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The impact of renewable energy sources on forest crimes the case of North Cyprus

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Abstract---Depending upon promoting and wide-spreading the use of renewable energy sources to preserve natural sources and forest land, several laws and regulations have been drawn by States in terms of sustainability. Investigations in forest land and natural sources for various reasons, statistics revealing forest crimes are being overviewed for sustainable preservation of forests and new arrangements in laws and regulations are being made. The statistics of forest crimes by the Office of Forestry, Preservation and Exploitation Branch and the Electricity Authority of TRNC were referred to while carrying out this study. The findings in these statistics revealed a substantial increase in forest crimes between the years 2012-2017 due to the lack of a State policy and failure in the common use of renewable resources. The findings in this research point to the fact that, based on a sustainable environment policy, more investment in renewable energy sources is essential and will positively affect the reduction of forest crime rates.

Keywords---renewable energy, forest crimes, forest protection, renewable energy policies, crime statistics.

Introduction

The forest is a complex biological ecosystem consisting of mainly trees, bushes, and other vegetal, animal, and mineral elements all interacted in a specific way of existence with their functions and products for national wealth (Sarıbaş, 2016). Although Law of Forestry is a branch of law arranging all forestry activities responding to people's needs, forests are still public properties and forestry is assumed as a public service (Birben & Gençay, 2009). Since the beginning of humanity, forests have been used for heating, lightening, and protection purposes, which, parallel to the technological developments, are in more excessive demand. The written rules of law, however, cannot put an end to all these demands. There are several activities and behaviors harming forests today. One of the most effective ways of putting an end to such activities so as to keep

sustainability of forestry is to ban all kinds of harmful activities and impose sanctions, which are in practice in several countries. Forest crimes, as defined by law, are banned activities harming forests directly or indirectly in or out of forest land. In other words, forest crimes are every kind of banned activities threatening, harming, and creating future risks for the forest (Güneş, 2004).

Renewable energy is defined as a source of energy that provides the amount of energy equal to consumption or renewing itself faster than utilization rates (Erdoğan, Sezgin, Demirbilek, 2008). A huge amount of decrease in the fossil-fuel reservoirs used in energy production all over the world is being observed. This question has urged several countries to start studies to produce the energy they need from renewable energy sources rather than fossil fuel. Due to insufficient energy sources to respond to their proportionally ever-growing industries, developing countries are in search of alternative energy sources, such as, wind-power, solar-power, and the Ocean (the sea, current, tide etc.). However, besides the existing renewable energy sources, new ones, Bio-gas, Biomass energy, have been put into use parallel to the developments in technology and sciences. Renewable energy helps improve sustainable education and provide job opportunities (Fırat, Sarı, Karaduman, 2016). The sun is the most important energy source, ecologically clean, and is an alternative to types of fuel that increases carbon dioxide emission. The amount of yearly sun radiation energy on the world is 160 times more than fossil fuel resources and 150000 times more than the energy produced by fossil, nuclear, and hydraulic plants (Ultanır, 1966 and Sarı, 2002). Parallel to the ever-increasing solar energy systems throughout the world, it is used for hot water and even a little electric energy power production in North Cyprus (Yılmaz, 2012). In the Mediterranean region of Turkey the sunshine duration is 2956 hour/year and the amount of total solar energy is 1390kw/m². According to (2013) this shows the importance of the potential solar energy in this area (YEGM, 2013).

%23 of the 3,555 square kilometer area of TRNC (Turkish Republic of North Cyprus) is forestland. The Office of Forestry of the State has great responsibilities. The forestlands in North Cyprus are preserved, improved, and made feasible for forestry activities by 5 Regional Forest Chieftaincy and the Head Office (Fırat, 2018). Following the Peace Operation, forest provisions, adapted as articles during the British Administration on the Island before the establishment of the Republic of Cyprus, were put in effect by the Cyprus Turkish Autonomous Administration until 13 February, 1975. These regulations are known as “Article 60 Forest Law” and “Article 61 Fighting Arson”. Although these regulations have undergone certain changes, based on the regulations by the British Administration, they do not respond to today’s prevailing conditions.

Aim of the study

The aim of this study is to investigate the connection between the rise in electric bills in North Cyprus in the years 2012-2017 and forest crimes i.e. illegal cuts, possession and selling of wood, illegal use of electric saws. This study also aims to search the renewable energy potential of TRNC and associated government policy.

Methodology and data analysis

This study went through the Amplified analysis method in which two or more data sets are compared or combined. The statistics by the Office of Forestry and Electricity Authority were combined, interpreted, and overviewed. The data used in this study were obtained from the secondary statistical data by the Electricity Authority, TRNC and from the statistical data prepared in a distributed format by the Office of Forestry.

Heaton (2008) stated that the secondary data type is a new issue and named it as “secondary analysis” which required new methodology. The scope of Heaton’s secondary analysis includes data types such as field notes, central group work, observations, interviews and findings in questionnaires. Data about autobiographies, life stories, letters and pictures etc. were not included. Moore (2007) pointed to the common features of the data types included and stated that there was an interaction between the source of data and the data collector.

Data Set 1- Price-range statistics for monthly/yearly electric energy in TRNC

The secondary data set was obtained through analyzing the weekly/monthly statistics prepared by the Department of Statistics of the Electricity Authority. These data sets were publicly announced and put into researchers’ use. In this data set, the monthly/yearly price ranges in TRNC are presented as kwh/TL. The difference in yearly consumption and rating between the years 2012-2017 were taken into account.

Data Set 2. Statistics for forest crime reports in TRNC

The secondary data set was obtained from the monthly/yearly statistics for forest crime reports prepared by the Statistics Branch of the Office of Forestry, TRNC. The raw data collected were put into 10 different categories and the findings were presented in data sets as yearly crime rates.

Findings

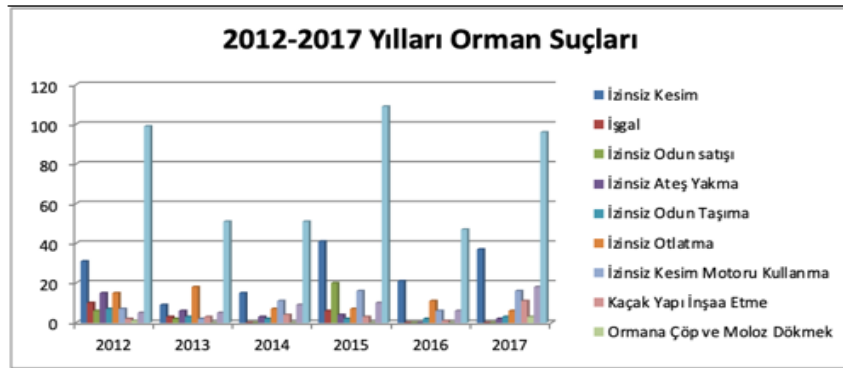
The connection between the crime reports by the Office of Forestry and the price ranges in electric energy were examined in this study and in the light of the findings, it was questioned as to whether there was a connection between illegal cuts and the electric price rates. As it is revealed in Table 1, forest crimes between the years 2012-2017 were particularly categorized as illegal cutting of trees, illegal possession and selling of wood, illegal use of electric saws, and cutting trees for firewood. Occupying, making fire without permission, unlawful grazing, unlicensed construction and casting litter or rubble are not directly connected with cutting down trees for woodfire.

Table 1. Types and rates of forest crimes between the years 2012-2017 (Office of Forestry, TRNC)

CRIMES REPORTED BETWEEN THE YEARS 2012-2017								
Year	Illegal Casting grazing selling	Illegal Occupa Court electr. 5	Illegal TOTAL Constr. 99	Illegal Litter/ ssion 15	Illegal cut cases 7	Illegal tion saw 15	Illegal wood rubble 7	Illegal fire posse 2
2012	31	10	6	15	7	15	7	2
1		5	99					
2013	9	3	2	6	3		18	2
		0	5	51				3
2014	15	0	0	3	2	7		11
		0	9	51				4
2015	41	6	20	4		2	7	16
3		0	10	109				
2016	21	0	0	0		2	11	6
		1	0	6		47		
2017	37	0	0	2		3	6	16
11		3	18	96				

Forest crimes in TRNC between the years 2012-2017 are as revealed in the Table above. As it can be observed, illegal cutting was at its maximum level between the years 2015-2016, but at a lower level in 2012-2013 and at the lowest level in 2013-2014 and 2014-2015. In terms of years, illegal cutting was at the highest level compared to other crimes. In 2012 7, in 2013 3, in 2014-2015 and 2016 2, and in 2017 3 illegal cutting crimes, particularly committed at nights, were reported. As for illegal use of electric saw, in the years 2012-2017, 7, in 2013 2, in 2014 11, in 2015 16, in 2016 6, and in 2017 16 were used. The reason for the increase in the rate of this crime in yearly bases is assumed to be due to the high cost of getting a license to own one and use it. The rate of court cases, as seen in the Table, is quite low and this is because, as stated in Article 60, under Preservation and Exploitation Regulation, every Protection Officer has the power to fine. Therefore, every crime is not directly taken to the court.

FOREST CRIMES BETWEEN THE YEARS 2012-2017



-Illegal cuts	-Occupation	
-Illegal wood selling		-Illegal fire making
	-Illegal wood possession	-Illegal
grazing	-Use of illegal electric saw	
-Illegal construction		-casting
litter/rubble	-Court case	
-TOTAL		

Figure 1. Types of Forest crimes and distribution Table (Electricity Authority 2012-2017)

Table 2. Electric kWh/price rate Table between the years 2012-17 (Elect. Authority/2012-17)

2012-2017 ELECTRIC kWh/price range distribution table

YEAR	0-250kW	251-500kW	501-750kW OVER 751kW
2012	0,38TL 0,65TL	0,44TL	0,52TL
2013-2014	0,45TL 0,84TL	0,55TL	0,67TL
2015-2016	0,44TL 0,54TL	0,48TL	0,52TL
2016-2017	0,52TL 0,75TL	0,60TL	0,67TL

As it can be observed in Table 2, tariff rates for houses were grounded on yearly basis in energy consumption. The reason behind this is because the people in these four groups are highly affected by the prices, therefore, they tend to illegal cut. Tariff rates are calculated in kw/h unit and are exempted from real taxes. In the Table, an overall increase in the tariff rates for houses is observed. Although, a decrease between the years 2012-2017 is noted, the tax adjustments in those days did not bring about any fall in prime cost for the consumers. The Table also reveals no rise in all tariff rates between the years 2012-2017.

Electric rate changes in the years 2012-2017 kWh/TL

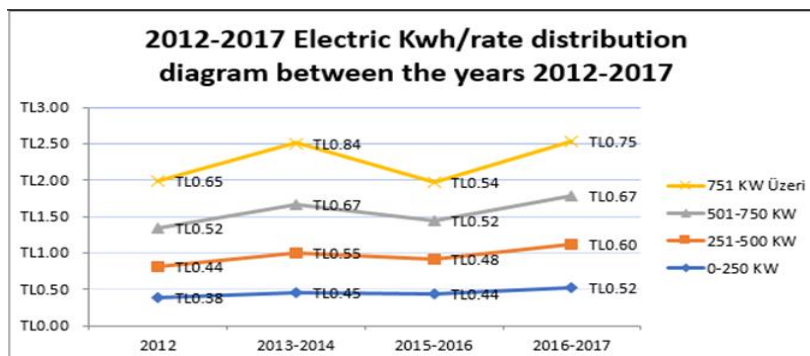


Figure 2: Electric kwh/rate distribution diagram between the years 2012-2017

Conclusion and Recommendations

During the years 2012-2017, there has been an increase in forest crimes parallel to the rise in power prices. Our country has a great wind and solar energy potential. In order to benefit from these energy sources, policies, legal regulations, and relevant legislation need to be completed and put into practice, which will lessen dependency on fuel oil and evenly decrease environmental pollution. All the studies, dissertations, publications, and articles in the subject question, should be considered and made use of by the involved departments of the State.

When the unique and mathematical state of our country is considered, the natural and renewable energy potential should be specified and a reasonable energy policy should be adapted. In our country, buildings with fireplaces should be recorded and taxed. Even more, a new legislation should be written for the houses to be built with fireplaces. Requirements for permission to possess an electric saw should be more binding and the fee paid for such tools should be higher. Non-governmental organizations, the media, and the involved should put more effort in making people aware of the harm of fossil fuel in power production.

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