. Therefore, an inclusive definition of community participation is needed which can be identified through the analysis of the words separately (Langton 1978).

Defining the word '*participation*' is relatively easier than the concept of community. Participation is a process where all the members of a community create opportunities, contribute, influence and share equitably (UN 1981). Indeed, the word simply comes from Latin '*participare*', which literally means *to take part* (Langton 1978). On the other hand, although there is still debate among sociologists on the definition of '*community*', it is defined as a group of people organized around common interests, interacting and living in a common location or within a shared geographical location (Hillery 1955). The word community also comes from Latin '*communitas*' which defines a broad term for organized society (Oxford Dictionary 2010).

Conclusively, derived from the definitions above, community participation can be described as '*taking part in a process as a group of people due to common interests and values'*.

Community participation means '*different things to different people and even different things to the same people*'; because it depends on the topic, time and the political setting of the place (Rosener 1978, p. 109). Therefore, it is impossible to define standard approaches to community participation to apply in different settings. However, all settings still share the common necessity of participation in planning, and now, it is in every project as a common denominator referring to various forms. Walker and Devine-Wright (2008) criticize some governments due to labeling a project as community-based and letting local people get nothing out of it. This kind of attitude simply increases the scope of objection. To avoid resistance and improve acceptance, benefits of the projects should be disseminated to the local people beforehand and clearly in order to describe the developments as community based.

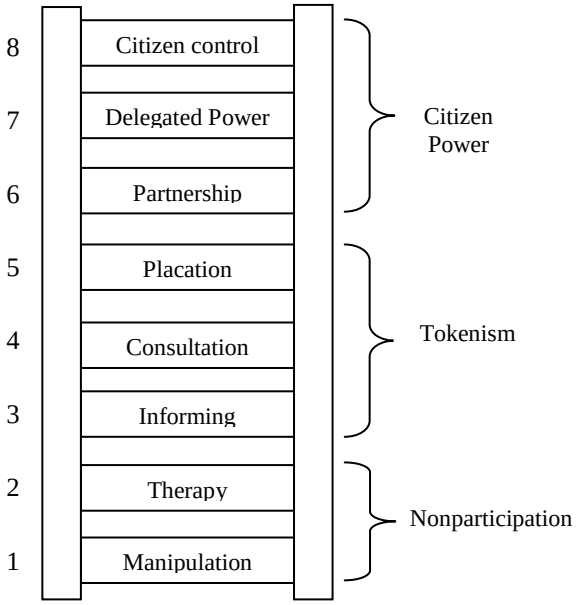
The benefits of participation are already clear. It expands the representation base and creates the environment to incorporate local experience, knowledge and expertise. In addition, participation can clarify the uncertainty and misinterpretation by stabilizing power relations between stakeholders, and encourages local ownership which makes all stakeholders feel responsible for the results (Kapoor 2001). However, although it has been welcomed by many governments, this does not mean that it is easily realized. There is often the lack of integration of participation into the overall program; thus it remains as an add-on most of the time. One reason for this is the requirement for heavy commitment of time and resources especially for the institutions. It is argued that even there is institutional commitment; bureaucrats might have little interest in encouraging participation due to losing discretionary power.

Yet, participation process does not need to be initiated by government institutions. Civil society organizations can initiate such a transition in the management and planning. However, it is important to note that in order to achieve a sustainable process, participation cannot be thought as an add-on; instead, it should be integrated to the overall program and to the relationships between the stakeholders (Kapoor 2001).

2.5.1. Community Participation Models

Arnstein's Model (1969)

Fig.2. 10: Ladder of Participation



Source: Arnstein, 1969, p.2

Arnstein (1969) is one of the earliest and most known authors on community participation, who identifies different forms of participation in her 'Ladder of Participation' (Figure 2.10). The simplification by using the ladder example tries to show the significant grading of citizen involvement where she was ranging these steps from non-participation to full involvement. Arnstein (1969) defines participation as the redistribution of power in order to enable and involve people in the future who are excluded from a process.

According to the ladder, there would be no contribution by the citizens to local decisions in (1) manipulation and (2) therapy stages, since these levels do not make sense as any kind of participation. This kind of participation has an attitude of 'formality' since grassroots do not actually participate in the process, instead do '*participate in participation*' (Arnstein 1969, p.6). Likewise, (3) informing has the same problem of formality which is often one-way flow of information through media, posters, etc. Although the informing level of participation has been

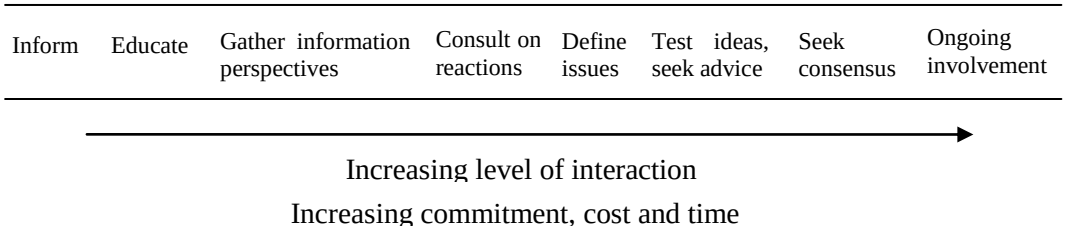
considered important by many authors; she finds it tokenistic and argues that people are often late in participating.

On the other hand, (4) consultation is a much better form of participation that can be done through surveys, meetings, referendum, etc. (Daemen & Schaap 2001). As Smith (2003) and many other authors have mentioned, it is very important in terms of information exchange, and sets the base for further participation. However, the process of participation should be very well thought. Arnstein (1969) criticizes some governments for choosing survey/questionnaire methodology to understand the opinions of the citizens. Due to the inappropriate design of these surveys, people might not express their opinions correctly, and sometimes might reflect incorrect needs. Community meetings are more appreciated than surveys for consultative form of participation, and a better option to understand the real needs and opinions of the community. Placation (5) is simply a higher level of tokenism where the community can advise, but the final decision is still made by the power holder.

According to Arnstein (1969), local authorities should have an attitude of encouraging real citizen engagement instead of tokenistic approaches. (6) Partnerships, (7) delegated power and (8) citizen control are the latest steps of the ladder where citizens and power holders agree to share the responsibilities. This will definitely result in successful progress from decision-making to the implementation and monitoring, with the help of public commitment, ease of implementation, shared responsibilities, etc. (8) Citizen control is the last step of community involvement which refers to community controlled and based services such as schools, recreational areas, etc. Although this level of participation has a more positive image, there are counter arguments indicating that this attitude may lead to separatism and fragmentation of public services.

Dorcey et al. (1994) builds on Arnstein's ladder and describes a spectrum of participation with eight levels designed according to the increasing levels of interaction, commitment and influence (Figure 2.11). However, unlike Arnstein, they do not consider the low levels as non-participation; instead, they argue that each level may be necessary, and the level to be chosen depends on the decisions to be made.

Fig.2. 11: Dorcey et al.'s (1994) Spectrum of Public Involvement



Source: Jackson, 2001, p.139

Rosener's Model (1978)

Rosener (1978) introduces the need to set goals and objectives in community participation. According to her, participation program requires a great deal of

prior analysis to design the purposes of participation properly. However, it is important to state that unlike the frameworks in the 1960s and the 1970s, Rosener's model does not include participation in the form of shared decision making or consensus due to waning interest in community participation in the planning during the 1980s (Jackson 2001).

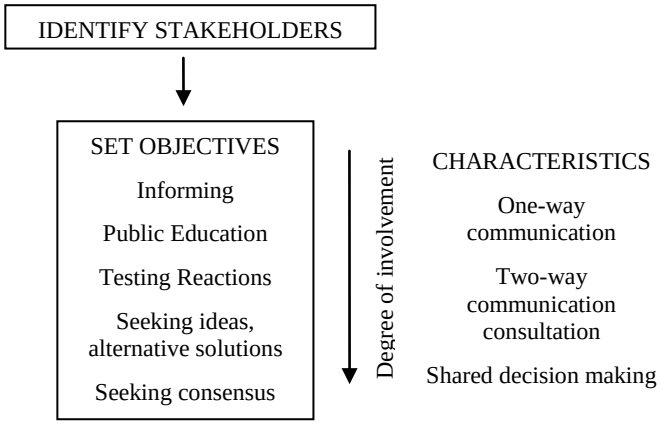
She criticizes some public officials for spending time on the participation activities rather than on the prior analysis to think about the purposes and decide on the methods which serve best to those purposes. As a result of such disregard, participation activities often fail to achieve success and satisfy the parties. The major reason for failures is the lack of awareness about the complexity of the participation concept. She strongly criticizes public officials who choose the simple and inexpensive techniques that ensure their control over the process. In order to develop an appropriate framework and get citizens participate, the analysis of various methods and techniques is as essential as setting the goals and objectives for community participation in planning.

Consequently, Rosener (1978) develops a technique-function matrix where she outlines 39 techniques in order to understand how different techniques can be matched to different functions. The matrix aims to conceptualize participation in terms of purpose and method, but it does not give an idea about the resources needed for any of those techniques. Thus, the matrix can be used as a guideline to clarify the decision of applying a technique or combination of techniques for a particular purpose. However, one should always consider the local context in terms of policy environment, available resources and time.

Jackson's Model (2001)

Jackson (2001) builds on Dorcey et al. (1994) and argues that under certain circumstances, all levels of community participation may be appropriate. She also adds the stakeholder aspect and highlights the importance of identification and analysis of stakeholders in order to decide on the objectives of participation. The approach is similar to Rosener's (1978) in terms of prior analysis requirement before implementing any kind of participation process.

Fig.2. 12: Stages of Public Involvement



Source: Jackson, 2001, p.139

Jackson (2001) develops a model with five different levels of involvement (Figure 2.12). However, the model requires two prior steps that are identifying and analyzing the stakeholders, and defining the objectives. According to the model, the informing stage aims to increase awareness and generate interest. The problem with this level is the approach of the governments. Jackson (2001) talks about the specific tools like newspaper advertisements and public meetings, which are often used by the governments in this stage. Advertisements are usually not visible and are not seen by the public which leads to low interest and creates disappointment among government officials who think that they have performed their duty. Jackson (2001) states that, it is all about the design of the process. Small changes in the design can generate important outcomes.

In the public education stage, the author highlights the ongoing process. The tools for education are important which are often the speeches and presentations to the community groups, articles written for community magazines, and radio and TV programs. Both the informing and public education levels require creativity in the design of the tools. Jackson (2001) introduces a different level in her model which is the testing reactions stage. This level is necessary in order to communicate with the public about the objective, to see the reactions and elicit feedback. It is important to understand the purpose which is not 'to sell' the plan decisions. Therefore, for objective discussions, deciding on whom to go from government is as important as the design of these methods. On the other hand, the seeking ideas stage is more open-ended than testing reactions. Testing reactions is based on the opposition of the citizens to a draft plan whereas seeking ideas utilizes the expertise of the community members. The format is used in many consensus processes where subcommittees are formed from the community in order to work on specific topics and scenarios. Lastly, the seeking consensus stage represents collaboration and shared decision making, which can be briefly said as the 'devolution of power'. She considers this stage as a process, and states that the focus should not be on the consensus, but on the process which differentiates it from negotiation. Collaborative decision making is a participatory process where different actors devote their time and expertise to assist government authorities in setting the objectives and providing solutions. In such a process, different parties do not defend a 'side', instead they try to address all potential interests before providing solutions to satisfy all interests (Jackson 2001).

The model has a hierarchical structure which means people who are involved in the generating ideas stage have already been informed about the issue.

2.5.2. Identification and Analysis of Community Members

Stakeholders in a participation process are defined as '*the groups or individuals with a significant interest in, or who could affect or be affected by, the activities of an organization'* (Jackson 2001, p.139). In continuation, Jackson (2001, p.140) notes that '*stakeholders are those who believe themselves to have an interest or stake, not those which the agency deems to have a stake, or would like to include'*. Therefore, government officials need to identify and invite all potential parties to let them self-select whether they will participate or not. At this point, a list of all relevant stakeholders is suggested since it helps the organization comprehend and

address the diverse needs of different actors. In this study, among different stakeholders community members are on the focus and are referred for the identification and analysis.

Kapoor (2001) argues that most of the time participation by itself is not enough. Asking the question '*who participates and how?*' is crucial to estimate the potential impact of participation. In addition, participation often remains very passive and superficial. For participation to be meaningful, involvement of the relevant stakeholders in all decision-making phases is essential throughout the program, and relevant stakeholders can be selected by techniques like stakeholder identification and analysis.

Rosener (1978), before developing the technique-function matrix, introduces the need to conceptualize community participation issue by asking simple questions of *who, what, where, how* and *when*? '(1) *Who are the parties to be involved in community participation?* (2) *What are the specific functions we wish to have performed by this participation program?* (3) *Where do we wish the participation road to lead?* (4) *How should citizens be involved?* (5) *When in the policy process is participation needed or desired?'* (Rosener 1978, p.110) According to her, the questions above should be asked in order to identify the stakeholders and conceptualize the participation issue. Although they look like simple questions, they are often disregarded in the prior design of a participation process. It is the common misunderstanding to think that all stakeholders will participate and contribute equally. Similarly, not all levels of a policy, program or a project requires the same kind and amount of community participation. These questions and the need for their responses show the complexity of community participation issue, which are often disregarded by the government organizations and ends up with one type of design. Jackson (2001) argues that once the various stakeholders are identified, each should be analyzed according to their level of knowledge and experience about the topic and their degree of commitment. Based on the analysis, the goals and the objectives are defined for each stakeholder group. '*Is the participation intended to generate ideas?*', '*Is it to identify attitudes?*', '*Is it to disseminate information?*', '*Is it to measure opinion? Is it to review a proposal?*' are some questions that can be asked in determining the goals and objectives (Rosener 1978, p.111).

2.5.3. Matching Community Members to Participation Models

Among the stakeholders for those who are not aware of the topic, one-way communication process, such as *informing*, can be appropriate unlike what Arnstein (1969) argues. On the other hand, for stakeholders who are already informed but ignorant, a *public education plan* is required as exists in Dorcey's (1994) and Jackson's (2001) models.

Stakeholders who have more knowledge and even expertise can be invited for *consultation, testing ideas* or for *seeking advice and alternative solutions.* As the last level in many models proposed; *shared-decision making* and *collaboration* can only be feasible when the stakeholders have enough information and education on the topic, and if they are committed to such a process with their time

(Jackson 2001). In any level, the objectives should be clear to all parties in order to prevent misinterpretation and potential problems. If differences in the perceptions and expectations are not clearly outlined and the objectives are not made realistic and clear in the beginning, participants of the process can be disappointed in the end (Rosener 1978). Such differentiation among the stakeholders can facilitate the participation process and respond to the criticism in terms of ineffectiveness and time-consuming.

2.6. Community Participation in Local Environmental Management

During the last few decades, one of the most important shifts in environmental planning and management has been from the technocratic activity to an inclusive approach. In planning, the traditional expert-driven view used to be dominant whereas the new approach started to look for including all relevant stakeholders in a parallel direction similar to the shift from government to governance. Although there are many debates about participation concerning socio-economic differences, power imbalances, or the risks of making ad-hoc decisions, stakeholder participation is on the increase and has already become one of the indispensable components of planning, implying that planning is not a purely technocratic activity (UN Human Settlements Program 2009; Jackson 2001).

2.6.1. Institutional Environment

Local Agenda 21 (LA 21), the key document approved at the Earth Summit in Rio de Janeiro in 1992, mandates cooperation between all actors involved in environmental planning and management on many scales ranging from nation to neighborhood level. It consists of three components which are; ***the dialogue between the local authority and other organizations or individuals of the local society; environmental education to enhance consciousness, commitment and behavior of the local actors within the society;*** and ***national and international cooperation to achieve local sustainable development through the exchange of experiences and best practices*** (United Nations 1992).

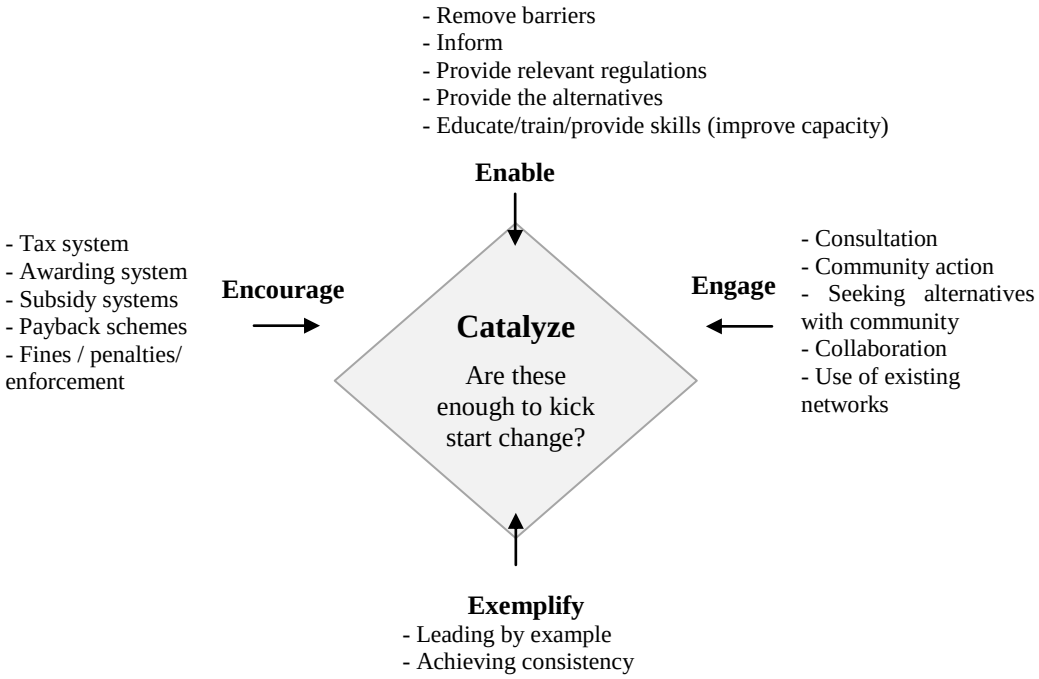
The LA 21 (1992) tries to identify the issues in a community based manner to understand the community vision, and conducts detailed assessments of the problems and issues that have priority. It tries to change the attitude from a closed or even authoritarian style of governance to an open and participatory model. Studies show that since the shift towards the participatory approach in environmental management, many governments, NGOs, and communities have adopted this approach (Kapoor 2001).

Later on, in 1994, Aalborg Charter defined citizens as the key stakeholders and argued that all citizens and relevant groups should be able to access to information and participate in local decision-making processes (Aalborg Charter 1994). Community participation is now a common denominator in many projects, and non-participatory communities are not considered sustainable anymore. Decisions concerning the future of neighborhoods, districts, or cities require well defined civil consensus. In Brussels, new concepts of participation have been introduced for consultation processes; or thousands of citizens have participated in the preparation of the economic and social strategic plan in Barcelona. Many cities

already have hundreds of citizens' associations like in Valencia where citizens even participate to decide on new metro lines (Mega 1996). On the other hand, even though everybody talks about the LA 21 and participation, it is still a big question mark what the local authorities or the citizens perceive from the concept.

Evaluation of the experience shows that many strategies used by the government institutions, such as informing through environmental mass media campaigns or 'awareness raising', have failed to engage large number of community members in community action at the local level. Institutional regulations are important in order to create an enabling environment; yet, there are other aspects that should be considered for tangible outcomes. To exemplify, encouragement through financial enforcement can be essential, yet, on its own it would not be sufficient. A more integrated approach is required by the government institutions to generate positive change in terms of attitudes, habits and behaviors among people. Such an approach should aim to enable, encourage, engage and exemplify community action in order to achieve sustainability (HM Government 2005). In doing this, community capacity and the existing networks should also be considered as other important components. The following figure, derived from the UK Government's Framework for Behavior Change, demonstrates an integrated approach from the institutional perspective (Figure 2.13).

Fig.2. 13: 'Framework for Behavior Change'



Source: HM Government, 2005, p.26

2.6.2. Community Capacity

There are various definitions on the community capacity. Some of those definitions refer to the local reserves such as skills, knowledge, expertise, problem-solving abilities whereas some simply highlight the individuals'

involvement in a process of relationship building and community planning (Peters & Jackson 2008).
Chaskin et al. (2001) identify four aspects of community capacity. The existence of the local reserves is the first aspect which ranges from individual skills to the strengths of organizations within the community in terms of financial capital. The networks of relationships are the second aspect which can be both formal and informal. Although there is not a precise definition, leadership is another aspect; and lastly there is the support for mechanisms in which community members get involved for collective action and problem solving.

Making good and sound decisions and informed choices is directly related with high community capacity, and community capacity building can easily improve the quality of participation. At this point, Peters and Jackson (2008, p.16) ask a key question; *'how best to engage with and capitalize upon the existing networks, relationships and interactions?'*Although public involvement is vital, inadequate partnership approaches can still create a top-down dimension and cause failure in capacity building and consequently in empowering the community.

Box 2. 2: Scotland example for community capacity enhancement

Research in the area of Integrated Coastal Zone Management (ICZM) in Scotland is important to study in terms of inadequate choices (Barker, 2005). In Scotland, during the promotion of more sustainable residential resource management in terms of energy, water and waste; two main tools have been used. First tool was; mass media campaigns and awareness raising advertisements, whereas the other instrument was the introduction of tax and incentive schemes in order to encourage the households.

However, similar to the previous experiences; informing people through advertisements has failed to involve people (Peters & Jackson, 2008). Evaluation of the previous experiences suggests that; awareness raising campaigns raise awareness and enhance the community capacity, but the awareness is often not translated into action (HM Government, 2005).

2.6.3. The Role of Existing Networks

Kapoor (2001) argues that in disseminating information, the existing networks of communication can be one of the most effective means. Kapoor (2001) exemplifies that sometimes people invest in environmental innovation, such as purchasing solar panels, only if they see other community members investing in that technology. This is simply explained with the principle of social influence. The spread of the innovations is done through particular networks as catalysts for change. Once they are encouraged and involved to adopt the innovation, it is likely to spread them with less additional effort.

Community Based Organizations (CBOs) are important part of those existing networks in communities contributing and enabling the adoption process. The CBOs can be the agents in the community to work towards unifying the community. They can enable the cooperation between the community members and the government institutions, playing an influential role (Krone 2000).

The ways in which innovation is spread and become influential upon the community is explained by the persuasion theory and social learning which has

three key elements (Kapoor 2001). The first element is the source which is the speaker. It is important the credibility of the speaker since the more respected individuals can be more influential among the community. The second element of the theory is the message about the persuasiveness of the argument. Lastly, the recipient is another element which depends on the responsiveness of the audience (Hovland et al. 1957). Additionally, Kapoor (2001) argues that the trust and knowledge are other critical aspects in promoting the innovation and suggests making use of the existing networks in the dissemination of these signals. This has been proven by the experience in the past with the achievement of community based energy conservation projects.

About the first element which is related to the respected individuals, Kapoor (2001) suggests that it is likely to increase the number of role models in a community in order to improve the desirability of an innovation among larger numbers of community members. In doing this, the government institutions can take advantage of the existing networks and improve them by connecting a broad spectrum of community members.

Box 2. 3: 'Do it' project by Rotterdams Milieucentrum

'Do it' is a project by Rotterdams Milieucentrum in which eleven women were educated for energy efficiency in the houses. The education period was 7 weeks and after the education, women were awarded with certificates given by the alderman of the Rotterdam Municipality.

Each certificated woman was supposed to find 20 other women in order to educate about energy efficiency issues. The aim of the project was to increase the number of role model women in the community who were willing to educate other women around them. The project was not limited with only energy efficiency; it also involved water efficiency measures in houses.

2.7. International Cases

One of the components of the LA 21 is the national and international cooperation to achieve local sustainable development through the exchange of experiences and international practices. Doing a research on community participation in neighborhood energy retrofits, it is important to look at the international cases to benefit from the experience of other projects.

PROJECT 1 | The 'warm and comfortable living' campaign

EnergieBureau Amersfoort, The Netherlands, 2004

The Project was held with the partnerships of The Amersfoort municipality as the supportive party and EnergieBureau as the coordinative body. Local energy supplier (REMU) carried out the performance assessments and Planbuilding had a coordinating role in retrofitting works.

Target & Aims	The target of the Project was the owner-occupiers of the houses built before 1985 due to the low quality of houses in terms of energy efficiency. The main aim was to encourage as many owners as possible to request for energy performance assessment (EPA), and to demand for the relevant rehabilitation works based on their EPAs.

Methods & Tools	• Subsidies were made available for the owners to carry out the necessary changes in their houses. • The campaign was arranged district-by-district, using mainly local media to advertise activities. • Information stands were used in public spaces including the city hall, to explain the aims of the campaign and the process. • Direct mailing and sending registration card and an EPA brochure to the aimed households were used. • Information evening was organized for the local community in order to explain the EPA process, the types of energy-saving measures and available subsidies. • The owner-occupiers were communicated by phone and encouraged to continue participating.
Results	• 210 EPAs were conducted which resulted in a considerable amount of energy saving retrofit works. • The cooperation ability was improved due to the partnership approach.
Final Remarks and Repeatability	It is stated that it can be repeated with proper attention to the local conditions. In Utrecht, a similar approach created some problems such as over interest; whereas these problems could have been solved by early consultation. It is vital to involve all the partners from the beginning with the coordination of a trusted body for improved communication. The organizers of the project state that the scale should not be too ambitious in order to achieve tangible results. Lastly, the availability of the subsidies was an important aspect in encouraging the community to participate in the project.

Source: Local Energy Action, EU Good Practices 2004, pp. 10-11

PROJECT 2 | Encouraging energy-efficient measures for home-owners
Kirklees Energy Services, United Kingdom, 2000

The Project was mainly managed by Kirklees Energy Services which is a non-profit organization. It took place in two areas with a total population of 582.000, and the local authorities of these areas contributed to the project with initial funding. Other partners who were the utility companies agreed to provide additional initial funds; whereas network of installers and three local credit unions participated in the project by providing loans for the retrofits.

Target & Aims	In the UK, an average household produces six tones of CO2 emissions due to the energy use every year. However, with energy efficiency measures, it was estimated that such amount can be reduced by one-third. This required an initial investment which was discouraging the households. The main aim of the project was to make it easier for the households to pay for such measures with loans and payback schemes.
Methods & Tools	• Free phone service was provided in order to give residents advice on energy efficiency measures, and loan and payback schemes. Later, people were directed to an approved installer for property inspections. • The monitoring of the retrofit works was done through

	questionnaires and telephone surveys. • The installers of the retrofit works were selected after the advertisement on local newspapers. The selected ones received training on the specific energy efficiency measures to direct the households to the most beneficial areas.
Results	In three years time, total amount of investments reached to €2 million; and half of it was the householders' own investment. In total, 1455 households participated in the project which created a reduction of 34000 tons of CO2 emissions.
Final Remarks and Repeatability	The scheme can be repeated, especially better in a smaller scale. Later, it can be expanded to larger scales. The project demonstrates the importance of available funding, loans and attractive payback schemes. It is estimated that without access to adequate financial system, many households would not have participated in energy retrofits.

Source: Local Energy Action, EU Good Practices 2004, pp.8-9

PROJECT 3 | Promoting energy awareness in the east of Ireland

Meath Energy Management Agency, Ireland, 2004

The project was organized by Meath Energy Management Agency and mainly supported by Sustainable Energy Ireland (SEI). Moreover, local companies sponsored the event and provided additional prizes. The National Ecological and Environmental Awareness Centre (Sonairte) and local newspapers and radio stations also assisted the awareness week event by news coverage and interviews.

Target & Aims	The target of the campaign was everyone who lived and worked in the County of Meath, Ireland. The campaign aimed to make local people to think about their energy use and learn how to use energy more efficiently. The main goals were to encourage the concepts energy efficiency and renewable energy, to give information about the energy use and to reduce energy consumption in the community. There was also a long term aim which was to reduce the dependency of Ireland on energy imports and to ensure the regionally generated renewable energy supply.
Methods & Tools	A range of different activities were arranged in order to increase the awareness for energy. • Information was disseminated in many displays including libraries, civic offices, schools etc. • An energy awareness quiz was organized on the radio, as well as a school poster competition for Energy Awareness Week. Leaflets and various educational materials were disseminated in the schools to make children aware of the energy issues. • A Car Free Day was promoted by the media which asked people to leave their car for one day at home and walk, cycle or use public transport. • Energy efficient lighting promotion was also ran by the MEMA, where a survey was conducted and free energy efficient light bulbs were distributed to the respondents to try them out at their houses.
Results	There was a drastic increase in the number of requests for information from the energy agency. The number of people who

	were using low-energy bulbs increased after the promotion while this percentage was only 20% before. Community's interest in the events was high, and the energy agency could find the chance to interact directly with the local people of all ages.
Final Remarks and Repeatability	The main budget for the campaign was €3520 which covered the production of promotional materials, prizes and accessories needed for the participants. It was a very good opportunity to gain media support and attract the attention of the community for energy issues. Without doubt, competitions and quizzes that were supported by various prizes boosted the community interest in the campaign. It can be repeated in any place, yet media support should not be disregarded while planning the event.

Source: Local Energy Action, EU Good Practices 2005, pp.8-9

PROJECT 4 | Barcelona Solar Thermal Ordinance

Barcelona Energy Agency, Spain, 2002

The city council of Barcelona developed The Plan for Energy Improvement (2002-2010) with the necessity to use sustainable energy in the city. The aim was to increase the use of renewable energy sources within the city and with particular focus on solar energy for hot water supply. To do this, a Solar Thermal Ordinance was introduced which obliged the solar energy use (at least 60%) in hot water requirements for both new and existing buildings.

Target & Aims	The target was both the new and the existing building stocks and the general aim was to reduce the carbon dioxide emissions by 20% in comparison to 1999 levels.
Methods & Tools	The initiative used different tools such as promotion and demonstration projects, legal instruments, and the implementation of renewable energy measures in the urban scale to increase the share of renewable energy in the total supply. • To promote the project and ease the acceptance, the city provided a broad communication program including an explanatory guides. • Round table discussions were organized with different stakeholders who were the contractors' association, neighborhood groups, architects and environmental organizations. • 'Solar Day' was organized to attract the attention to the Ordinance. • The technology's benefits were exemplified by major demonstration projects in public buildings such as schools, swimming pools and the city hall to show the feasibility.
Results	In 4 years time, the installed solar energy capacity increased from 1 650 square meters to 19 600 square meters which has resulted in huge annual savings of 15 675 MWh, reducing 2 756 tons of carbon dioxide emissions per year. The major plan proposed several measures building on the success of the

	Ordinance. Many other projects have been planned mainly focusing on the reduction of energy demand and the use of renewable energy.
Final Remarks and Repeatability	The Ordinance has already been repeated by many other cities in Spain. The key element of the success is shown as the effective communication program with different stakeholders for the new regulations.

Source: Local Energy Action, EU Good Practices 2004, pp. 24-25

PROJECT 5 | The FEE-project: Force for Energy by Children

Energy Advice Centers, Seven European Countries, 2001

The FEE-project -'Persuasive power of children towards energy consumption in the local community'- aimed to raise the awareness of environmental issues with particular focus on energy in local communities. The project was held in seven countries through the energy agencies and ran almost two years from 2001 to 2003. Regional and local authorities provided the resources for the project.

Target & Aims	The target was the children in 100 schools who were educated about renewable energy sources and sustainable use of energy. The aim was to change the behavior of communities in terms of energy consumption by informing them about energy savings and the use of renewable sources. The children who were involved were between 10 and 14 years old, and they produced exhibitions with what they learned about energy. This was very inspiring for the families, friends and local communities to get involved in energy issues.
Methods & Tools	• A common project framework was developed while selecting the partner schools. The educational tools were carefully prepared, and exercise, books and informative documents were distributed to teachers and students. • A lot of fieldwork was done to analyze how energy was used in the areas where the schools are located. • An energy bulletin and a website were prepared in order to inform about the project and the energy issues. • The schools were supported by energy agencies in terms of the provision of the context for exercises. Children worked project based where they analyzed the cases and looked for their solutions. • At the end of the year, each school had its own exhibition to present the final work to the local community. • Children were encouraged to make energy audits at home which also inspired their parents to participate as well.
Results	The project helped children understand the energy concept and its sustainable use. This was seen important since education starts from early ages. However, the exhibitions and the inspiring commitment by children also had impacts on the behaviors of the parents, and in local communities.

Final Remarks and Repeatability	The FEE-project already received invitations from other schools to repeat. The energy agencies had important role in the success since they had technical skills, content and educational tools. It is easily repeatable, yet, the partnerships between the stakeholders is very crucial and requires attention.

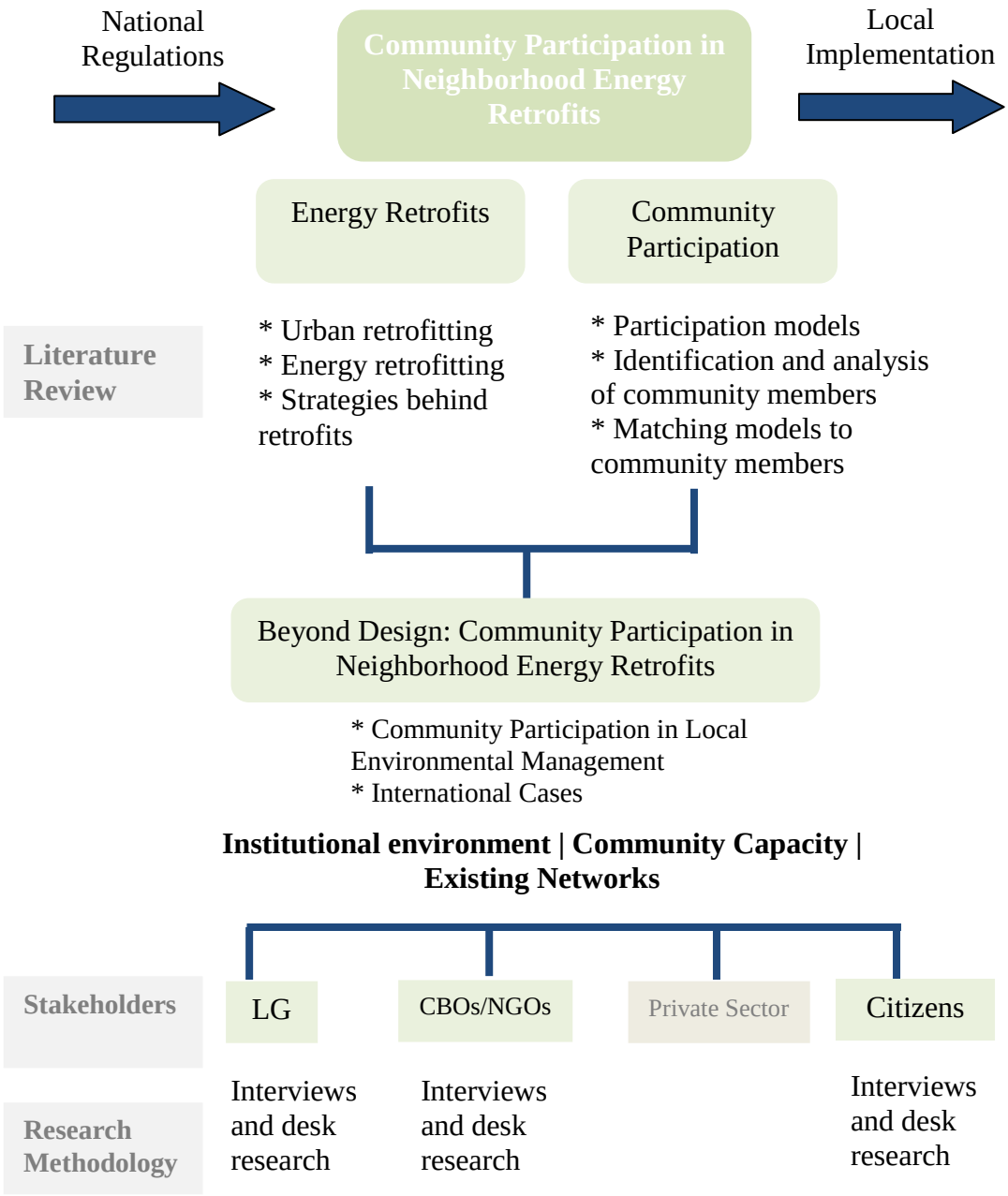
Source: Local Energy Action, EU Good Practices 2004, pp. 28-29

2.8. Analytical Framework

Summing up, the research has reviewed two different concepts 'energy retrofitting' and 'community participation', aiming to explore how these concepts come together in a framework. Three important aspects have come out after the analysis of their combination, which are 'institutional environment', 'community capacity' and 'existing networks'.

The analytical framework primarily shows the process how these three aspects are derived, and later the framework displays how they are further analyzed in terms of research methodology and the scope of unit of analysis (Figure 2.14).

Fig.2. 14: Analytical Framework



to understand what they think about;

- Energy retrofitting concept
- Community participation concept
- Potentials and limitations for community participation in neighborhood energy retrofits, within the selected pilot area.

Source: Author, 2010

Chapter 3 | Research methodology

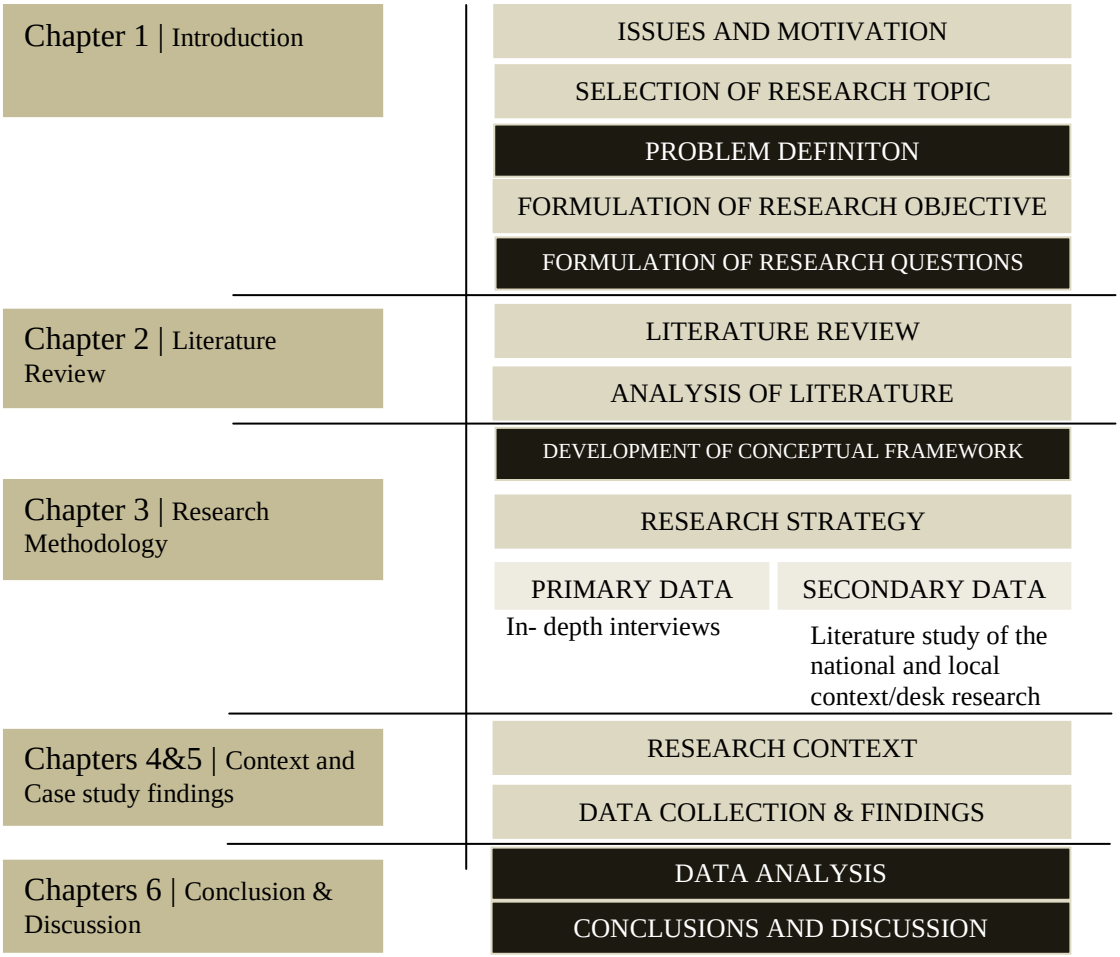
3.1 Introduction

To research the development of a framework for community participation in neighborhood energy retrofits in Güzelyalı requires a clear understanding of the existing framework for community participation in environmental management in the city and in the neighborhood studied. The research is an exploratory and descriptive study because it aims to analyze the ways for community on how to participate. A case study approach is applied to analyze the current situation, and different research instruments are utilized which will be discussed in the coming section.

3.2. Research Design

Figure 3.1 summarizes the research design, making a general overview of the overall research.

Fig.3. 1: The Research Design



Source: Author, 2010

3.3. Research Strategy

3.3.1. Operational Definitions of Variables

Table 3.1 provides the operational definition of the variables used in this research.

Table.3. 1: The Variables and Their Operational Definitions

Variables	Operational Definitions
Energy Retrofitting	It is one of the pillars of urban retrofitting. It refers to the improvement of overall built environment in order to improve energy efficiency. Due to the saving potential, energy retrofits in buildings and urban areas are emerging as a high priority (Delhagen et al. 2009).
Community Participation	Derived from the analysis of literature, community participation can be described as '*taking part in a process as a group of people due to common interests and values'*.
Community Participation in Neighborhood Energy Retrofits	It is a process in which the community is involved in order to take various actions for energy efficiency in the neighborhoods. It is widely accepted that community participation enables the retrofitting process by overcoming resistance, addressing the fundamentals, working bottom-up and by forming new partnerships (Delhagen et al. 2009).

Source: Author, 2010

The research is both a qualitative and quantitative study. Table 3.2 summarizes the research and sub-research questions which are detailed into variables, sub-variables and indicators. The table also analyzes the type of data used, the data source and the unit of analysis.

In the research, case study approach is used as the main strategy. The case study includes the analysis of the existing situation and data collection through different instruments. The qualitative data are gathered through the analysis of previous experiences in community participation in environmental management of Izmir by desk research and in-depth interviews with key actors, together with interviews with the community members.

International cases that are relevant to the topic are presented in the literature review in order to represent examples for the research area through the desk study.

Table.3. 2: Variables and Indicators

Main Research Question: How can community participate in neighborhood energy retrofits?						
Sub-Research Questions	**Variables**	**Sub-Variables**	**Indicators**	**Data Type**	**Data Source**	**Unit of Analysis**
What are the elements to be analyzed in order to involve community participation in neighborhood energy retrofits?	Concepts and Definitions	Energy Retrofitting Concept	Urbanization rate Existing building stock Energy efficiency Energy intensity Energy efficiency strategies	Qualitative	Literature Review	Literature
		Community Participation Concept in Energy Retrofitting	Participation models Identification and analysis of community members International cases			
What are the potentials and limitations for community participation in neighborhood energy retrofits?	Potentials and Limitations	Institutional Framework	Regulations Integration of regulations Interaction between the stakeholders Experience in participatory local EPM	Qualitative	Literature Review In-depth Interviews	Literature Local Government NGOs CBO Neighborhood Administrator Community members
		Community Capacity	Level of Awareness Level of Commitment			
		Existing Networks	Interaction between the stakeholders Level of Commitment			

3.3.2. Data Collection

Data collection is based on the primary and secondary data through different research instruments.

3.3.2.1. Primary data collection

The primary data are collected during the fieldwork through in-depth interviews conducted in Izmir and mainly in Güzelyalı neighborhood.

In-depth Interviews

In-depth interviews are semi-structured and designed with mainly closed, but also with open-ended questions (see Annex 3.1). This kind of interviews was conducted to explore the views and perspectives of the local government officials, neighborhood administrator and the community based organization about community participation in neighborhood energy retrofits, and to analyze the potentials and limitations. In addition, two people from different NGOs were interviewed to analyze the relevant energy regulation.

On the other hand, structured interviews with both open and closed-ended questions were conducted with the community members to analyze their awareness for the energy, energy retrofits and participation in order to have a clear understanding of the potentials and limitations from the perspectives of the community members (see Annex 3.2).

3.3.2.2. Secondary data collection

The secondary data source for the research is the literature study of the national and local context. Literature study is composed of books, journal articles, government reports, policy documents, newspaper articles and internet sources.

3.3.3. Data Quality: Validity, Reliability and Objectivity

In order to ensure the validity of the data collected, alternative independent measuring instruments, namely literature review and in-depth interviews, are used for the same queries. In addition, common questions were asked to different authorities and actors. By this way, it is aimed that different sources of information complement each other and assure validity. Moreover, during the fieldwork, observation notes were taken since the researcher accommodated in the studied area for additional insight of the site and a clearer understanding of the relations among the community. However, observation notes are clearly separated from the actual data gathered.

For reliability, references are chosen from international organizations, government publications, books, reviewed journals, famous academic institutions publications and prominent websites. Moreover, special attention was paid to the selection of the interviewees from government authorities to enhance the reliability in the data collected through the interviews. Objectivity is ensured through the careful design of the interview questions. In addition, as mentioned in section 3.4.5, a pilot test was realized before conducting the interviews with community members in order to improve the objectivity of the questions.

3.3.4. Research Operationalization

The fieldwork was conducted in approximately one month from 3rd of July 2010 to 6th of August 2010, whereas the discussions on the research first started in November 2009. In general, the overall research is conducted in approximately eleven months.

The data collection took place in the city of Izmir, specifically, in a neighborhood called "Güzelyalı", which is located in one of the biggest districts, ''Konak'' (For more information about the neighborhood, please see chapter 4.2). Within the boundaries of Güzelyalı, a smaller zone around the park was selected to carry out the fieldwork as a pilot area (Figure 3.2).

The main language spoken in Turkey and in the city is Turkish, so it was used for any kind of communication in the field. Therefore, interview questions first prepared in English were translated into Turkish. In doing this, back translation method was used to ensure that the content and meanings of both interview questions, in English and in Turkish, were equivalent. Moreover, it was also ensured that Turkish language used in the interviews for the community was easy to understand and did not contain academic words.

Fig.3. 2: Güzelyalı Neighborhood and the Pilot Area

Source: Google Earth, 2010

3.3.5. Pilot Test

Before conducting the interviews with community members, a pilot test was realized in order to ensure the consistency and the clarity of the questions from the perspective of the respondents. Moreover, another aim of the pilot interviews was to prevent the leading and provoking questions for improved objectivity. The pilot

test was done with five people, two of whom were already the residing in the research area.

3.3.6. Research Sampling

The sampling for the research is purposive for the semi-structured interviews with experts and stratified random for the structured interviews with community members. The samples selected for semi-structured in-depth interviews are from the local government who work on community participation in neighborhood and urban issues. In order to understand the city's previous experience in participatory local EPM, another local government official was selected who is involved in participatory waste project. Semi-structured in-depth interviews were also conducted with the representatives of two professional NGOs that are working on the new EPB Directive, and people related to the CBO located in Güzelyalı which is involved in improving the quality of life in the neighborhood. In addition, *muhtar* (officially elected neighborhood administrator) of the neighborhood was interviewed due to his strategic tasks between the community and the local government (See Annex 3.3).

Thirty-eight people from the community in the pilot area were interviewed through a stratified random sampling (See Annex 3.4). These people were selected according to their backgrounds in order to achieve representativeness for every age and gender groups. It is important to note that the socio-economic variables are daily checked in order to prevent the domination of any marginal group. Figures 3.3 and 3.4 show the backgrounds of the community respondents.

Fig.3. 3: Gender distribution

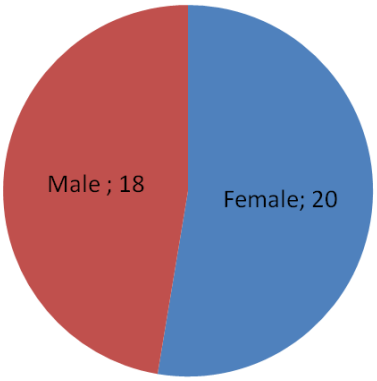
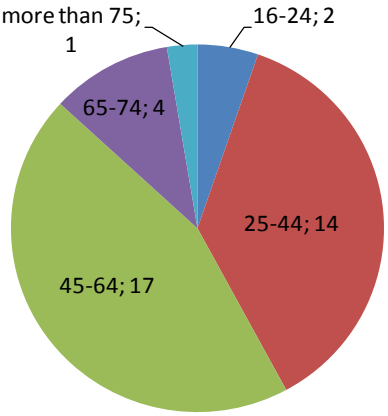


Fig.3. 4 : Age distribution



Total: 38 people

Source: Community interviews 2010

3.4. Data Analysis

The data collection instruments are designed in a structured way in parallel to the research questions and the structure of literature review in order to ease the data analysis.

During the fieldwork, data criticism was done in parallel with the data collection in order to find out the inconsistencies as soon as possible and clarify directly in the field. The community interviews are analyzed according to gender and age, to

ensure that there is a fair distribution of all gender and age groups above eighteen. In case of dominant groups, more interviews were conducted in order to prevent the dominance of one age or gender group.

Once the interview responses were criticized, all the questions were codified in Microsoft Excel, to ease the analysis of data. However, quotations from in-depth interviews are still used extensively to demonstrate the raw images of the circumstances expressed. The observational notes were taken daily and gathered separately from the main data collected through the literature and the in-depth interviews. The observations are kept for the conclusion part to provide additional comments.

3.5. Limitations of the Study

Time is the biggest limitation of the study since it is limited for a comprehensive study. The data collected in the research is based on what government authorities and actors say. One month is very limited to really understand what these actors actually do.

The policy document is new; therefore, it is hard to find people in local government who are aware of the new policy on energy performance in residential buildings. Moreover, there are general uncertainties about the regulation in terms of responsibilities for the implementation and audit. These are the facts that can limit the further analysis and the development of ideas for future projects.

Finally, issues related to energy and participation are very popular and pronounced often by different sectors in the country. Although this is something necessary for the rationale of the study, the concepts can be seen as trends which might weaken the seriousness of the research.

Chapter 4 | Context of Izmir and Güzelyalı

4.1. Outline

Chapter four presents the context of the case study conducted in the city of Izmir and Güzelyalı neighborhood, which is a formal settlement in Izmir. The context is studied through various spectrums that are physical, social, cultural, economic, political and institutional, and environmental. It is important to state that the chapter is broadly presented to make the reader understand the context properly. The chapter is divided into two sections. First section reviews the background of the city of Izmir which is followed by the current status of Güzelyalı neighborhood in the second section.

4.2. City of Izmir

4.2.1. Physical Context

Located along the Coast of Aegean Sea and in the western part of Anatolia, the City of Izmir is the third biggest city of Turkey (Figure 4.2). The city is composed of eleven metropolitan districts with different physical characteristics. The total area is 1,973 km^2, including the metropolitan districts.

Fig.4. 1: Location in Europe Map

Source: Kuoni, 2010

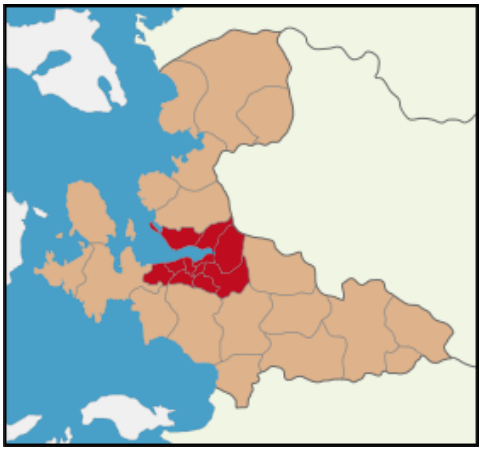
Fig.4. 2: Location in Turkey

Source: Wikipedia, 2010

Fig.4. 3: Province of Izmir

Source: Wikipedia, 2010

Fig.4. 4: City of Izmir



Source: Wikipedia, 2010

4.2.2. Socio-cultural Context

In terms of socio-cultural values, lifestyle and dynamism, Izmir is widely considered as one of the most progressive Turkish cities. The total population of the province is almost 4 million, distributed as 85% urban and 15% rural. The population density is 316 people / km^2. In Izmir, the average household size is 3.58 people and the average age in the city is 32 years while the average in Turkey is 28 (Izmir Strategic Plan 2009).

In Izmir, there are three public and four private universities which create a scientific environment in the city. According to a research done by a non-governmental organization with the help of Ministry of Internal Affairs, 81 Mayors, University Rectors and Turkish Statistical Institute shows that socio culturally, Izmir is the most developed city of Turkey (Türkiye'nin Sorunlarına Çözüm Konferansı 2007). In the ranking, some of the main determinants were the population, total area, education ratio, GDP, urbanization ratio, average family size, population density, fertility rate, number of students in higher education, number of employees in industrial sector, electricity production per person, water consumption per person, districts development rankings and the ratios of teacher/student, doctor/patient, unemployment/work, total crime/population, etc.

The city is growing fast due to the high amount of immigration each year which is around 40% (Izmir Strategic Plan 2009). On the other hand, there is a brain drain which is an important problem in the city, since the young generation often immigrates to other major cities for better career opportunities.

4.2.3. Economic Context

According to the data of 2001, per capita GDP in Izmir is around $US 3215 which is higher than the average GDP of the country and the region it is located. There are different types of economic activities in the city among which the industry is the most participated one with 30.5%. Other key sectors are trade and similar services (22.9%), transportation and communication (13.5%), and agriculture (7.8%). Tourism is also an important income for the city; in 2009, around 1 million people visited Izmir mainly for the sea, archeology, mountain and thermal tourism. In addition, it is important to state that Izmir has the second largest port after Istanbul which shapes the socio-cultural and economic context.

On the other hand, energy investments in the outskirts of the province of Izmir create a new economic sector. In terms of wind energy, Izmir has 36% of the total installed capacity of Turkey (Boztepe 2009). The city has future action points to create new sectors in other renewable energy sources some of which are currently in use and under the control of the municipal companies.

4.2.4. Political and Institutional Context

Izmir is the capital of the Izmir Province and has an active political environment. Local government is from the Republic's Party which is different than the party of the national government. This polarization and conflict between different political parties often create a negative impact on the political consensus about many

issues. The Governor, as the local representative of the national government, does not have a vertical relationship with the local government. The Governor has the tutelage control, and is responsible for the control of regulations. When realizes a problem, he/she cannot intervene directly but forwards it to the Council of State.

The range of functions of the local government is very wide. Every local issue, primarily zoning, and water and sewerage is under the responsibility of the local government. Local governments have the authority to make decisions, implement and control several issues in environmental management, local transportation, parks and recreation areas, culture and arts, tourism, social service and aid, matrimonial service, emergency services, the provision of education for local people to obtain skills and professions, services to improve economy, and in the trade. However, being the responsible body in many sectors does not mean that the implementation of the Energy Performance of Buildings Directive is under the responsibility of the local government. This is due to the general uncertainties about the implementation of the regulation in general which will be discussed in the coming chapter.

4.2.5. Environmental Context

The Metropolitan Municipality of Izmir mentions about the strengths, weaknesses, opportunities and threats (SWOT) of the city in environmental planning and management. The city has important experiences in resource management which come forward as strengths. Sorting at Source[5], a Solid Waste Management (SWM) project, is one of those experiences of the city in resource management.

Despite the global threats like the lack of water sources, immigration, increasing air pollution and global warming, the city has several opportunities. Firstly, there are renewable energy sources (wind, solar and geothermal) and the technology is becoming widespread. There are universities to conduct research for technical support which can ease to design and carry out the projects for resource efficiency. The high level of awareness in the city for environment is another opportunity together with the geography and the mild climatic conditions.

In addition to the focus on the waste and water, energy is also a topical issue in the city as stated in the strategic plan of 2010-2017. Table 4.1 shows the SWOT analysis made by the Metropolitan Municipality for energy.

Table.4. 1: Izmir Metropolitan Municipality SWOT analysis for energy

Strengths	**Weaknesses**
• There is geothermal energy use in the buildings in Izmir. • The projects that encourage renewable energy use are supported. • Energy efficiency is encouraged by supporting the projects for insulation. • Natural gas use is promoted in the city.	• There are not enough projects to integrate renewable energy sources to industrial and residential sectors. • The infrastructure for the distribution of renewable energy is not sufficient.

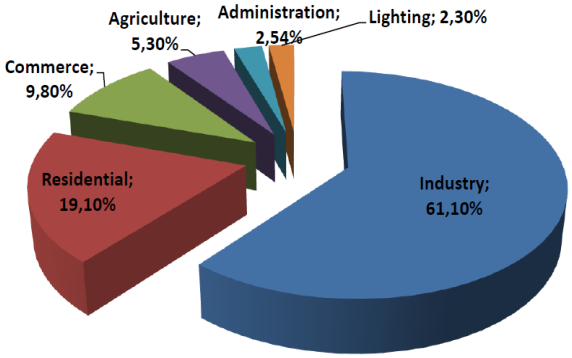
[5] Sorting at Source is a SWM project of Izmir Metropolitan Municipality and is analyzed in Chapter 5.

Opportunities	Threats
• The city is rich in terms of geothermal energy resources. • The climate has positive impacts on reducing the energy consumption during winter. • The number of sunny days is enough for the feasibility of solar energy production. • There is a high potential for wind energy production.	• The city does not have the capacity for adequate technology to produce renewable energy, and this makes the investments more costly. • The city is dependent on energy imports especially for the industry and residents. • The cost of production of geothermal energy is high for electricity production. • Energy prices are increasing continuously. • The city does not have the authority to open new geothermal sources.

Source: Izmir 2010-2017 Strategic Plan, 2009, p.283

Accordingly, the city states different actions for the seven years time in terms of energy production and consumption. Some of those are city lighting by renewable energy, dissemination of geothermal energy use and the creation of an ecological village. In addition to those, together with the private companies that the Metropolitan Municipality is a shareholder in, there are future attempts for solar energy, wind energy and energy efficiency (Izmir Strategic Plan 2009).

Fig.4. 5: Electricity consumption in Izmir



Source: Izmir 2010-2017 Strategic Plan, 2009, p.57

Box.4. 1: Electricity consumption in Izmir

Izmir is the seventh most electricity consuming city in Turkey and the fourth in the least energy loss in the distribution. However, energy efficiency is still an important problem especially for the industrial and residential sectors (Figure 3.4).

4.3. Güzelyalı Neighborhood

4.3.1. Physical Context

Güzelyalı neighborhood is located along the waterfront and expands into the interior region in the south of the city. The neighborhood is easily accessible by different means of transport such as bus and ferry; and in the near future it will be accessed by also metro and tram.

Within the boundaries of Güzelyalı neighborhood, there are four schools, one health care center, two mosques and one police station. There is one more thing which differentiates Güzelyalı neighborhood from others, which are the two cultural centers located within the vicinity. One big and one relatively small, two culture and arts centers exist in Güzelyalı where many concerts, seminars, lectures and talks are organized throughout the year.

4.3.2. Socio-cultural Context

In the neighborhood, there are approximately ten thousand houses which give an approximate number for the total population. It is assumed that the total population of Güzelyalı is around 35.000-40.000 people. In Güzelyalı, the households are usually families, but there are few houses where single people or university students live. The *muhtar* (neighborhood administrator) states that the neighborhood has not received much immigration from rural areas like others in İzmir. Thus, according to the *muhtar*, socio-culturally Güzelyalı has not changed much throughout the years whereas some community members think the contrary.

> *''...The profile of the neighborhood has changed a lot during the last 15-20 years. People who have come lately are economically and socio-culturally different from people who have lived here for all their lives. Such difference has affected the communication among the community members negatively...''*
>
> **Retired | Female | 60 years old | resident for 43 years**

Sabri Özazar who is the leader of the community based organization (Güzelyalı Göztepe Beautification Platform) talks about the history of the neighborhood. During the 1900s, many families immigrated to Güzelyalı neighborhood which was followed by people who came due to the population exchange during the 1920s with countries like Greece. In Güzelyalı, there are still many people who are the young generations of those families. Today, due to its physical location and the neighborhood atmosphere, Güzelyalı is favorable in Izmir. The education and the income levels are relatively high when compared to other big areas in the city. However, due to the narrow streets and insufficient infrastructure, especially younger generation tends to move to spatially more planned neighborhoods (Interviews 2010).

4.3.3. Economic Context

Fig.4. 6: Commerce in Güzelyalı

Source: Author, 2010

In the neighborhood, people often run their own companies. There are too many small commercial activities held within the boundaries of Güzelyalı neighborhood. Especially around the park, it is likely to see every type of commercial activity which creates various environmental problems (Figure 4.6).

4.3.4. Political and Institutional Context

The neighborhood is located within the borders of Konak district which is the second biggest district in Izmir. Apart from the municipal body, like every neighborhood in Turkey, Güzelyalı has also a *muhtar* (neighborhood administrator) who has been representing the neighborhood for more than 20 years. Like in other neighborhoods, the *muhtar* is often busy with administrative works. However, there is another task of these people which is to constitute the communication bridge between the local authorities and the community.

> *''...I personally communicate with the municipality. The neighbors come to my office and talk about the problems. My task is to deliver these problems to the municipality. Similarly, when the municipality has a project, the officials primarily communicate with me to inform and consult us about the project...''*
>
> **Ali Ertürk | Neighborhood Administrator of Güzeyalı**

Konak Municipality states that one of the most important strengths is their good relations with the higher local authorities. The projects prepared by the Konak Municipality are often supported by the metropolitan municipality. Yet, there is still the confusion about the assigned tasks and allocated revenues between the authorities. The socio-cultural level of the Konak community, the number of universities within the boundaries, the input of the *muhtar*s to municipality projects and the awareness for natural and built environment come out as the opportunities of the district. However, immigration, high urbanization rate and diminishing natural sources are still important threats for Konak district.

The municipality states its mission as *to create an environment which is livable, productive and attractive for investments with the participation of the communities and through sustainable urbanization approach*. In doing this, the authority defines the basic values as participation, transparency, responsible citizenship, environmental awareness, respecting to human rights and sense of ownership for the city (Konak Municipality 2010-2014 Strategic Plan 2009).

4.3.5. Environmental Context

There is a park in the Güzelyalı vicinity which is unique in the south part of the city. Located in the middle of the neighborhood, the park is used for different purposes (Figures 4.7 and 4.8). Except for this recreation zone, buildings are densely located with narrow streets in Güzelyalı.

Box.4. 2: Park of Güzelyalı

The park has a story behind. The location of the park used to host a dispensary which was demolished to construct eight-storey apartment blocks. The dispensary had trees in its garden and this was the only breathing place in the neighborhood in between the building blocks. One night, the neighbors woke up with a sound and they saw that the trees were being cut in order to empty the area for construction. The neighbors stayed awake till the morning to protect the trees. The next day they collectively complained to the municipality saying that they want to keep the trees and have a park for their neighborhood, not new buildings. The case went to the court and the Mayor of that time was judged for the misuse of his position. Finally, that area was kept as a park which is a big success of Güzelyalı residents (Interviews, 2010).

Fig.4. 7: Sitting areas in the park

Source: Author, 2010

Fig.4. 8: Playground in the park

Source: Author, 2010

There is no information about the number of buildings within the boundaries but it is obvious that the density is very high. In the front, the buildings are around seven or eight-stories whereas in the back, the buildings are shorter with maximum of five-stories. Consequently, the big blocks on the water front block the air circulation and the wind that comes from the sea, and create a bulky atmosphere in the interiors (Figures 4.9 and 4.10).

Fig.4. 9: Housing blocks on the waterfront

Source: Author, 2010

Fig.4. 10: Housing blocks in the back

Source: Author, 2010

According to the neighborhood administrator, one of the most important environmental problems in Güzelyalı is the insufficient infrastructure. It is stated that when it rains, the drainage system cannot respond adequately and the streets get blocked with water. Apart from the drainage problem, the neighborhood has parking, waste, noise and visual problems (Figure 4.11). The commercial activities around the park and in narrow streets occupy too much space with the stuff they sell. Due to such activities and tight structure, parking is one of the most problematic issues in the neighborhood. This affects the waste management in the neighborhood since there is no adequate space left for the waste containers.

At the same time, cars and informal commercial activities in the streets create a noisy environment together with the disturbing noise of the air-conditioners in almost every house. Energy issues are not pronounced directly by the residents, but when one starts to talk about the problems in the neighborhood, it is seen that many problems are directly linked with energy. Basically, the usage of air-

conditioners is an important problem since it affects the quality of the air and creates visual problems (Figures 4.12 & 4.13).

Fig.4. 11: Some of the environmental problems in Güzelyalı

Source: Author, 2010

Another problem that the usage of air-conditioners creates is the electricity cuts. The power given to the neighborhood is not sufficient for the increasing number of electric devices, thus, the municipality has to work continuously on strengthening the power capacity in order to respond to the rising energy demand.

> *''Energy is a high-priority problem in the neighborhood since it is connected to a problem chain. If we can solve the energy problem by reducing the demand for air-conditioners, many problems such as noise, air and visual pollution will have been solved as well.''*
>
> **Retired | Female | 56 years old | resident for 5 years**

Fig.4. 12: Energy problem in Güzelyalı

Source: Author, 2010

Fig.4. 13: Air-conditioners on facades

Source: Author, 2010

> *''...It is sad to see my neighborhood in these conditions. In the past Güzelyalı neighborhood was one of the most beautiful, the neatest, cleanest and the greenest districts in Izmir just as its name*. However now, I sometimes cannot believe that the neighborhood turned into a total mess.''*
>
> **Retired | Female | 60 years old | resident for 43 years**

*In Turkish, the word Güzelyalı is composed of two words that are ***güzel*** (beautiful) and ***yalı*** **(**waterfront). The neighborhood was named by Güzelyalı in the past because of being a beautiful waterfront.

Chapter 5 | Case Study Findings

5.1. Introduction

Chapter five presents the practical understanding of community participation in local environmental management in Izmir and Güzelyalı. Based on the documents and interviews (with local government officials, CBO, NGOs and the community), the chapter seeks to respond the research sub-question two which is: ***'What are the potentials and limitations for community participation in neighborhood energy retrofits in Güzelyalı neighborhood?'***

The chapter is divided into three broad sections that are classified according to three important aspects for community participation in neighborhood energy retrofits. These topics are institutional environment, community capacity and existing networks which have been derived after the literature review.

5.2. Institutional Environment

Achieving behavior change and sustainability demands for an integrated approach by the government institutions which aims to enable, encourage, engage and exemplify (HM Government 2005). With this in mind and derived from this approach, in the research institutional environment is studied through the analysis of relevant regulations and their integration, the experience in participatory local EPM and the interaction between the stakeholders.

5.2.1. Local Agenda 21 Initiatives in Izmir

Together with two other metropolitan municipalities, Izmir is one of those first that promoted the Local Agenda (LA) 21 process. The project of 'The Development and Encouragement of Local Agenda 21 initiatives in Turkey' was supported by UNDP (United Nations Development Program); and in 1997, it was signed as an international treaty by the Turkish Government, UNDP and IULA-EMME (International Union of Local Authorities-Eastern Mediterranean and Middle East) (Palabıyık & Toprak 2000). The project aimed to achieve the Local Agenda 21 main goals by the development of a long term strategic plan in order to cope with sustainability issues on the local level.

However, the city had started to promote partnerships voluntarily before 1997. In 1996, the mayor of Izmir and the president of Aegean Municipalities Union organized a meeting in order to revise the local activities with the participation of district governments, state government agencies, NGOs, universities and citizens. The first task was to found working groups and analyze the urban and environmental problems in the city. The first framework was drawn under the topics of urbanization, environment and migration. Since then, regular meetings have been held by the volunteer working groups once in every month (Izmir Metropolitan Municipality 2009), and the reports of these meetings have often helped the local government prepare action plans for the city.

In 1999, Izmir Metropolitan Municipality looked for more decentralized action, and encouraged district municipalities to organize working groups and advisory meetings. This went even further in 2009, and with a large participation by the

local authorities, private sector, artists, architects, authors, universities, NGOs, two workshops were organized as a first step in two fields; economy and culture-arts (Izmir için Elele)[6].

Basic Outcomes of the Local Agenda 21 in Izmir

Since the government pursues a western model of development, the idea of involving the civil society in decision making has been highly valued in Turkey. However, Palabıyık and Toprak (2000) argue that due to unique characteristics of the civil society, the ideal model has been transformed into a bureaucratic society which failed in establishing autonomous organizations. One reason for this is that centralization has always been strong in Turkey since the early years of the Republic (Palabıyık & Toprak 2000; UNDP 2004). Due to the bureaucratic structure, practical cooperation between the local authorities, private sector, NGOs and the citizens has not been successfully achieved (Palabıyık & Toprak 2000).

However, the LA 21 initiatives had important outcomes such as the city councils, where government officials constitute one-third of the participants, and the two-third is composed of NGOs and citizens. There might be problems in achieving real participation by relevant stakeholders; yet, city councils are still very important since they constitute the base for further participation. They are widely regarded by the local authorities and the topics raised in the meetings take place in the city agenda.

> *''...City Councils came out as the outcome of the LA 21. In the beginning, the law stated that municipalities 'can' establish city councils. We, as Konak District Municipality, insisted that the law must say 'should'. Our suggestion was accepted and now, although there is no common language, each Turkish city should have a city council. Furthermore, we tried to eliminate the government authorities as much as possible and encourage civil society to participate. Every city has its own regulations for its council. In Izmir, city councils are not only open to particular NGOs; instead, anybody can participate in the city council. This has advantages like better representativeness; yet, being open to abuse is an important disadvantage.*
>
> *The decisions taken in the city councils should be listened and discussed by the municipality council; however, the regulation does not oblige the council for the consideration which is very open to abuse as well. Yet, city councils are still essential in creating the environment for information and discussion. Citizens are all welcome to these meetings, but we hardly see them if the agenda of the meeting do not have direct impacts on them...''*
>
> **Celil Durdu | Konak District Municipality**

5.2.2. Experience in Participatory Local EPM

Building on the LA 21 initiatives in Izmir, two examples from the city are studied to contribute to the analysis for participation in local EPM. These are the projects related to waste sorting for recycling and household water efficiency.

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[6] *Izmir için Elele* is an initiative of the Izmir Metropolitan Municipality for a better urban democracy model. For more information: http://www.izmirelele.com/

5.2.2.1. Participatory Solid Waste Management

In Turkey, SWM is a subject that is rapidly attracting interest in the city management. Besides, within the environmental context of Izmir, the solid waste problem has been the most essential one in the middle term (Palabıyık 2002).

In the city, the Metropolitan Municipality of Izmir is the decisive responsible body for any kind of actions regarding the SWM in cooperation with the city managers and the contractors. In 2000, city officials gathered due to an urgent need for a participatory-responsible model to deal with the solid waste problem. This participatory SWM system was the first initiative in the city and nationwide due to its participatory and implementable context based on the LA 21 experiences (Palabıyık 2001). In doing this, the city first identified its strengths, weaknesses, opportunities and threats. The city had waste management experiences and also previous co-operations. There was a positive environment for dialogue and scientific capacity for research. Furthermore, international good practice examples, reforms in municipal bodies and environmental laws were considered as opportunities for such a proposal. However, institutional capacity was not seen sufficient in terms of personnel and equipment, and lacking financial sources were important weaknesses. In addition, the risk of importing inadequate operational models was a threat for the city.

After the analysis, a participatory-responsible model has been established by building an 'Informed Advisory Committee'. This committee consists of the representatives from the local authorities, central government representatives, *muhtars* (neighborhood administrators), chambers, NGOs and research institutes. The committee worked as city council by the invitation of the Mayor, and mainly functioned to develop an integrated SWM strategy. The model proposed to build sustainable, participatory and implementable local strategies and methods of SWM, establishing regulatory frameworks (Palabıyık 2002). Despite the attention on waste collection and disposal, the model also looked for waste sorting. In doing this, understanding the distinct conditions of the neighborhoods was found essential which required public involvement and more public awareness on waste.

The participatory-responsible model set the first base for the SWM in the city. The municipality continued working on the proposed model which later became an important sample for other local and national decision-makers (Palabıyık 2002). This first step generated other actions and by the year 2004, the municipality started an awareness campaign called '*Sorting at Source*' (paper, glass, plastic and metal) in nine metropolitan districts in cooperation with district municipalities, ÇEVKO[7] and eight licensed private companies.

In January 2005, under the adaptation reforms for European Union, sorting was made obligatory in Turkey which obliged municipalities to put legal control on the citizens for recycling. At that time, Izmir was ahead by initiating the process before the legalization. Due to this fact and being in cooperation with the

[7] ÇEVKO (Environmental Protection and Packaging Waste Recovery and Recycling Trust) is the partner NGO in the Project.

community and other stakeholders, the city reached a much better amount in comparison to other cities in terms of collected sorted waste.

When the project started in 2004, the scope was within two pilot areas (eleven thousand houses). Posters and leaflets were used to raise awareness about recycling and the importance of sorting. Educators from the partner NGO organized community meetings to educate people and distribute blue-colored sorting bags. In schools, thinking that education starts from the very early age, awareness talks were organized with students and recycling containers were located in some of them. Such attitudes in EPM contributed positively to the collected total amount. Table 5.1 shows the distribution among years.

Table.5. 1: Collected sorted waste distribution in years in Izmir

Years	Collected Sorted Waste (tones)
2004 – 2005	4180
2006	5761
2007	6736
2008	8315
By July 2009	16000

Source: Izmir Metropolitan Municipality Website, 2010

By the first half of 2009, the number of houses included in the project reached 245.000. In addition, public buildings, hotels, hospitals, shopping malls, industrial zones, military buildings and the universities have also been taken into the scope of the project. In 2012, the project aims to reach the whole city.

5.2.2.2. Participatory Household Water Management

After the experience gained in SWM, the city prepared a similar campaign for household water consumption in 2007. Due to severe impacts of global warming, the overall amount of rainfall has decreased over the last years and as a result the metropolitan cities in Turkey faced a drought problem. Izmir, by foreseeing the problem beforehand and implementing measures to deal with the water cut problem, saved considerable amount of water in the first year of the campaign.

In Izmir, water management is under the responsibility of IZSU (Izmir Water and Sewerage Administration), which is a company established by the municipality for water and sewerage works. Izmir Metropolitan Municipality together with the IZSU organized an awareness campaign to raise the consciousness for household water use through the children. Posters were prepared to be used in bus, ferry and metro stations, shopping malls, hospitals and neighborhood administration offices.

The campaign was supported by many schools in the city. The school managers organized competitions among the students by awarding the student who encouraged his/her family to save the biggest amount of household water. The students gave a copy of their water bills and the ones who made the biggest difference won free education prizes. Furthermore, within the campaign, leaflets and movies were prepared to be distributed to families. Table 5.2 shows the

expected distribution of the campaign. It is seen from the table that by the year 2008, the project saved much more water than expected.

Table.5. 2: Household water saving after the campaign

Daily water consumption by 2007	600.000m³
Water saved in the first two months	2.214.000 m³
Expected water save by the year 2008	13.287.726 m³
Water saved by the year 2008	21.620.093 m³

Source: Izmir Metropolitan Municipality Website, 2010

As aimed in the beginning, children played an important role in the achievement of the campaign. The municipality achieved these results by collaborating with the university students in order to communicate with children in primary schools.

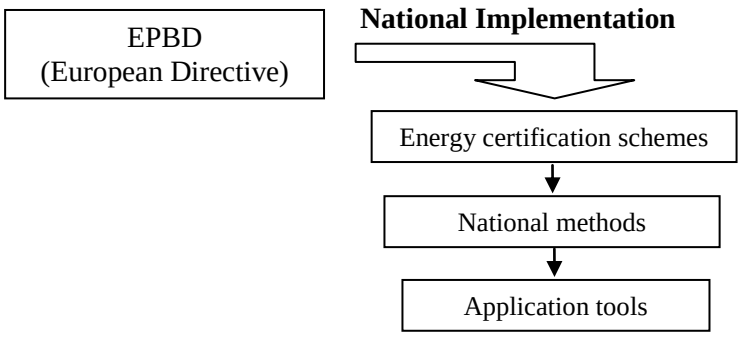
The projects for waste and water are important in terms of showing the city's experience in local EPM. There are lessons learned from these experiences to be used in future energy projects. Although the examples do not demonstrate an elaborate way of participation, the experience is still very valuable to build on.

5.2.3. Energy Retrofitting in the Local Context

In addition to the LA 21 initiatives and their impacts on community participation, it is also essential to look into the integration of technical regulations in the institutional environment. As mentioned in chapter two, on the way towards energy efficiency in the building sector, Turkey has recently executed a regulation for new and existing buildings. Reminding the words of Kraft (2007), passing the law from the Congress is not enough. Decision making on how it will be implemented and to analyze how it will fit in the general framework is crucial.

The Energy Performance of Buildings (EPB) regulation is a European Union directive and was prepared to promote the improvement of the building stock in Europe in terms of energy efficiency. One of the key elements is the introduction of the energy certificates for the existing building stock. Governments which accept to implement this regulation are free to choose the appropriate financial and social instruments to combine with energy certificates (Figure 5.1). Thus, an energy certificate can be seen as the combination of different policy instruments.

Fig.5. 1: EPB Directive Framework



Source: Workshop by Adel Mourtada, 2009

In Turkey, the regulation has been prepared in collaboration with different professional NGOs. The Chamber of Mechanical Engineers (MMO) and The Chamber of Electric Engineers (EMO) are two of those institutions which play an important role in the development of the program. Looking at the technical program, one can say that it has three main objectives which are 1) to minimize the energy loss, 2) to use equipments with high performance, and 3) to create the energy identity certificate for buildings which have to be renewed in every ten years. At first glance, the ambition looks adequate and feasible; yet, not having a strategy or no step-by-step process makes the implementation almost impossible (Interviews with MMO and EMO Izmir Chapters 2010).

> *''... We don't know where we are, and we don't know what we aim with this regulation. We have already warned the policymakers to simplify the regulation in order to start from somewhere easier; however, every day it gets more and more complicated. I would say that this regulation is not implementable with its current situation...''*
>
> **Melih Yalçın from MMO (Izmir Chapter)**

The regulation obliges the existing buildings to take action and make necessary changes in order to be eligible for relevant energy certificates before 2017. In doing this, the main focus is on the buildings whereas the interviews show that although the neighborhood scale is not mentioned in the regulation, it can be a much better solution in order to achieve energy efficiency. *'We all know that the bigger the scale, the most probably you will achieve more efficiency in your heating and cooling infrastructure.'* says the representative from the MMO Izmir. The interviewee from the EMO Izmir adds to it; '*In order to realize such projects, people need to see the benefits clearly. In the existing situation, there are no social instruments to communicate with people, and actually this can be done through the neighborhoods and together with the media.'* Both interviews show that conducting a project on the neighborhood scale helps the project expand more easily by improving the acceptability among the neighbors.

The interviews also demonstrate that the benefits are not only limited with this. *'By using the local knowledge and experience, the fundamentals can be addressed more easily and adequately'* says the interviewee from the MMO. In the existing situation of the regulation, there are general measures set for all the regions. This definitely requires local investigation to identify the adequate measures to take in each location. The interviewee from the EMO states that communities can play an important role in such a decision-making.

The same interviewee points out a problem of the regulation which is the exposure to abuse. With the regulation, there are already many private companies established to carry out the retrofitting works in the country. Yet, there is a problem in auditing since it is not clear who is responsible to audit whether the buildings are retrofitted within the given time frame or if they are done properly. Both interviews show that the lack of audit will be a big limitation against the implementation of the regulation together with the missing financial system, i.e. paying schemes, tax reduction, subsidies, etc.

''... Although it is not ready yet, the national government is currently working on the financial system to introduce fiscal instruments by 2012, such as emission taxes to oblige retrofits. In the coming financial regulation, the buildings without relevant retrofit measures will be obliged to pay an emission tax and if they don't make necessary changes, the amount to be paid for the tax will increase by more than 25% each year ...''

Talat Canpolat from the EMO (Izmir Chapter)

'However, it has many potentials' says Melih Yalçın (the representative from the MMO Izmir). Many people are already interested in making changes, and actually made some with the help of special bank loans and the insulation companies. Yet, people need to be educated and oriented. Their interest in making changes on their own started to become a handicap due to the inadequate implementations.

The regulation for energy retrofitting is a very crucial element in realizing community participation in neighborhood energy retrofits. There are limitations of the regulation as well as several potentials. In the next chapter, these potentials and limitations will be analyzed together with other components of the framework to see how they fit in together.

5.2.4. Perspectives on the Institutional Environment

So far, the institutional environment has been analyzed in terms of regulations and their integration, together with the city's experience in participatory local EPM. Previous experience shows that the concept of community participation is not a new topic for the city. However, as Rosener (1978, p.109) argues, community participation means '*different things to different people and even different things to the same people*'; because it depends on the topic, time and the political setting of the place. Therefore, to have a clear understanding, it is important to analyze what different stakeholders understand from this concept.

Aylin Eroğlu (the responsible person for the SWM project) states that people participated in *Sorting at Source* project by accepting the project and sorting their waste at their houses. The participation process has been through informing the community about the project and educating them about waste sorting. Although it is accepted that some people could participate in more elaborate ways, this has not been experienced much, except for a university which proposed to take part in the project by informing the households about sorting waste. A government official from Konak District Municipality confirms this fact with the sentences below:

'In Izmir I see more awareness campaigns and informing rather than collaboration or shared-decision making. In Izmir, participation has often been understood as participating in the action, but not in the decision-making. **Celil Durdu | Konak District Municipality**

'*Of course, this is not enough.*' says Memnune Bahçevanlar. According to the interviewee, this could have been much better. In the planning department, although consultation is currently done through community meetings or surveys, there is always the difficulty of transferring the social data and input to technical plans. This requires human capacity in the institutions, like sociologists, to work with the planners from the beginning of the planning process.

Celil Durdu confirms the fact that the experienced level of participation is not sufficient, but evaluates the case from a different point of view. According to him, the community should be analyzed accordingly. Although there is mobilization among the communities to have a say in the decisions that affect them, there is still too much analysis required to change the comprehension for community participation. *'Community participation is about culture and the lack of participation is a problem of the whole country. The concepts of social movements have often been disregarded. We have always read the history based on the individuals not on communal movements. Moreover, religion has also influenced people's understandings and thei lifestyles. These are all affecting the involvement of communities from the perspective of the community.'* says Celil Durdu.

The park project in Güzelyalı neighborhood is a recent example that gives clue about the institutional environment for community participation. The existing park in Güzelyalı has been recently redesigned and will be renovated in the coming months. Sabri Özazar (the president of the CBO in Güzelyalı) mentions that the project came into the agenda of Konak Municipality after the discussions and the proposals sent by the CBO (Güzelyalı Beautification Platform). However, according to some community members, their letters to the municipality have been successful in taking the municipality's attention for action. Consequently, the park has been redesigned, and the model together with the basic drawings has been presented recently to the community in the existing park.

> *''...I am very happy with the new plan. I don't think it would be better if we had participated to make a better design because it already looks very nice and attractive...''* **Housewife | Female | 29 years old | resident for 29 years**

> *''...Although the new plan and design looks very attractive, I don't think the planners could solve the basic problems with this design. If they had asked us, anyone from the neighborhood could have said that the playground needs a fence around, to be protected from the dogs and cats for hygienic reasons. The municipality is not here at nights, so they cannot see the real problems of the park...''* **Retired |Female | 60 years | resident for 43 years**

On the other hand, the interviewees from the youth council at Konak Municipality take the attention to a different point. According to the president of the youth council, planners should have gone to the neighborhood in order to collaborate with the community instead of presenting the final version of the plan which can hardly change after the comments by the community.

> *''...In Güzelyalı, the youth could have participated in the project by designing and painting a wall inside the new park. Such an attempt would definitely establish some communication bridges between the youth and the local government, and enhance their sense of ownership ...''*
>
> **Tamer Erez | Youth Council, Konak District Municipality**

Thus, what is the problem? Why do not local authorities consider the concept of community participation with a broader approach in neighborhood decisions? Actually, they do; or they may do. Most of the interviews with local government officials show that decision-making on how community can participate in decision-making mainly depends on personal initiatives. This is mainly because

there is no official obligation for the government officials to involve the community in neighborhood decisions.

Memnune Bahçevanlar (the chief of the planning department at Konak Municipality) talks about the *enabling environment* of the institutions and says that the regulations which enable the community to participate already exist.

> *''...When we first came to this department in 1990; we saw that everything was being planned without going to the field. We were newly graduated, very excited four planners who were willing to go to the field and consult community. Since then, nothing has been planned without going to the field and this is the way how the planning department has worked for the last20 years. However, I cannot promise that the next team that comes after us will follow the same routine since decision making on community participation totally depends on personal viewpoints and initiatives ...''*
>
> **Memnune Bahçevanlar | Konak District Municipality**

According to the interviews done with local government officials, the institutional environment enables participation; yet, it does not encourage participation. This fact is confirmed by the community member Yavuz Duvarcı, who initiated the Güzelyalı Göztepe Beautification Platform.

> *''...It is likely to say that the municipality enables the attempts for community based organizations. They try to show their support by word. When I first initiated this organization and invited people to talk about the problems of our neighborhood, Konak Municipality gave me a room to use for such meetings in the Güzelyalı Culture Center. Although they support such initiatives by the community, you face a huge bureaucracy which tires you. If you are voluntary with limited time, you give up easily ...''*
>
> **Yavuz Duvarcı | Community Member**

Aylin Eroğlu (Izmir Metropolitan Municipality) counter argues and states that institutional environment encourages participation as well. The example given by the interviewee is the appreciation given to a university student who informed his neighbors and collected waste batteries by himself for proper recycling in his neighborhood. The interviewee states that the metropolitan municipality, by giving an appreciation certificate to the citizen, encourages others to get involved in such initiatives.

The interviews show that even though there are attempts to encourage community to participate in decision-making, it is more likely to say that the institutional environment is more enabling than encouraging due to the existence of relevant regulations. Not having an official obligation to involve communities in decision-making and dependency on personal initiatives by the local government officials are the highlighted limitations for participation. Moreover, the lack of integration of technical and social instruments is also a limitation while combining the participation concept with energy retrofitting. On the other hand, the early LA 21 initiatives, existence of city councils and the previous experience in participatory local EPM come out as the important potentials in analyzing the community participation in neighborhood energy retrofits.

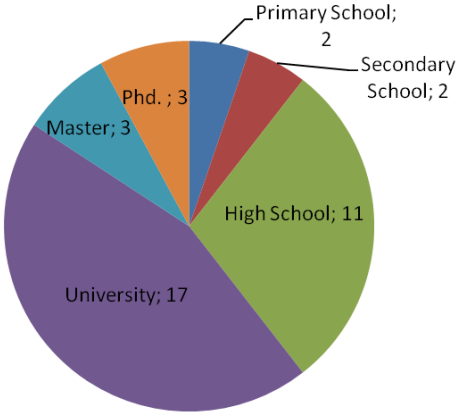
5.4. Community Capacity for Neighborhood Energy Retrofits

The literature suggests various definitions for community capacity. While some of those refer to local reserves like skills, knowledge, expertise, etc, some simply focus on the individuals' involvement in a process (Peter & Jackson 2008). In this section, community capacity is analyzed in terms of two aspects which are *the level of awareness* and *the level of commitment*.

5.4.1. Background Findings for the Pilot Research Area

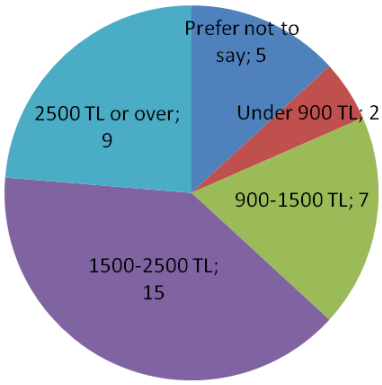
38 community members were interviewed within the research area in Güzelyalı neighborhood. As mentioned in the research methodology, the sampling was stratified random since special attention was paid to the selection of the respondents in terms of representativeness for different genders and age groups. In addition to the data presented in Chapter 3 regarding the age and gender, the backgrounds of the respondents are as below:

Fig.5. 2: Educational backgrounds



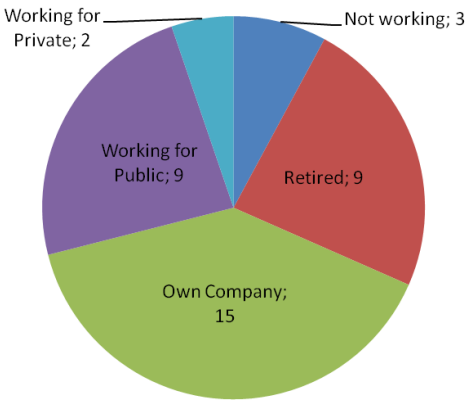
Source: Community interviews, 2010

Fig.5. 3: Economic backgrounds



Source: Community interviews, 2010

Fig.5. 4: Professional backgrounds



Source: Community interviews, 2010

(Please note that the minimum salary in Turkey is 760 TL by the year 2009; and the average salary for retirement is around 1000 TL)

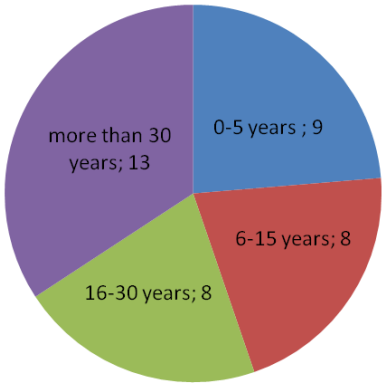
The respondents who had their own companies were often retired people with mostly high education level.

After the retirement, many of them preferred to open a store within the neighborhood and continue working close to their houses. They are mainly the shop owners who work and live in Güzelyalı.

Similar to the pattern seen in Güzelyalı, the majority of the respondents have been living in the neighborhood for more than thirty years (Figure 5.5). This fact is

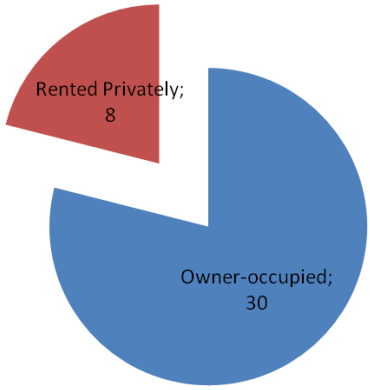
directly linked with the house ownership, and it is easily seen that the large majority of the respondents are house owners (Figure 5.6).

Fig.5. 5: Duration of living in the neighborhood



Source: Community interviews, 2010

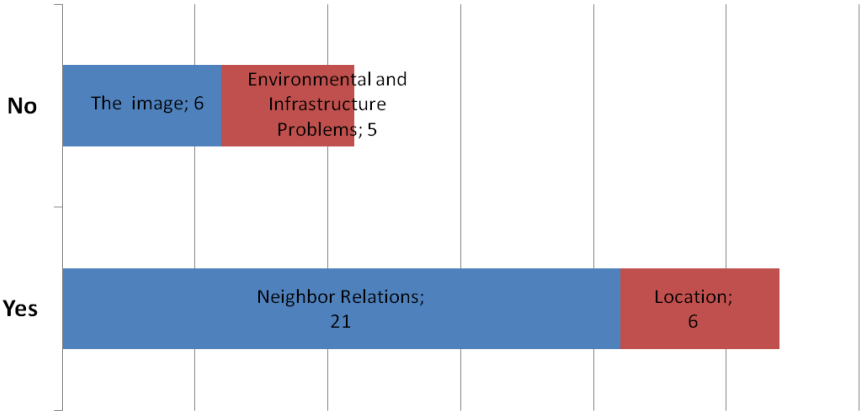
Fig.5. 6: House ownership



Source: Community interviews, 2010

The duration of residence, house ownership and the willingness to continue living in Güzelyalı are important aspects to consider since they determine the level of commitment. During the interviews, respondents were asked whether they would like to continue living in Güzelyalı, and the majority responded as 'yes' (Figure 5.7). The neighbor relations are mentioned at the first place, whereas the location of the neighborhood in the city is also an important aspect. On the other hand, the image of the neighborhood with old buildings and the facades is the leading factor for the majority of 'no' which is followed by environmental and infrastructure problems. Respondents mention about the lack of infrastructure, noise, air pollution and traffic as the most disturbing problems.

Fig.5. 7: Willingness to continue living in Güzelyalı



Source: Community interviews, 2010

> *''...I moved to Güzelyalı because of my husband, and I was very happy with that. Looking from outside, the neighbors and the communication between them remind the old neighborhood environments. However, in time, you start to see the physical problems. Now, the most disturbing thing for me is the image of the building I am living in. I could renovate inside, but the façades of these buildings create an old and dirty image...''*
>
> **Architect | female | 27 years old | resident for 3 years**

''...Güzelyalı really has a sympathetic image from outside because of the communication between neighbors. Yet, when you start looking from inside, you realize that it is not that sympathetic anymore with all these physical problems ...'' **Urban planner | male | 40 years old | resident for 12 years**

However, another respondent states; '*Despite all the problems the neighborhood has, in today's cities, it is so valuable to live in a place where people greet others on the streets. This is the difference of Güzelyalı.*'

5.4.2. The Level of Awareness for Energy and Energy Retrofits

Energy in the neighborhood does not come as the prioritized problems at the first sentences of the interviews. *Energy* is pronounced only when one starts to complain about the environmental problems and thinks about the reasons behind. According to many interviews, the reduction of energy consumption is becoming an important topic to discuss due to the increasing number of air-conditioners used in every house. People are even more enthusiastic about the renewable energy use after seeing the geothermal use in the houses in Balçova[8]. Turkey's dependency on energy imports is another aspect that makes people think more on the renewable energy sources and its integration to their consumption. However, in contrast to what they think about the reduction of energy consumption and their willingness for renewable energy, the majority of the respondents replied as they use electricity for the heating of their houses (mainly air-conditioners) and for the sanitary water (Table 5.3).

Table.5. 3: Existing heating and sanitary water systems, source of energy

Electricity	Butane gas[9]	Fuel	Electricity & Butane gas	Electricity & Fuel	Electricity & Coal	Fuel & Butane gas	Butane gas & Wood
27	1	1	4	2	1	1	1

Source: Community interviews, 2010

When the respondents were asked about their willingness to change such systems, among the 38 respondents, 27 of them responded as 'yes'. Inefficiency of the systems, high electricity prices, the country's dependency on energy imports, environmental impacts and the visual problems of electric systems are the most mentioned reasons in order to replace them with the new ones. Among 27 people who are willing to replace the systems, only 7 people mentioned that they would accept the natural gas and make the renovations accordingly. Geothermal energy, which is being used close to Güzelyalı neighborhood, and the solar energy are the most mentioned energy sources that the respondents would like to change to if they are given the alternatives.

''...I would accept the change for renewable sources as solar energy. However, I would never accept natural gas due to security reasons. I wish people were given the alternatives so that they could make the renovations for the most desired systems ...''

Retired | female | 55 years old | resident for 45 years

8 Balçova is a neighborhood close to Güzelyalı which is rich in terms of geothermal resources.

9 Butane gas is sold bottled as a fuel for activities such as water heating, cooking etc.

Some people talk about the need for central systems to deal not only with the energy issue, but also with other environmental problems. The noise of the air-conditioners during the nights, the bulky air created due to the external units of air-conditioners and the visual appearances on the facades call for central systems which used to exist in the Güzelyalı. Yet, they have been replaced with individual systems in time due to the problems occurred among the neighbors.

> *''...People go and get their individual systems and start complaining about the environmental problems in the neighborhood. We are not aware that we create the problems by ourselves. We should return to our centralized systems. This is how the buildings function...''*
>
> **Academician | female | 42 years old | resident for 20 years**

Some of the respondents are satisfied with their systems due to the ease of control. The mild climatic conditions do not oblige people to think much on their energy consumption during the winter time. For those, cooling in summer is a more important problem. Therefore, as long as they can pay the electricity bills, changing the heating system from air-conditioners to more efficient systems is not an important topic at all.

While the answers regarding the existing situation give clue whether they have heard about the new regulation or not, the respondents were once more asked about the new regulation which obliges the existing householders to certificate their houses in terms of energy efficiency. Among the 38 interviewees, only 12 respondents stated that they are aware of the Energy Performance of Building regulation and some of the measures the regulation obliges to take. On the other hand, probably not the concept of retrofitting, but some actions such as insulation, double-glazing, replacement of lighting systems with more energy-efficient systems already sound familiar to the majority of the respondents.

The respondents were asked about the measures they have already taken in order to reduce the energy consumption in their houses. Table 5.4 illustrates the results.

Table.5. 4: Measures taken to reduce energy consumption in houses

Turn lights and appliances off when not in use	Use energy saving light bulbs	Use energy saving domestic appliances	Planning energy-related home improvements	Already did energy-related home improvements
38	35	13	7	6

Source: Community Interviews, 2010

> *''...Since now, we have not thought about any energy-related renovations but I see some renovations such as double-glazing and insulation in my neighbors. If they really make considerable change in my energy consumption, as a house-owner, I can make such renovations as well...''*
>
> **Retired | male | 64 years old | resident for 40 years**

> *''...Renovations sound good for several reasons but I am renting my house. If the house owner comes and proposes me to divide the expenses into two, I would accept it since I am the one who will benefit from the energy savings...''* **Worker | male | 43 years old | resident for 36 years**

On the other hand, as the table 5.4 illustrates; six interviewees state that they have already done energy-related home improvements. These are often insulation or the replacement of window and door systems with double glazing systems which are often adopted due to the noise problem in the neighborhood or due to being very old. Melih Yalçın from the MMO Izmir criticizes the situation in Turkey. '*With the advertisements of the insulation companies and the loans by banks, it is good that people became more aware of the importance of insulation and other energy-related improvements. However, what people do nowadays is they go to the market, buy the insulation material and simply implement it. Although they spend lots of money on such renovations, they are done without making any calculations and detail solutions. I doubt whether such attempts are worth for it.'*

In order to realize neighborhood energy retrofits, it is important to see whether the potential benefits of a neighborhood energy retrofit project are clear to the community. If the benefits are clear, the project can expand easily by enhanced acceptance. In the research area, while some interviewees illustrated the benefits on the macro level such as less dependency on energy imports; the majority focused on the micro level benefits. *'I don't know if the neighborhood benefits from it as the neighborhood itself; but, it is obvious that it will help individual household economies improve'* says 34 year-old shop owner who has been living in Güzelyalı for 20 years.

Contrarily, many interviewees point out that the neighborhood and the interaction between the neighbors will be enhanced by a partnership, improving the sense of ownership among people. '*However, the communication between the community members and the local government should be very well thought'* says 40 year old urban planner. He adds that just conducting surveys would not make any benefit to the sense of ownership for the neighborhood.

> *''...Such projects improve the attachment to the neighborhood. Firstly, it will help people develop the sense to be neighbors who are sensible to their environments, and this will lead them to be responsible to their cities by developing their awareness as citizens...''*
>
> **Civil Servant | Female | 49 years old | resident for 12 years**

> *''...I will be honored to see my neighborhood as a sample in the city again, just like in the good old days. We can again be an example for future projects in different neighborhoods, and the project can be spread continuously...''*
>
> **Shop owner | Male | 52 years old | resident for 39 years**

In addition, some respondents state that an energy retrofit project can also help the neighborhood improve its image. Especially the interviewees who were not willing to continue living in Güzelyalı due to the bad image point out that a project would probably rehabilitate the neighborhood aesthetically as well. Similarly, it was also mentioned that energy retrofits might automatically be the solution for other environmental problems within the neighborhood.

> *''...The benefits will not be limited with energy savings. This is a chained issue. The solution for energy can also improve the air quality, and minimize visual disturbance and the noise problems...''*
>
> **Retired | Female | 56 years old | resident for 6 years**

The doctor of the neighborhood adds; '*Such improvements will have direct benefits on the health of the neighbors'* whereas a 55-year old shop owner looks at it from an economic point of view: *'Balçova, which is a district close to us, used to be a less expensive place to live. When they started using geothermal energy in the houses, the value of the buildings increased a lot. If I can leave here, even I would like to move to Balçova. Why can't we be in the same situation by lobbying for geothermal or by integrating solar energy to our houses in Güzelyalı?'*

Being aware of the limitations is as important as knowing the benefits beforehand. From the research area, financial difficulties arise as the biggest concern. 19 respondents think that the investment costs can be dissuasive for many people, whereas for 10 respondents the biggest concern is the lack of communication among the residents. Many mention about the increasing gap between the neighbors in terms of socio-cultural and economic levels. However, a 42-year old shop owner is still optimistic. *'When we had the water cuts, everybody warned each other to use the water efficiently and this changed many habits'*. However, the 42-year old academician is not that optimistic. She talks about her previous initiatives to sort glass and states that it is hard to convince people to be more responsible for their environments.

In addition to the financial difficulties and the lack of communication among the neighbors, for 3 respondents the biggest limitation is the bureaucracy. Furthermore, the lack of audit and obligation by the local government are also mentioned topics that can slow down or limit the implementation of such projects.

> *''...Energy is a political issue in Turkey which is not shaped by only national and local authorities. However, if the communities become aware, come together and state that 'they want this to happen', local governments might take the initiative since they have the autonomy...''*
>
> **Doctor | Male | 46 years old | resident for 3 years**

This fact is strengthened in different interviews, pointing out the difficulty of political consensus between national government and local government. Last but not least, two interviewees strongly argue that although the socio-cultural and economic levels of the community are higher than other neighborhoods, the poor infrastructure can be an important limitation against the implementation of such retrofit projects like it happened in sorting at source project.

5.4.3. The Level of Commitment to Neighborhood Energy Retrofits

Would you like to see Güzelyalı as the pilot area for a neighborhood energy retrofit project in Izmir? The question is simple, but the responses are various. 19 people responded positively to this question by suggesting different reasons. According to the majority of the positive responses, the socio-cultural level of the neighborhood is an important aspect to consider. '*The community members in Güzelyalı are relatively more aware of many issues in comparison to many other neighborhoods in Izmir, and environment is one of them:*' says a 45-year old community member who has lived here for all his life. The neighborhood's deterioration in time is another reason why the respondents think a possible project should start from this neighborhood.

''...I totally agree that such a project should start from Güzelyalı neighborhood, but not because people are very educated and aware. The neighborhood deteriorated a lot during time and stayed very behind in comparison to others. It needs renovations to return to its good old days...''

Retired | Female | 60 years old | resident for 43 years

A 55-year old shop owner who has been living in Güzelyalı for 39 years confirms this fact and says: *'Güzelyalı used to be one of the three most beautiful neighborhoods in Izmir; but now it is continuously deteriorating. As a result the neighbors who have been living here for many years started to emigrate from this neighborhood which can be stopped by such an improvement'.*

''...There can be many advantages of being a pilot area. We, as the community, can work for fund raising and sponsorships. Companies can be interested in sponsoring us as their advertisements for potential future investments ...'' **Teacher | Female | 45 years old | resident for 36 years**

The counter argument of why a project should not start from Güzelyalı neighborhood has more common reasons. The main counter argument is the necessity of exemplification. 10 people who responded negatively to the question state that they would not accept any renovation unless they see the benefits and the costs with a sample. 9 respondents remained neutral thinking of the technical difficulties which are mainly about the lack of infrastructure.

''...I don't know if such a project can start from here. The streets are very narrow; it can be easier to start from a more planned area. On the other hand, there is always construction in some parts of the neighborhood. If everything can be done in an organized way, renovation is just what this neighborhood needs ...''

Civil Engineer | Male | 28 years old | resident for 4 years

Considering that a project will be held in Güzelyalı, the interviewees were asked about their choice for the type of the building to have the priority for a neighborhood energy retrofit program. The majority of the respondents agreed on initiating the project from houses due to the fact that the major consumption occurs in these places. In addition, it is also stated that such a broad project would have impacts on the neighborhood during the construction period; thus, if the costs are on the neighbors anyway, then the householders should also be the ones who benefit from such a project. People who do not prefer their houses in the first place reason this by the necessity of exemplification. *'I want to see clearly the exact costs and the benefits of such a project. I wouldn't like to be the first to try.'* says 62 year old shop owner who has been living here for 50 years. At this point, public buildings and the schools were mentioned equally for the opportunity of exemplifying the costs and the benefits of energy retrofits. *'People can be informed about the benefits by different methods in public buildings, like signals showing the total energy saving in a day. This will encourage them to implement those systems in their houses as well.'* says a 24-year old university student. On the other hand, schools have more reasons for some respondents. A 65-year old female respondent states that children can play an important role in educating and convincing their families to get involved in a neighborhood energy retrofit project. In addition, the number of schools within Güzelyalı neighborhood is considerable.

Although mentioned by few, commercial places such as banks, shops and supermarkets are also found important due to the energy saving potential.

Yet, what would be the reactions of the community members to such a neighborhood energy retrofit project run by a community group? Firstly, it is important to analyze the existing situation, in terms of participation in general neighborhood issues. Currently, there are community groups in different fields and community projects that are prepared by particular community members. Table 5.5 shows the involvement in such neighborhood projects and groups.

Table.5. 5: Involvement of the community members in neighborhood projects and groups

Are you, or have you been, involved in any local community groups, projects or other activities in Güzelyalı?	
Yes	16 respondents; mostly in music groups of the neighborhood. Environment and social aid are other major groups that the respondents take place.
No	22 respondents; some of them heard about the activities held by the CBO, but they either did not like them, could not find time or it was hard to get involved.
Are you, or have you been, involved in any local community groups, projects or other activities anywhere else?	
Yes	15 respondents.
No	23 respondents.

Source: Community interviews, 2010

Additionally, table 5.6 shows the distribution of the responses according to support and commitment they will give in a neighborhood energy retrofit project.

Table.5. 6: Distribution of the responses for support and participation in a neighborhood energy retrofit project

I would support a "sustainable energy project" run by a community group to look reducing energy use and using local renewable energy.				
Strongly Agree	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
22	10	4	-	2
I would like to participate in a "sustainable energy project" run by a community group to look reducing energy use and using local renewable energy.				
Strongly Agree	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
17	6	9	3	3

Source: Community interviews, 2010

The major reason for not supporting the project is the idea that energy consumption is a topic that is supposed to be considered on the individual level. The neighborhood level is not the appropriate scale to run a community project about energy consumption and local renewable energy use. Some respondents clearly state that the building scale, could be a better scale to think of. On the other hand, the major reason for non-participation is the lack of time which was mainly mentioned by younger people (25-44 age group). In addition to the lack of

time, some of the elderly respondents point out that although they would support energy retrofits, they wouldn't like to get involved since this should be undertaken by the younger neighbors. A 29-year old civil engineer talks about his concern for participation. He doubts whether his effort will make a real contribution to the project. *'I would really spend my time on the project, like working in the identification of buildings. But, it can be very discouraging if I see that my effort does not really contribute to the process*.' Therefore, according to him, the project managers should be very careful in using the community input.

The main form of participation that is mentioned by the interviewees is *informing the neighbors and the community about the project.* Almost all the respondents who strongly agreed or just agreed to participate in a neighborhood energy project stated that this would be the basic thing they can do. There are some respondents who choose to participate in the development of the project and fund raising.

> *''...I am already working in the energy sector. I would like participate in the development of the project and the provision of the technical equipments as well as informing my neighbors...''*
>
> **Electronics Engineer | Male | 28 years old | resident for 2 years**

'As an architect, I would participate in the project phase' says the 42 year old academician. Yet, she adds; *'This should not turn into a group composed of elitists and technical experts. Such a project requires all the faces of the community'.*

5.4.4. Perspectives on the Importance of Community Capacity for NERs

In the previous part, community capacity has been analyzed in terms of level of awareness and level of commitment which are very considerable for the research area. Yet, how important is the community capacity in realizing neighborhood projects, or specifically neighborhood energy retrofits? This section analyzes the importance of community capacity by looking at it from different perspectives.

> *''...In 'Sorting at Source' project, the pilot areas are selected according to the socio-cultural levels of the neighborhoods. In my opinion, the differences between these levels are also seen in the final achievements. With this in mind, Güzelyalı could be a very good example to conduct this project and obtain good results; however, the physical structure of Güzelyalı did not allow us to put this neighborhood the first places…''*
>
> **Aylin Eroğlu | Izmir Metropolitan Municipality**

For Yavuz Duvarcı, community capacity was very important when he decided to establish a platform for his own neighborhood. '*Güzelyalı is a place with social capital. Why are not we using this social capital for the improvement of our neighborhood?'* He, as a transportation expert and a community member, wanted to contribute to the improvement of the parking problem in Güzelyalı. *'I tried to make an analysis of the existing situation for the parking problem. Community members with expertise should put their knowledge to make the neighborhood more livable and sustainable. However, this should not be misunderstood by other community members because the aim is not to make an engineers, architects or planners platform.'*

Memnune Bahçevanlar (the chief of planning department at Konak Municipality) reminds one of the fieldworks of the planning department where a very old lady was consulted to understand the previous situation of the area. '*She was a walking documentary. She helped the planning process more than any architect or urban planner*.'

> *''...How can you differentiate people in a community? Sometimes a community member who is graduated from primary school contributes to the project much more than an urban planner. Furthermore, experts often disregard our meetings and they come only if they are invited personally. When they come, the problem is they usually talk about the same things with a technical language which discourages other community members with no expertise...''* **Memnune Bahçevanlar | Konak Municipality**

According to the representatives of the youth council of Konak Municipality, the differentiation can create serious problems. During time, the community members might differentiate according to their interests and might contribute in different ways but they suggest that this should not be decided beforehand. Yavuz Duvarcı confirms this fact and adds that the most important expertise is being a member from that community. The experience about the neighborhood is so important and valuable that some data that are in the memories of the neighbors cannot be found in anywhere else apart from those people.

If the community capacity is so important, why don't local authorities benefit from these local reserves? Celil Durdu has a response for this question. *'It is an absolute truth that local reserves are very essential in a project process. However, people are always afraid of ideas that come from the grassroots. This is probably our problem. We need leaders who are not afraid of public and who really internalize democracy'.*

5.3. The Role of Existing Networks in Neighborhood Energy Retrofits

In disseminating information, the literature suggests that the existing networks of relations are essential (Kapoor 2001). Chaskin et al (2001) build on this and state that these networks can be both formal and informal. In this section, two existing networks are analyzed in terms of their interaction between the stakeholders, and their level of commitment. The first one is an informal network which is a CBO, while the second one is the official and the formal network of communication.

5.3.1. Existing Networks in Güzelyalı Neighborhood

Güzelyalı Göztepe Beautification Platform (GGIP)

GGIP is a community based organization initiated in 2006, by an academic transport expert who moved to Güzelyalı 12 years ago. His profession is urban planning and the lectures he took in the university on participation theory in planning encouraged him to initiate a platform in his own neighborhood. *'Güzelyalı is a neighborhood with social capital'* says Yavuz Duvarcı. What he wanted was to use this social capital in improving the environmental, social and economic conditions. The main goal was to create an environment that could enable to think about the spatial problems of the neighborhood and look for the solutions. '*We should not expect everything from the local authorities'.*

However, the lack of participation and not really knowing the neighbors discouraged him, and he wanted to pass on the platform to someone more motivated. He was advised to communicate with *Sabri Özazar* (Mr.), who can be described as the role model in the neighborhood. *'I did not have as much time as Mr. Özazar, I just wanted to contribute to the improvement of Güzelyalı with my expertise. For me parking was an important problem, therefore, I tried to develop a project using my expertise. Mr. Özazar followed a different way and maybe his way worked much better'.*

Sabri Özazar is an old resident of Güzelyalı (Figure 5.8). After taking the responsibility what he did was to remind the residents the old and beautiful Güzelyalı with nostalgia. *'Maybe we first need to remember these binding memories and then we can come together to collaborate for neighborhood problems'* says Yavuz Duvarcı.

Güzelyalı Göztepe Beautification Platform was developed with three people who came together after the initiatives of Yavuz Duvarcı in 2006. By the year 2009, the number of people who have joined the platform in different ways was 209. The platform aims to get involved in the protection and the improvement of Güzelyalı by trying to build up the sense of ownership among the residents. In doing this, they give importance to knowledge and research in order to make feasible and necessary projects that will have tangible outcomes for the vicinity.

Fig.5. 8: Sabri Özazar as the role model

Source: Author, 2010

Fig.5. 9: Office of the CBO

Source: Author, 2010

Although the community and the communication between them give the impression that they are open to everyone, some respondents pointed out the difficulty of being a part of this network.

> *''...I heard about the activities of the community members but they all know each other for quite long time, and they are usually old people. I would like to get involved in the groups related to environment, but I think it is hard to take part in such an established group...''*
>
> **Architect | Female | 27 years old | resident for 3 years**

Similarly, according to a community member who also works actively in the platform says that the biggest limitation in reaching more people is the lack of information systems. The platform has a website and an email address to contact; but people mainly communicate through phones since they all know each other.

For a new community member, this can take some time to hear about the meetings and join. What the community member suggests is to take assistance from the Konak Municipality in improving the means of communication.

The office of the community platform used to be in the culture center which is located just next to the current office. Yet, platform members preferred to use a bottled water shop which is owned by one of the active members and is easily accessible in the daily life (Figures 5.9 & 5.10). The platform members state that they receive the tangible and intangible support of Konak Municipality in various activities of the CBO. As an example, the bulletin that is prepared by the community members is sponsored by the municipality.

Recently, the platform has different projects prepared by some community members and different groups in the environment, culture and arts fields. After the huge interest in music groups of the platform, the community decided to establish the culture and arts association of the neighborhood. Currently, Güzelyalı has both a platform where the neighbors can meet to discuss issues related to their neighborhood, and a culture and arts association to carry on their activities in a more corporate and professional way (Figure 5.11).

Fig.5. 10: Members of the CBO

Source: Author, 2010

Fig.5. 11: Community members

Source: Author, 2010

Neighborhood Administrator (Muhtar)

The second network in Güzelyalı neighborhood is formal like in any other neighborhood in Turkey (Figure 5.12). As mentioned in Chapter 4, the *muhtar* is mainly occupied with the administrative tasks of the community members and especially with the documentation of the residents. However, there is another task of the *muhtar*s which is to establish the interaction between the local authorities and the community. Aylin Eroğlu states that also in the Sorting at Source project, the municipality communicated only with the *muhtar*s where the project would be held. After they contact, it is the task of the *muhtar* to inform and involve the community in the project. This is confirmed by the *muhtar* of Güzelyalı, Ali Ertürk. *'I am the contact person of the neighborhood. It is often me who delivers the issues and the problems to the local authorities. Indeed, the neighbors can also communicate with the municipalities directly, yet, they prefer to tell me what they experience and I deliver them.*

Park renovation is a recent example where Ali Ertürk states that the municipality asked him about the problems they had about the park. He accepts the fact that the network between him and the community members should be well established.

Fig.5. 12: The office of the *muhtar*

Source: Author, 2010

'We have good interaction with the residents although we don't meet to discuss about the neighborhood. I don't think we need a meeting because I am with the community every day. They can tell me their opinions anytime and I, of course, should listen to them because there are many residents who are more informed and educated than me, and many with technical expertise'.

However, his attitude towards the interaction with the CBO and the activities held by this community based organization is not very positive unlike his positive attitude to community members. The interviews with the *muhtar* and the CBO show that there is tension and a kind of competition between the two parties which ends up with no communication at all.

5.3.2. Perspectives on the Role of Existing Networks in NERs

Although the present communication between the neighbors and the local government is achieved through the neighborhood administrators, the interviewees from the local government agree that networks like community based organizations (neighborhood associations, platforms, etc.) are very essential in reaching the community. Otherwise with given tasks, *muhtar*s have too much responsibility and say in terms of the community's level of participation in neighborhood decisions.

> *''…The role models in a neighborhood are important in terms of keeping the network alive. The communication should not depend on the muhtar, because if the muhtar is not proactive or even reactive, the communication fails and this discourages the community members. The community should find a responsive body in their neighborhoods…''*
>
> **Tamer Erez | Youth Council, Konak Municipality**

An active member of the CBO highlights the fact that the existing community networks are not only important to reach the community. They can also be very helpful in disseminating an innovation through social influence. *'I was the first person who bought an electric motor, now many other people started to buy the same motor after asking me whether I am satisfied or not.'* He suggests to make use of these channels to initiate a neighborhood energy retrofit project with proper exemplification.

Sabri Özazar (the president of the CBO) suggests that for a broader understanding of participation, local authorities can make use of the community based networks. *'In the design phase of the park renovation project, the district municipality already contacted with me and invited me as the representative of our neighborhood'.* However, Yavuz Duvarcı warns about the situation and says that

in such networks, there is always the risk of hierarchy among the community members. *'It is not always very democratic within the community based platforms. There might be some issues that are dictated by one or two people or decided without discussing with different community members enough. For such cases, it will be very wrong to consider these decisions as neighborhood initiatives'.*

Memnune Bahçevanlar (the chief of planning department at Konak Municipality) points out a different risk of such networks. Likewise Aylin Eroğlu, she also accepts that the way of communication with community is obviously not working perfect with the *muhtar*s. At this point, she also suggests paying particular attention to other networks within the community but also with particular attention to the danger of abuse. The experience in the planning department shows that with the awareness for community based platforms, people in some neighborhoods have started to develop such organizations and use these platforms for personal purposes. Therefore, she warns the project managers to be careful about these groups which might not have been established for communal benefits.

Apart from supporting alternative networks such as community based organizations, the interviewees agree that the official network with neighborhood administrators should be strengthened as well. Celil Durdu from the Konak Municipality states that the neighborhood administration system is unique and when used with full capacity, it can enable the process easily.

Chapter 6 | Conclusions and recommendations

6.1. Outline

Chapter six presents a critical overview of the overall findings including the literature and the case study, while seeking the response for the main research question: '***How can community participate in neighborhood energy retrofits?***'

The chapter is divided into three sections. Section one looks at the findings and relate them with the literature reviewed in chapter two. Section two makes recommendations about the research topic and the pilot area selected to conduct the research. The chapter ends with final remarks.

6.2. Findings from the Research

In responding the main research question, firstly, it is important to answer the research sub-question one which aims to analyze the elements that lead to the development of a framework for community participation in neighborhood energy retrofits. This question has been responded through the literature review.

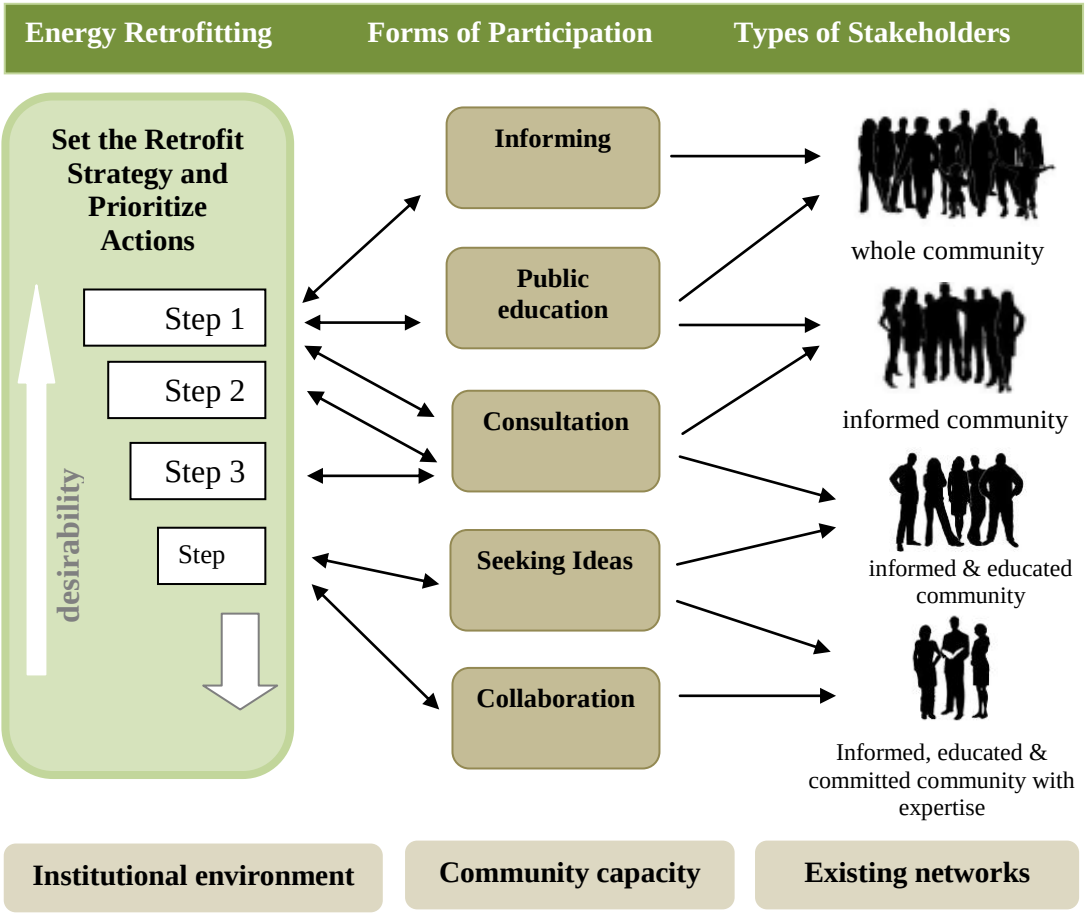
As the first element of the framework, the literature looked into the concepts of 'urban retrofitting' and 'energy retrofitting' by analyzing the rationale behind. Energy retrofitting for energy efficiency in the existing building stock has been studied in detail together with the followed strategies in order to define the role of the community in a proper way. The second input 'community participation' has been analyzed through the review of participation models proposed by different authors. What is clear from the literature is that defining the participation forms and levels in projects is not the aim of community participation. Conceptualizing the participation (Rosener 1978) and identifying stakeholders (Jackson 2001) in order to match people to different levels of participation are the main challenge which shows the complexity of the community participation issue.

The following figure (Figure 6.1) explains the relation between the energy retrofit strategy, participation forms and the community members. In the developed framework, setting the energy retrofitting strategy is the first step in order to define the steps and arrange them according to their desirability. Different strategies have been described in the literature review, which mainly depend on the local conditions and available resources. However, the literature demonstrates that many strategies follow and build on the basic and classical theoretical models (Lysen 1996; Tillie et al. 2009; Dokka and Rødsjø 2005).

The second column of the framework demonstrates a sum-up of the participation models which has been derived from the review of different authors; Arnstein (1969), Rosener (1978), Dorcey (1994) and Jackson (2001). On the other hand, the third part sorts the community members according to their level of knowledge, awareness and commitment. The community members are matched to different levels of participation based on different goals and objectives which are supposed to be set by the project managers (Rosener 1978). The framework, finally, demonstrates three important aspects that constitute the base of such a model for community participation in neighborhood energy retrofits, which are the

institutional environment, ***community capacity*** and the ***existing networks*** within the community. For any specific area, the framework needs to be reviewed with particular attention on the goals and objectives, and definitely considering the local conditions in terms of abovementioned aspects.

Fig.6. 1: Conceptual framework for community participation in neighborhood energy retrofits



Source: Author, 2010

These aspects, *institutional environment*, *community capacity* and *existing networks*, become the main focus of the research in analyzing the potentials and limitations in Güzelyalı neighborhood, mainly to respond the second research sub-question. In doing this, the sub-question two has followed the indicators that are presented in chapter three (Table 3.2).

The analysis of **institutional environment** shows that energy is an important problem in Turkey. As mentioned in the problem statement, there are relevant ***regulations*** prepared which are already on the way for the implementation of energy retrofits. Likewise, on the local government level, the strategic plans prepared by both the Metropolitan Municipality of Izmir and the Konak District Municipality show that the local authorities are also committed to work on the energy issue in the city of Izmir. In doing this, participation has been set as one of the basic values of the institutions. Although there seems to be commitment by both the national and local governments, it can be said that Energy Performance of

Buildings Directive, which is the relevant regulation for energy improvements in both new and existing building stock and the backbone of the overall program, has many limitations. The literature suggests different ideas on how a retrofit program should be designed. Op't Veld & Demollin-Schneiders (2007) talk about the necessity of an integral approach which looks for well balanced choices, considering all disciplines from technical programs to the communication with end-users. Such an attitude requires a strategy in order to bind all the aspects it seeks for. However, the research shows that the recent regulation in Turkey does not have a clear strategy in terms of technical program, capacity of the private sector, financial incentives and audit; and this fact arises as the main limitation. In addition, lack of awareness about energy efficiency and retrofitting concepts are other limitations that slow and even prevent the implementation of energy retrofits. Entrop and Brouwers (2005) strongly argue that governments need strategies in order to focus on particular steps rather than distinct measures. They talk about being more systematic to enable and improve the cooperation between the architect, the constructor and the end user.

On the other hand, the regulation has considerable potentials which can be turned into tangible results. Derived from the UK Government's Framework for Behavior Change (2005) (Figure 2.13), it is likely to say that by removing the barriers and providing relevant regulations, Turkish Government enables action up to a certain point. Yet, this is not enough. The same framework suggests that engaging the community, exemplifying the project and encouraging people by fiscal and social instruments are essential for the ***integration of different regulations and instruments***. The case study illustrates that fiscal instruments are on the way in Turkey to encourage or oblige people to look for energy retrofits. However, social instruments or the engagement of the community in the process by consultation or community action are not seen in the agenda yet. Local Agenda 21 initiatives and their adaptation in the city are promising, but it is seen that such experience should be considered together with technical programs, not as add-ons but as integrated to the overall process.

The case study demonstrates from ***the city of Izmir's experience in participatory local environmental planning and management*** that participation has often been limited with informing and awareness campaigns. In Izmir, people hardly participate in the decision-making phase; instead, most of the time they participate in the project by acceptance. This contradicts with the argument of Arnstein (1969), who suggests that one-way flow of information such as informing and awareness campaigns are tokenistic and cannot be really considered as participation. Yet, Izmir's experience and understanding for participation is still valuable for many other authors such as Dorcey (1994) and Jackson (2001), where it is stated that all levels and forms of community participation may be appropriate for different circumstances. In order to realize this, Rosener (1978) suggests stakeholder analysis in order to identify the community members, analyze the participation objectives and decide on the appropriate levels of participation. At this point, the local context shows that this might have dangers such as alienation of some community members. Therefore, the project managers might need to encourage people equally and for the same level of participation in the initial

phases of the project. In the later stages, it is more likely for the local government to continue with informed, educated and committed people.

The research confirms that although the level of participation seen in Izmir is valuable, it is still not enough. The analysis of the EPB regulation and the commitment of local authorities show that lack of participation is not related to the lack of regulations. It can be said that the institutional environment enables participation through relevant regulations especially after the adaptation of Local Agenda 21 initiatives. However, ***interaction with the community*** still depends on personal initiatives of government officials which often end up with informing form of participation in various projects, and this is mainly because there is no official obligation for the government officials to involve communities. At this point, the research illustrates the necessity for an encouraging institutional environment for more elaborate forms of involvement by the community.

In addition to the institutional environment, Peters and Jackson (2008) bring out another aspect, **community capacity,** which is also crucial in order to realize participation in neighborhood energy retrofits. By community capacity, they basically refer to local reserves such as local knowledge, expertise, experience or the relationships between the community members. The research confirms this fact and explains that community capacity is a leading factor for the government authorities during the selection of the pilot areas to conduct projects in Izmir. Social capital is not only important for government authorities, but also is encouraging for many community members to take initiatives for their neighborhood. As mentioned above, local expertise is an important capital in a locality; but the findings from Izmir show that the most important expertise is the knowledge and the experience about the neighborhood.

Güzelyalı, in terms of community capacity, is a favorable place according to different perspectives. The neighborhood is favorable in terms of the socio-cultural level of the residents and ***the level of awareness*** in environmental issues. However, it is important to highlight that there is still unfamiliarity with energy efficiency and retrofitting concepts in the research area. There are measures already taken by some neighbors; while many people still use air-conditioners for heating their houses, considering the system efficient. Furthermore, although double-glazing and insulation are the measures that the residents are familiar with, they are not in their agendas for energy efficiency; but people prefer these systems mainly to renovate the old windows and doors, and/or to deal with the noise problem. Yet, findings still show that in the case of a neighborhood energy retrofit project, the benefits are almost clear to community members which is an important potential in improving the acceptance and the dissemination of the project.

The level of commitment is another important issue that has been studied in the research area. It is seen that the level of commitment to improve the environmental conditions in Güzelyalı is very considerable for the locality. In addition, the research shows that support by the community members for such projects can easily be provided. Although the willingness to participate is not as high as support, it is still very considerable for the area studied which proves the

high level of commitment. The perspectives of the community members illustrate that the residential sector should be on the focus of such approaches, but they also highlight the necessity of exemplification. Some people tend to invest in retrofit measures only if they see realized samples where the costs and benefits are clear.

In terms of level of commitment, the neighborhood has even a platform which currently works in different fields, and is already committed to the improvement of the environment in Güzelyalı. This is an important potential since **existing networks** have an essential role in the realization of community participation in neighborhood energy retrofits.

Kapoor (2001) suggests that project managers can make use of existing networks of communication in order to disseminate information. It is seen from the case study that, currently, local government uses the neighborhood administrator *(muhtar)* channel in order to communicate with the community. The ***interaction*** between the government officials and the community members is done through this formal network, which gives an important task to *muhtar*s. However, these people might not always carry such responsibility in the most proper way. Although the interaction between the *muhtars* and the local authorities need to be strengthened, there is always the risk that the lack of vision of *muhtar*s creates lack of communication among the stakeholders and blocks the interaction. In addition to such formal networks, the organizations created by the community members are also important and valuable; but the means of communication between the government officials and the community-based organizations have not been established properly yet. Such informal networks in communities are essential for social influence, which is also valid for the research area due to the strong and established relationships among the community members. Social influence can be an important tool in promoting project ideas for neighborhood energy retrofits. Hovland et al (1957) suggest that the more respected individuals can be more influential among the community. Therefore, the hidden potential of Güzelyalı is crucial while realizing a neighborhood energy project. Firstly, the interaction and the social influence among neighbors show that a pilot project in Güzelyalı can be accepted and expanded more easily since there are existing community networks. Secondly, the acceptance and the dissemination can even be enhanced by high the ***level of commitment*** of the CBO since many residents are already committed to improve the environmental conditions, and are willing to convince their neighbors for such improvement projects.

To brief, this section has aimed to analyze the findings classified under three important aspects which have been derived from the literature. The analysis of findings show that there are both potentials and limitations for community participation in neighborhood energy retrofits. Based on these potentials and limitations; the coming section proposes recommendations, and one of them is the proposal of conducting a pilot project in Güzelyalı for energy improvement where the means to involve community can be determined.

6. 3. Recommendations

1. Based on the limitations regarding the regulation's lack of strategy on the national level, it is highly recommended that the local governments should take initiatives and engage community in order to realize neighborhood energy retrofits in the easiest and the most proper way. Although there is no strategy set for the regulation, together with the community, a strategy can be designed and followed as illustrated in section 2.4.3. This will not only improve the communication between the architect, the constructor and the end-user, but will also enhance the communication with the local authorities, enabling the implementation process.

2. It is also recommended that a separate and a small scale department (like energy agencies mentioned in the international cases) shall be founded within the local governments to work on energy retrofits in the building sector, and to deal with the progress away from the bureaucracy. The tasks of this department can be to establish the bridges between the local government, private sector and the community. Such an approach requires sensitive people within the government who not only enable communities but also engage and encourage them to participate. In doing this, social instruments are as important as the fiscal ones. Decision-making on how and why the community will participate in neighborhood energy retrofits is crucial and should be very well-thought.

3. The research confirms that the research area in Güzelyalı neighborhood can be pilot in promoting neighborhood energy retrofit projects. Izmir's experience in participatory local environmental planning and management shows that the socio-cultural level is an important determinant in choosing the project areas. Güzelyalı neighborhood, with its social capital and high level of commitment, can be a promising start for the future of energy retrofits despite the fact that the community is not very familiar with energy retrofitting concept. The neighborhood's being old and the necessity for renovation to improve the image are important aspects that should be considered to give the priority to Güzelyalı. Such an approach will prevent the deterioration of the neighborhood, and the emigration of the young generation due to the old and bad image and the poor environmental conditions.

4. Derived from the potentials, it is likely to say that with the encouragement and initiatives of the local authorities, communities can get organized and make retrofits happen. At this point, although the regulation focuses on the buildings, it is highly recommended to start from a neighborhood scale which provides more potential actions and alternatives than individual measures.

5. In doing this, as suggested in the literature and confirmed by the fieldwork, residential units can be the starting point in such retrofits since they have considerable potential for energy savings. However, the project requires exemplification to see the costs and the benefits clearly. In order to improve the acceptability, exemplification is crucial which can be done through the implementations in public spaces. Barcelona example in the international practices is an important experience where the city exemplified the solar energy use by demonstrating its feasibility first in public buildings such as schools, culture

centers, etc. Such an approach can easily overcome the resistance and boost the willingness for energy retrofits among the neighbors.

6. The neighborhood's existing community networks is an additional important potential to choose the Güzelyalı case as pilot. The commitment of the network to the improvement of environmental conditions in the neighborhood and the social influence among the neighbors are essential potentials that should be considered before carrying out the project. It is also recommended to strengthen the interaction with *muhtar*s (neighborhood administrators) since they are the people who know the community very well. Thus, *muhtar*s can work more actively in identifying and analyzing the community members to mobilize sub-groups that are based on experience and expertise within the neighborhoods in order to solve the problems on the neighborhood level. Although it is accepted that it might be very misleading to differentiate community members, such analysis is still very important in order to define the participation goals and the objectives.

7. As the city of Izmir mentions in the SWOT analysis for solid waste management (SWM), there is a positive environment for dialogue and scientific capacity for research in the city. In addition, international practices, reforms in municipal bodies and the regulations regarding environment and participation have also been considered as the opportunities of Izmir. Such opportunities mentioned for SWM are also valid for energy retrofits showing that there is no need for doubt to initiate energy projects. However, it is crucial to import adequate operational models from international cases which are adaptable to the local environmental context. In addition, the financial system, as one of the biggest limitations from both the perspectives of the experts and the community members should also be considered properly and designed adequately to the local context.

6.4. Conclusion

Summing up, the research adds on the existing literature on community participation and energy retrofitting, and highlights the issue of 'how community can participate in neighborhood energy retrofits.' The research discusses the different elements in order to develop a framework for community participation in neighborhood energy retrofits. In continuation, opportunities and challenges are studied for Güzelyalı neighborhood in a pilot area in order to give reference to future research and practice in Izmir, and in general.

To conclude, the involvement of community participation in neighborhood energy retrofits requires an integrated approach. The attitude of attaching the concept of community participation to different policy implementations should be transformed into an integral relationship. The concepts like energy retrofitting and community participation are not very clear to the common man yet; but first, they need to be internalized by the local authorities for a sustainable future in the city.

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Annexure

Annex.3.1. Questions for purposive sampled interviews[10]

----------Energy retrofitting

- Did you hear about the concept ‘energy retrofitting?
- What do you think about energy retrofitting?
- Do you know the recent Energy Performance of Buildings Directive of Turkey for building energy retrofits?
- What is your viewpoint on the EPB Directive of Turkey for building energy retrofits?
- What kinds of strategies are used for building energy retrofits in Turkey?
- Do you think the regulation is enough to generate positive outcomes for energy efficiency in the building sector?

----------Community Participation in Neighborhood Energy Retrofits

- What do you understand by community participation?
- What kind of participation do you experience in the city of Izmir in general and in neighborhood based projects?
- Do you think this is enough?
- Do you think everybody should be involved in neighborhood projects equally and in the same way?
- What do you think of the role of community participation in neighborhood projects?
- Do you think there is a difference between community participation in neighborhood energy retrofits and in general meetings?
- What do you think of the role of community participation in neighborhood energy projects?

---------- Potentials and Limitations for Community Participation in NER

- Do you think the institutional environment is enabling for community participation in neighborhood energy projects?
- Do you think the institutional environment is encouraging community participation in neighborhood energy projects?
- Do you think the institutional environment is engaging community in neighborhood energy projects?
- Do you think community participation concept is clear for the community?
- What do you think about the existing community networks in neighborhoods?
- Do you think that community capacity in terms of local reserves can contribute to neighborhood energy retrofits?

---------- Conclusion

- What are your final remarks and ideas about the role of community participation in neighborhood energy retrofits?

[10] This includes all the questions asked to various interviewees. Among the questions above, relevant questions have been selected, combined and asked to relevant respondents.

Annex.3.2. Questions for community members[11]

Background

Are you: ☐ Male ☐ Female

Education: ……

Profession: ……

Monthly household income: …….

How long have you been living in Güzelyalı?

Is your house rented privately or owner occupied?

Do you hope to continue living in Güzelyalı? Why?

Energy

What fuel is used in heating of your home and for the hot sanitary water?

Would you be willing to change your heating system? Why?

What would be your new choice and why?

Have you heard about the Directive about Energy Performance of Buildings?

Have you heard about energy retrofitting concept?

What do you do to reduce your energy consumption?

- Turn lights and appliances off when not in use ☐
- Use energy saving light bulbs ☐
- Use energy saving domestic appliances ☐
- Planning energy-related home improvements ☐
- Already did energy-related home improvements ☐
- Other: _____

Please state what you think about the following sentences by reasoning your responses.

- I would like to see energy use reduced in the existing buildings in Güzelyalı.

Agree strongly	Agree	Neutral	Disagree	Disagree strongly
☐	☐	☐	☐	☐

- I would like to see renewable energy produced for local use in Güzelyalı.

Agree strongly	Agree	Neutral	Disagree	Disagree strongly
☐	☐	☐	☐	☐

[11] Most of the questions for the interviews have been derived from the questionnaire prepared for '*Thirlmere Community Energy Project'*. (For more information please see reference: Convery et al. 2008, pp.4217-4226.)

- I would like to see Güzelyalı as pilot for a project which aims to reduce energy consumption and produce renewable energy for local use.

Agree strongly	Agree	Neutral	Disagree	Disagree strongly
☐	☐	☐	☐	☐

Which buildings in Güzelyalı, if any, do you think should be the priority for a community sustainable energy project? Please rank the following types in order of priority.

	Rank
Community buildings e.g. Culture Center	____
Schools	____
Privately-owned houses	____
Commerce	____
None	☐

Participation in Neighborhood Issues and Energy Retrofits

Are you, or have you been, involved in any local community groups, projects or other activities in Güzelyalı?

Yes ☐ Please specify: _____

No ☐

Are you, or have you been, involved in any local community groups, projects or other activities anywhere else?

Yes ☐ Please specify: _____

No ☐

I would support a 'sustainable energy project' run by a community group which looks reducing energy use and using local renewable energy.

Agree strongly	Agree	Neutral	Disagree	Disagree strongly
☐	☐	☐	☐	☐

I would participate in a 'sustainable energy project' run by a community group which looks reducing energy use and using local renewable energy.

Agree strongly	Agree	Neutral	Disagree	Disagree strongly
☐	☐	☐	☐	☐

IF AGREE/NEUTRAL - Please tell if you'd be interested in the following types of involvement:

Attend promotional and fund raising events ☐

Contribute time or general labor ☐

Contribute specialist skills (e.g. engineering, management, fund raising)	☐	_____
Look at making changes in my own home or business	☐	
Put money towards changes in my own home or business	☐	
Other – please specify: _____	☐	

Why would/wouldn't you like to be involved?

Do you think there would be any benefits to Güzelyalı from a community sustainable energy project?

Would you have any concerns about a community sustainable energy project in Güzelyalı neighborhood?

Annex.3.3. List of Interviewed Organizations / Representatives

Organization	Interviewee	Contact Details	Relevancy
Izmir Metropolitan Municipality | Solid Waste Management Department	Aylin Eroğlu	Address: İzmir Büyükşehir Belediyesi Katı Atık İşl.Şb Mdl. 4.Kat Konak İzmir Tel: +90 232 293 19 84	Aylin Eroğlu is an environmental engineer and expert in solid waste management. She has been working in the *Sorting at Source* project since the first phase as the responsible person for the packaging waste. The aim of the interview was to see the previous experience of the city of Izmir in participatory local environmental planning and management.
Konak District Municipality | Planning Department	Memnune Bahçevanlar	Address: Konak Belediyesi Dokuz Eylül Meydanı Kat:7 No:11 Basmane / İzmir Tel: +90 232 489 45 22	Memnune Bahçevanlar is the chief of the planning department at Konak District Municipality. The aim of the interview was to analyze the existing situation for the institutional environment in terms of community participation.
Konak District Municipality | Directorate of Editorship	Celil Durdu	Address: Konak Belediyesi Yazı İşleri Müdürlüğü Basmane / Izmir Tel: + 90 232 484 5300 (7123) Email: yazi@konak.bel.tr	Celil Durdu is the head of the Directorate of Editorship in Konak Municipality. Before this task, he used to be the Deputy Mayor in the same municipality. Celil Durdu worked for the foundation of city councils and is currently involved in the preparation of the council agenda in Konak. The aim of the interview was to analyze the existing situation in institutional environment in terms of community participation in neighborhood projects and in city council.
Konak District Municipality | Youth Council	Tamer Erez	Email: ereztamer@hotmail.com	Tamer Erez is the president of Youth Council in Konak District. Before the foundation of the Youth Council, he used to work for Local Agenda 21 in Izmir. He was one of the interviewees in order to analyze how youth and people in general can participate in neighborhood projects and issues.

Konak District Municipality | Youth Council	Murat Çakar	Email: muratcakar_84@hotmail.com	Murat Çakar is an active member of the Konak Youth Council and the general manager at Aegean Youth Institute. He has been involved in organizing projects with the youth in Konak since the foundation of the Council. He was interviewed together with Tamer Erez to understand his perspective for the role of community in the neighborhood, district and the city they live in.
Neighborhood Administrator (*Muhtar*) of Güzelyalı	Ali Ertürk	Address: Güzelyalı Mh. 39. Sk. 35290 Konak Izmir Tel: +90 232 224 67 56	Ali Ertürk has been representing the neighborhood for more than 20 years. He was interviewed due to his strategic task between the local government and the residents in Güzelyalı.
Izmir Chamber of Mechanical Engineers	Melih Yalçın	Address: MMO Tepekule Kongre Sergi ve İş Merkezi Anadolu Cad. No: 40 KAT: M2 Bayraklı – İzmir Tel: +90 232 444 8 666	Melih Yalçın is the general secretary of the organization. As the representative from the Chamber of Mechanical Engineer Izmir Chapter, he is currently involved in the preparation and modification of the regulation with the national government. The Chamber of Mechanical Engineers wants to have responsibility for audit in the implementation, so they have an important role. The aim of the interview was to learn more about the overall progress, the regulation and its implementation.
Izmir Chamber of Electric Engineers	Talat Canpolat	Address: 1337 Sokak No:16/8 35210 Çankaya Izmir Tel: +90 232 489 34 35 Email: talat.canpolat@emo.org.tr	Talat Canpolat is an electric engineer and works in the Izmir Chamber of Electric Engineers as the responsible person for education. Talat Canpolat is actively involved in the preparation of the regulation just like Melih Yalçın. The aim of the interview was to have additional and supplementary data about the overall progress from a different organization.

Güzelyalı Göztepe Beautification Platform (Community Based Organization)	Sabri Özazar	Address: 32 Sokak 35290 Konak Izmir Tel: +90 232 285 56 54	Sabri Özazar is the president of the CBO in Güzelyalı. He is actively involved in the community based projects in Güzelyalı since 2006. The aim of the interview was to analyze the existing informal networks within Güzelyalı and understand its role in neighborhood projects.
Community Member	Yavuz Duvarcı	Address: 32 Sokak 35290 Konak Izmir Tel: +90 232 285 56 54	Yavuz Duvarcı is an urban planner and academician at a public university. He lives in Güzelyalı and he was the first person who initiated the community platform. He is not actively involved in the CBO anymore.
Güzelyalı Göztepe Beautification Platform (Community Based Organization)	Emel Kayın	Address: 32 Sokak 35290 Konak Izmir Tel: +90 232 285 56 54	Emel Kayın is an architect and academician at a public university. She lives in Güzelyalı and she is an active member of the CBO.

Annex.3.4. List of Interviewed Community Members

The following list shows the backgrounds of the respondents in detail. The full names and the contact details of the interviewees exist but are kept with the author for future project possibilities.

1 – Female, 65 years old	**2 – Male, 66 years old**
Education: University	Education: University
Profession: Painter	Profession: Retired
Monthly Household Income : No response	Monthly Household Income : 900 – 1500 TL
Resident for: 50 years	Resident for: 28 years
House: Owner occupied	House: Owner occupied
Number of people in the house: 5	Number of people in the house: 2
3 – Male, 68 years old	**4 – Male, 74 years old**
Education: University / Master degree	Education: High school
Profession: Retired (Architect)	Profession: Retired (Agricultural Technician)
Monthly Household Income : No response	Monthly Household Income : Under 900 TL
Resident for: 30 years	Resident for: 44 years
House: Owner occupied	House: Owner occupied
Number of people in the house: 2	Number of people in the house: 2
5 – Female, 42 years old	**6 – Female, 29 years old**
Education: University	Education: High school
Profession: Shop owner (Architect)	Profession: Housewife
Monthly Household Income : 1500 – 2500 TL	Monthly Household Income : 1500-2500 TL
Resident for: 11 years	Resident for: 29 years
House: Owner occupied	House: Owner occupied
Number of people in the house: 4	Number of people in the house: 5
7 – Male, 52 years old	**8 – Female, 45 years old**
Education: University	Education: University / Master degree
Profession: Shop owner (retired painting teacher)	Profession: Archeologist (English teacher)
Monthly Household Income : 1500-2500 TL	Monthly Household Income : 900-1500 TL
Resident for: 39 years	Resident for: 36 years
House: Owner occupied	House: Owner occupied
Number of people in the house: 4	Number of people in the house: 2
9 – Female, 55 years old	**10 – Female, 55 years old**
Education: High school	Education: High school
Profession: Retired (Civil servant)	Profession: Housewife
Monthly Household Income : 900-1500 TL	Monthly Household Income : 1500-2500 TL
Resident for: 45 years	Resident for: 15 years

House: Owner occupied	House: Owner occupied
Number of people in the house: 2	Number of people in the house: 2
11 – Female, 39 years old	**12 – Female, 56 years old**
Education: University / PhD degree	Education: University
Profession: Dentist (works for public university)	Profession: Civil engineer (own company)
Monthly Household Income : 1500-2500	Monthly Household Income : No response
Resident for: 5 years	Resident for: 20 years
House: Rented privately	House: Owner occupied
Number of people in the house: 1	Number of people in the house: 2
13 – Male, 58 years old	**14 – Male, 25 years old**
Education: University	Education: University
Profession: Finance (Private sector)	Profession: Finance (Private sector)
Monthly Household Income : more than 2500 TL	Monthly Household Income : 1500-2500 TL
Resident for: 22 years	Resident for: 2 years
House: Owner occupied	House: Rented privately
Number of people in the house: 3	Number of people in the house: 1
15 – Male, 28 years old	**16 – Male, 45 years old**
Education: University	Education: University
Profession: Electronics engineer	Profession: Shop owner
Monthly Household Income : more than 2500 TL	Monthly Household Income : 1500-2500 TL
Resident for: 2 years	Resident for: 45 years
House: Owner occupied	House: Owner occupied
Number of people in the house: 1	Number of people in the house: 3
17 – Male, 46 years old	**18 – Female, 32 years old**
Education: University	Education: High school
Profession: Doctor (public sector)	Profession: Civil servant
Monthly Household Income : more than 2500 TL	Monthly Household Income : 1500-2500 TL
Resident for: 3 years	Resident for: 15 years
House: Owner occupied	House: Owner occupied
Number of people in the house: 1	Number of people in the house: 4
19 – Male, 64 years old	**20 – Female, 42 years old**
Education: Secondary school	Education: High school
Profession: Retired (football player)	Profession: Shop owner
Monthly Household Income: more than 2500 TL	Monthly Household Income : 900-1500 TL
Resident for: 40 years	Resident for: 1 years
House: Owner occupied	House: Rented privately
Number of people in the house: 3	Number of people in the house: 2

21– Female, 34 years old	**22 – Female, 38 years old**
Education: High school	Education: University
Profession: Shopkeeper	Profession: Secretary
Monthly Household Income : No response	Monthly Household Income : 900-1500TL
Resident for: 20 years	Resident for: 7 years
House: Owner occupied	House: Owner occupied
Number of people in the house: 2	Number of people in the house: 3
23– Female, 42 years old	**24 – Female, 65 years old**
Education: University / PhD degree	Education: High school
Profession: Architect (works for public university)	Profession: Retired
Monthly Household Income : 900-1500 TL	Monthly Household Income : No response
Resident for: 20 years	Resident for: 34 years
House: Rented privately	House: Owner occupied
Number of people in the house: 1	Number of people in the house: 3
25– Female, 60 years old	**26 – Male, 40 years old**
Education: Primary school	Education: University / PhD degree
Profession: Retired	Profession: Urban planner (works for public university)
Monthly Household Income : No response	Monthly Household Income : 1500-2500 TL
Resident for: 43 years	Resident for: 12 years
House: Owner occupied	House: Owner occupied
Number of people in the house: 1	Number of people in the house: 3
27– Male, 29 years old	**28 – Male, 24 years old**
Education: University	Education: High school
Profession: Civil engineer	Profession: University student
Monthly Household Income : more than 2500 TL	Monthly Household Income : 900-1500 TL
Resident for: 4 years	Resident for: 4 years
House: Owner occupied	House: Rented privately
Number of people in the house: 3	Number of people in the house: 3
29– Female, 27 years old	**30 – Male, 58 years old**
Education: University / Master degree	Education: High school
Profession: Architect	Profession: Civil servant
Monthly Household Income : more than 2500 TL	Monthly Household Income : 1500-2500 TL
Resident for: 3 years	Resident for: 32 years
House: Rented privately	House: Owner occupied
Number of people in the house: 2	Number of people in the house: 2
31– Male, 43 years old	**32 – Male, 62 years old**
Education: Primary school	Education: University

Profession: Worker (at municipality)	Profession: Shop owner
Monthly Household Income : more than 2500 TL	Monthly Household Income : 1500-2500 TL
Resident for: 36 years	Resident for: 50 years
House: Rented privately	House: Owner occupied
Number of people in the house: 3	Number of people in the house: 3
33– Male, 55 years old	**34 – Female, 50 years old**
Education: University	Education: Secondary school
Profession: Shop owner	Profession: Retired
Monthly Household Income : more than 2500 TL	Monthly Household Income : under 900 TL
Resident for: 39 years	Resident for: 9 years
House: Owner occupied	House: Rented privately
Number of people in the house: 2	Number of people in the house: 1
35– Female, 56 years old	**36 – Female, 49 years old**
Education: University	Education: University
Profession: Retired (primary school teacher)	Profession: Civil servant
Monthly Household Income : 1500- 2500 TL	Monthly Household Income : more than 2500 TL
Resident for: 6 years	Resident for: 12 years
House: Rented privately	House: Owner occupied
Number of people in the house: 2	Number of people in the house: 1
37– Female, 28 years old	**38 – Male, 57 years old**
Education: University	Education: High school
Profession: Designer (own company)	Profession: Retired
Monthly Household Income : 1500-2500 TL	Monthly Household Income : 1500-2500 TL
Resident for: 2 years	Resident for: 30 years
House: Owner occupied	House: Owner occupied
Number of people in the house: 2	Number of people in the house: 2