



**Presented at the FIG Working Week 2016,
May 2-6, 2016 in Christchurch, New Zealand**



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A Study to Determine the Relations Between Living Standards and Carbon Footprint Among Geomatics Engineers in Turkey

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TS03H - Real Estate Economics & Expropriation Solutions to Land Policy Problems



Introduction

- One of the most important problems of our time is sustainability. Today, the protection of natural resources and ensuring the sustainable management is a major problem.
- A concept that came up with sustainable living has been the ecological footprint. Productive land and water area that needed for the production of consumed resources and absorb the generated waste is referred as the ecological footprint (Schaller, 1999).



Carbon Footprint

- Carbon footprint (CFP) of the frame ecological footprint, is the damage to the environment in terms of the amount of greenhouse gases generated.
- CFP is the total amount of CO₂ and other greenhouse gases emitted over the full life cycle of a product or process, from extraction of raw materials through to decommissioning.
- Among the gases that have greenhouse effect, it comes to CO₂ as one of the most effectives of all. Because CO₂ has the highest rate among the greenhouse gases that released by human activities, studies have focused primarily on CO₂ analysis.





Methodology and Used Data

- **Study Area and Participants**
 - This study contains the results of "Living Standards Survey". Participants are members of the Chamber of Survey and Cadastre Engineers. They were selected from members of the chamber to be from similar formation of engineering.





Methodology and Used Data

- **Study Area and Participants**
 - 645 responses from 68 cities of Turkey and abroad received from approximately 13000 members of the chamber.
 - Questions of the survey were prepared by examining available CFP calculators' surveys and literature studies. In order to determine CFP, questions in four main topics were prepared and the answers worked as the basis of the study.

Yaşam Düzeyi Anketi

* Required

1- Doğum yılınız? *

2- Cinsiyetiniz? *

3- Hangi şehirde ikamet ediyorsunuz? *

4- Hangi ilçede ikamet ediyorsunuz?

5- Aslen nerelisiniz? *

6- Hangi üniversiteden mezunsunuz? *

7- Mezuniyet yılınız nedir? *

8- Harita ve Kadastro Mühendisleri Odasının hangi şubesine üyesiniz? *

9- Lisansınızda eğitiminiz var mı? *

Hayır

Yüksek Lisans

Doktora

10- Hangi sektörde çalışmaktasınız? *

Kamu sektörü

Akademik

Özel sektör (İşletici olarak)

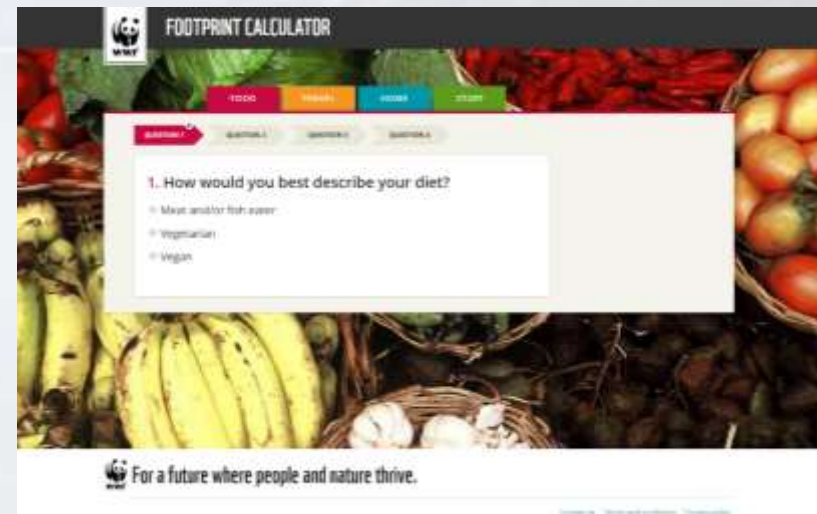
Özel sektör (İşveren olarak)

Çalışmıyorum / Emekliyim



Methodology and Used Data

- **Calculating Carbon Footprint**
 - There are many web sites can be used to calculate CFP values. In this study, WWF's (World Wide Fund for Nature) calculator was used.
 - Then, these calculated CFP values grouped using the information of the participants and found some averages.





Methodology and Used Data

- **Analysis of the Data**
 - Assessments were carried out on the basis of people, region and cities considering the calculated CFP values. Among geographical regions of Turkey, Black Sea Region has the lowest value and Marmara Region has the highest.

Regions	CFP Value (tones CO ₂)	Total Members	Participating Members	Participation Percentage
Black Sea	14.63	1524	64	4.20%
Central Anatolia	14.71	3272	136	4.16%
Aegean	14.77	1529	63	4.12%
Eastern Anatolia	14.94	494	18	3.64%
Southeastern Anatolia	14.97	547	18	3.29%
Mediterranean	15.73	1356	57	4.20%
Marmara	15.80	4358	194	4.45%



Methodology and Used Data

- **Analysis of the Data**
 - As the results of calculation, Mus has the highest average CFP value among all the cities of Turkey and Kars has the lowest value.

City	CFP Value (tones CO ₂)
Mus	20.86
Bitlis	19.68
Batman	18.82
Duzce	18.77
Sakarya	17.82

City	CFP Value (tones CO ₂)
Kars	9.81
Tunceli	11.40
Kirsehir	11.52
Agri	11.70
Sanliurfa	11.85



Methodology and Used Data

- **GIS-Based Maps**
 - First process to begin creating CFP maps is calculate values on the basis of provinces and import them to the system. The average value of all individuals in a province gives the average value of that city. After calculate and transfer the CFP values of the cities, next step is perform a similar process for the geographical regions.

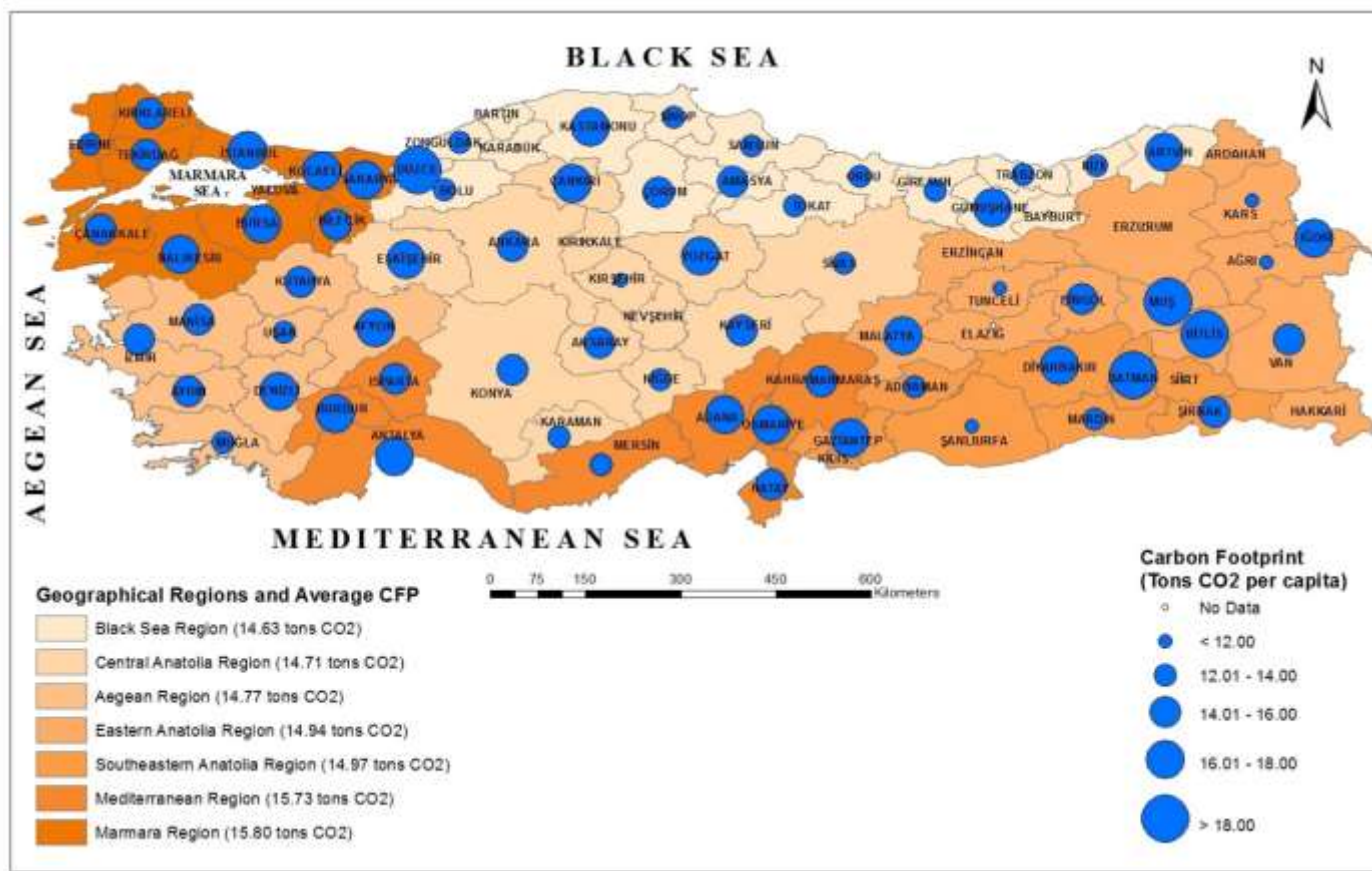


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Methodology and Used Data

- **GIS-Based Maps**
 - To produce CFP map of Europe, similar steps were applied. The first step was to obtain countries CFP values. For Turkey, an average value was found using the previously calculated CFP values of Geomatics engineers that living in the country. For European countries, 2010 data provided by the Carbon Footprints of Nations organization was used. In the next step, Europe is divided into four geographical regions as Eastern Europe, Southern Europe, Northern Europe and Western Europe.

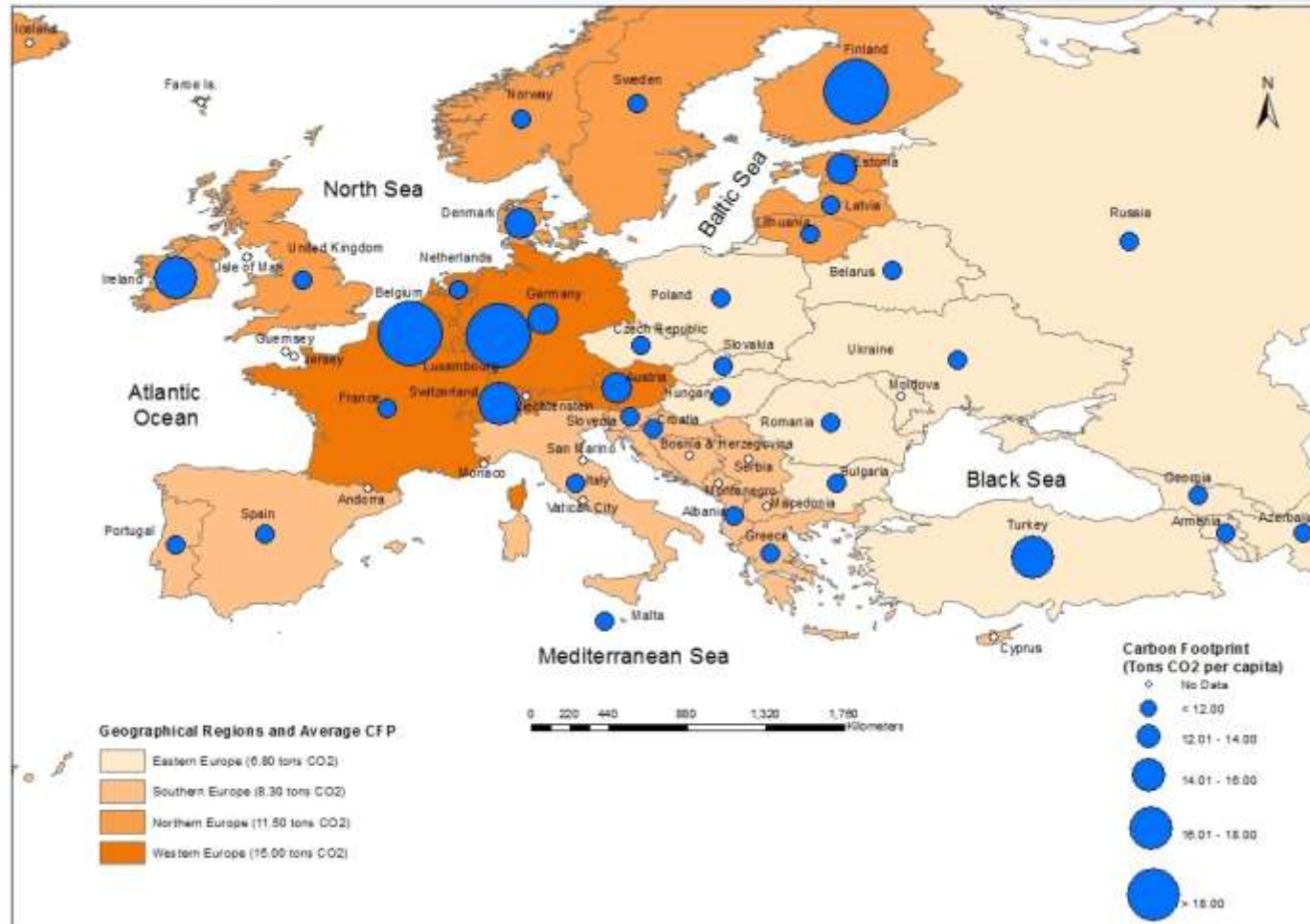


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Results and Conclusions

- According to the results of the evaluation among the provinces, the average CFP value for Turkey was found as 15.34 tones CO₂/year. The lowest value among the cities is 9.81 tones CO₂/year for Kars and the highest value is 20.86 tones CO₂/year for Mus. Among the geographical regions of Turkey, the Black Sea Region has the lowest overall CFP with 14.63 tones CO₂/year and the Marmara Region has the highest overall with 15.80 tones CO₂/year. It could be said that for western parts, fossil fuel usage for transportation and industry and for the eastern parts fossil fuel usage for heating are the major factors.



Results and Conclusions

- Among the European regions, Eastern Europe has the lowest average with 6.80 tones CO₂/year and Western Europe has the highest with 15.00 tones CO₂/year. Among the countries, average carbon footprint value calculated as 9.8 tones CO₂/year. Albania has the lowest average with 1.8 tones CO₂/year. On the other hand, Luxembourg has the highest average with 24.6 tones CO₂/year and Belgium is second with 22.2 tones CO₂/year. About place of Turkey, among the 37 countries that have data, Turkey has the 5th highest average value with 15.3 tones CO₂/year. As the main reasons of high CFP in western countries; high income, the abundance of carbon release activities due to the high level of income, high rate of industrialization and therefore excess consumption of fossil fuels can be mentioned.



Results and Conclusions

- The value calculated for Turkey belongs to 2014 and it contains only the information of Geomatics engineers. At the same time, values for European countries belong to 2010 and from a different source. Because of that, there is no exact comparison between them. However, these assessments are carried out with an important qualities in terms of providing awareness.



Results and Conclusions

- Greenhouse gases that released into the atmosphere as a result of human activities are the main reasons of global warming because of their heat retention capacity. Carbon footprint concept consisting of CO₂ is an increasingly popular topic mainly due to its rise and effects to the nature. Minimizing the carbon footprint, especially with regard to the prevention of global warming is more important than ever.
- Developed countries are producing more carbon emissions and lifestyles are becoming also consume more energy. Using renewable green energy, which is a more healthy form of energy without affecting global pollution, should be initiated as soon as possible.



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- Thank you for your attention..

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