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USAGE OF GEOTHERMAL SOURCES IN KIRŞEHİR WITHIN THE CONTEXT OF SUSTAINABLE ENVIRONMENT

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ABSTRACT

Introduction
Nowadays, countries struggle for dominance to increase their economic potential. To achieve this goal, the capacity for energy production and its use has gained great importance.

Aim of the study
Point out importance of Kırşehir natural geothermal potantial and critices usage methods.

Methods
In the research, as the technique of data collection, literature investigation on the subject has been carried out.

Conclusion
This study considers the all of different effects within the context of geothermal energy usage and tourism policy and explores the energy potential for cities, especially ones with thermal tourism, through the example of Kirsehir, ones the most prominent thermal cities in Turkey. This potantial must be developed with some effective policies applied.

Key words: geothermal energy, renewable energy, sustainability, health tourism,

INTRODUCTION

Energy consuming and sustainability

"The Industrial Revolution was accompanied by a revolution in the conversation of inanimate energy to meet human needs" (1). Energy consuming, growing with the metropolitan life, significantly affected to economic and social development but also this issue, respected to exhauste of the unrenewable energy sources. According to the theory of comparative advantages developed by D. Ricardo, free trade encourages international competition and specialization among countries. This in turn provides a more efficient resource allocation and makes possible a rise in the level of world trade. But according to Foster (2), today there are "energy imperialism" in our world. Besides the rapid technological development and change appearing in the energy system create an economic order in which countries are more dependent to each other every passing day and diversify the risks of politicians.

Now all of environmentalists have warn to us about the central issues of the present crisis: global warming, peak oil, species extinction, world water shortages, global hunger, alternative energy sources, sustainable development, and environmental justice (3).

In this regard, it is necessary to look at the development of the contemporary metropolitan life from the perspective of sustainability aiming to balance the imperatives of economic growth, social welfare and environmental protection. The searches for new alternatives have gained momentum especially after the environmental problems, it has recently been applied to the real life. Moreover the developing countries always postpone its application due to their economic concerns. With the introduction of the sustainable development, states have started to consider environmental protection with its all aspects, including its economic, social and political dimensions.

According to Bookchin "ecologic life" can be solve both ecological and political problems. To create an ecological society, cities would have to be decentralized, so people could live at a smaller scale and govern themselves and grow food locally and use renewable energy (4). Especially renewable energy as an important tool for ecologic life "not only because it is based on a renewable energy resource, but also because it brings the sun, changing climatic conditions, indeed the heavens, as it were, into our everyday lives in a palpable way. The same can be said for windpower, the presense of livestock in a community mixed farming composting techniques and others" (5).

Water problems

Within all environmental problems, water has most important one's, because water has an indispensable importance for human beings and other animates (6). Domestic water supply shortages and relevant problems are commonly observed to be increasing all over the world. This is due to the obvious reason of population increase, and also, to the increase in the pollution of fresh water resources on earth. The severity of the increase in demand and relevant supply problems appear to be significantly more in developing countries when compared with the developed ones. Today other water problems as pollution, scarcity, hydro-power technologies, even virtual water –it refers to the idea that when goods and services are exchanged, the hidden flow of water if food or other commodities are traded from one place to another- have been criticizes both in the scientific as well as in the political debate (7).

For example in the Middle East, the water resources have become determinant factors of political power from the very early ages onwards. Most water resources in this region are shared among more than one country, location and management of boundarys water resources is very important. Ground water is the main source of fresh water, so it is very important for residents of the region. Briefly usage of water resources gaining more importance every day.

Turkish Energy Sector is discussed recently and it is such an important sector for country's economy. The reasons of it's frequently discussion could be summarized as the sensitive structure of the sector and the fluctuations observed in the sector. "In fact Turkey has significant

hydro power potential making it the second richest country after Norway in Europe and hydropower plays a major role in reducing greenhouse gas emissions in terms of avoiding the generation of fossil fuels. Being one of the renewable energy sources par excellence, non-exhaustible, non-polluting and economically more attractive than other renewable sources, hydro power has turned out to be an important contributor to the future energy mix of every country. But there are some policy problems" (8).

Geothermal energy

Other important water resources are geothermal. Geothermal energy is the heat energy obtained from the hot water, steam, dry steam and hot dry rocks by artificial methods, which have gathered within rocks in the depths underneath the soil, and have moved and were stored by the fluid heat.
"As of the year of 2016 the installed capacity of geothermal energy was 13,300 MW. The electricity output from this source in 2016 is approximately 75 billion kWh. The top five countries in electricity generation from geothermal energy are the USA, the Philippines, Indonesia, New Zealand and Italy. Its use other than for the generation of electricity is 70.328 MW thermal. The top five countries in geothermal heat and hot springs applications are China, the USA, Sweden, Turkey and Germany" (9).
According to Gore, "geothermal energy is potantially the largest -and presently the most misunderstood- source of energy in the United States and the world today… Unlike solar energy, which comes to earth from the sun, geothermal energy comes from deep within the planet itself. Like solar energy and and wind power, geothermal energy could if properly developed- match all of the energy available from coal, ail and gas combined… İt is the most easily accesible and could provide an estimated 1000 gigawatts of energy in the United States alone –enough the provide energy equivalent to more than a third of America's annual electricity use" (10).
The population of Turkey exceeds 80 million and its area is close to 783 thousand km2 and it has rich natural geothermal resources (11). According to related ministry, "in 2005, with the support of our ministry, the development of existing geothermal resources initiated and began to search for new potential areas. Due for this mobilization, our usable geothermal heat capacity reached to 5000 MWt (by the end of December 2015) from 3100 MWt (by the end of the year 2004) with 212.000 meter drillings. With MTA's drilling activities, 173 discovered geothermal fields reached to 232 fields which 10 of them are suitable for electricity production. So far, total of 607 drillings with total of 370,000 meters of depth performed by MTA and 5000 MWt of heat energy (including natural springs) obtained from these wells (12). On the other hand there are stil some discussion on Law of 5686 on Geothermal Resorces and Natural Mineral Waters (13).

Geothermal organizations

Geothermal organizations are establishments that are founded to meet the need for health services which is one of the most vital needs of the society. There are a number of documents about the existence of geothermal baths in the very early stages of history in every society who has the certain level of civilizations from ancient period onwards (14).
"From Rome to India, despite having knowledge of the importance of geothermal baths rejected the curing properties of the water, people have been called to dismantle and vandalize the hot springs in the Middle Ages. Only after 800 years have the resources been able to be re-utilized. Replacing the elitist view of Rome and Byzantine period, "social thermalism" took over and was first implemented in the form of public baths by the Seljuqs" (15).
From that time now in an increasingly urban world, urban services have seen an increase in scope, standards, and expanse. One such example of these services are the ones related to health care. While the demand for more and better health care increases as a result of increasing life expectancy, the increasing awareness of "healthy living" have turned young and old to take interest in health care issues. In turn, the healthcare industry is fast becoming one of the most fundamental, and therefore also the most profitable industry. When the booming world

population is taken into context, the upwards trend of such profitability gains importance. In addition, tourism has expanded from visiting places of interest to concepts such as "culture tourism" and "health tourism".
The process of the modernization and urbanization has led cities to transform into the center of attraction in many respects. But rapid and uncontrolled urbanization have important effects on environment in these areas. In a lot of country, urban development legislations, have become very unsufficient for the protection of environment. Besides there are many health problems associated with the metropolis. Especially in contemporary metropolitan cities, as a result of lessening green areas and evaporation surfaces, and increasing asphalted surfaces and built areas cause unhealthy air. In addition that traffic originated noise pollution cause very bad effects on human health. For example people in cities, especially children, seem to be slightly more prone to allergies and asthma**.** Also a higher percentage of urbanites will suffer anxiety disorders.
Drucker focuses attention on the troubles of metropolis life and says that "the metropolis has become the habitat of modern man. Yet paradoxically we do not know how to make it habitable. We have to effective political institutions to govern it. Urban decay and traffic jams, overcrowding and urban crime, juvenile delinquency and loneliness are endemic in all modern great cities" (16). For all that reason people whom living there needs powerfull health services which is the most central domains of post-ındustrial society.
With the parallel all this process city managers try to change cities conditions which are more healty areas for people. WHO (World Health Organisation) depict these cities as a healty city. "A healthy city is one that is continually creating and improving those physical and social environments and expanding those community resources which enable people to mutually support each other in performing all the functions of life and developing to their maximum potential" (17). But this duty is not easy.
Today, all over the world, health care is becoming a featured matter and is considered as one of the impulsive forces of economic and social development. Recent developments in health care services provision with global characteristic affect the financial structure and functional role of this sector. Because health care organisations are establishments that are founded to meet the need for health services which is one of the most vital needs of the society and due to numerous tasks dealt within, they can be considered as quite complicated organizations in many concerns. In sectors like that services which costs of service provision is considerably higher, customers' satisfaction appears to be a significant issue for this type of institution because it will substantially effect the quality, continuity, cost and output of health services.
According to Drucker, "the "customer" of this kind of service institution is not really a customer; he is a tributary. He pays for the service institution whether he wants to or not, out of taxes, levies such as compulsory insurance, or overhead allocations. The products of these institutions are not meant to supply a want. They are meant to supply a need. School and hospital, but also the typical service staff in business supply what everybody should have, ought to have, must have, because it is "good for him", or good for society" (18) İn briefly democracy has some main objectives and the demands of people's health care is one of them. "İt must take into consideration the demands of people who mustnt be reduced to being mere consumers of health care, education and information" (19).

Thermal tourism in Kırsehir

Especially changing customers' needs and expectations, however, draw attention to the special interest services besides resort tourism that is expected to grow although data related to market share within international tourism market is still controversial. Thermal tourism is one of important sector in this field. Actually for ages, people took advantage of thermal centers for their health. Various minerals in the hot spring water help to solve different kind of health problems and provide significant help for medical treatment. The spas in Turkey are used by 7 million local people and 200.000,- foreign guests in a year (20). İn the last two decades, Turkish tourism industry has edged into the international tourism market through mass tourism

activities. The country has richest thermal water area. For this reason thermal tourism destinations are ready to candidate of one of the key points of international tourism and travel movements.

Kırşehir with a history of 5.000 years of history, in the Hittites period Akua Saravena (Water Cıty), in the Persians period Katpatukya (Cappadocia-Fine Horses Country), in the Roman period Makissos, in the Byzantine period Justinianapolis and in the Anatolian Seljuk period the city took the name as Gülşehri and Byzantine Eras. Kırşehir is grateful to the Anatolian Seljuks for ist revival. It was observed that Kırşehir had a great importance ın the areas of science and fine arts especialy after the eleventh century. Today growing day by day with its six administrative districts and with a population of 200.000, Kırşehir is a candidate to be the future's culture, tourism and industry centre.

The Terme geothermal area is one of the most important geothermal areas of Kırşehir. In the area, thermal tourism commercial growing of hothause flowers vegetables or fruit and city heating are performed. 12 wells, nine of them by MTA and three of them by private sector , have been opened since 1974. Offices and hauses which are equivalent to 1800 hauses are heated by these two wells. Five of them are used in the hotel spas and in conservatories. Five of them are waited. The wells which are in 92-500 m depth have got temperature between 30,3-57(^{0}c) and flow between 5,2-88,5 L/sec in the measurements done by MTA in 11/10/2015. The total flow of nine wells is 349,8 L/sec. İn tems of the physical chemical and biologic analysis report and medical evaluation of İstanbul Universty Medical Ecology and Hydro Climatology Observation and Application Centre abaut Terme Spa, it is generally useful to arrange the posibilities of batpool drinking and inhalation cure in the spa applications done by this kind of mineral-water.

Karakurt spa is in the borders of Karalar village in the centre district of Kırşehir. The distance of spa to Kırşehir is 16 km. the well in 147,65 m depth has good 51(^{0}c) temperature and 12 L/sec flow. There is a foundation including 50 beds in the spa. Positive results are take against many diseases such asrheumatism, neuralgian an gynecological diseases with its bath therapy. There are also historical Karakurt spa and Kalender Baba Tomb in the foundation.

Bulamaçlı spa is in the borders of Çiçekdağı district of Kırşehir. It is 4 km away from Çiçekdağı. The well in 160 m depth has 38 (^{0}c) temperature and 3 L/sec flow. The flow with compressor is 7 L/sec in this spa which has the capacity of 20 beds, many positive results are taken against many diseases such as rheumatism, neuralgia, neuritis and gyncologicay diseases with its bath terapy.

In Mahmutlu spa two sources were found with the last two boring made by MTA. The first one is in 311,2 m depth, 72,2 (^{0}c) temperature, 16 L/sec compressor, 40 L/sec flow. This second one is in 1149 m depth, 76,5 c temperature, 33 L/sec compressor, 80 L/sec flow. Hot water from the thermal source is being used at greenhouses as there are no established facility (21).

Thus because of its high quality and economic health services and mild weather, it is not difficult to divert the tourists that choose Kırşehir destination.

CONCLUSION

Turkey is the crossroad of the highways, railways, seaways and airlines, transportatıon lınes. For a healthy development of the tourism sector, health care personel whıch are well educated so that they are responsıble for economıcal, safely and envıronmentally clean servives are recquired. The problem of this type of firms in our country operating with the idle capacity and not using the sources which belong to them is extremely important. For this reason in this service area, lack of coordination among center place and geothermal institution and absence of an operating policy and enforcements result some efficiency problems.

"Briefly health tourism sector is very important sector in terms of the functions undertaken in health of patients and tourists that development of the sector is an harmony with economic and social development of a country is also very important. The latest increase in medical and senior persons tourism, is quite promising. In this context, that sector services must development" (22).

All energy policies should be aim to use our energy resources efficienctly, effectively and in a way that has a minimum impact on the environment within the scope of the sustainable development objectives.

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