

## Global Warming Awareness and Knowledge Assessment: A Case Study in Isparta, Turkey

Megha Sharma, Rakesh Singh, Nitin Yadav, Pooja Gupta, Anjali Verma & Akash Tiwari\*  
Delhi University, New Delhi, India

### ABSTRACT

Global warming is one of the most important environmental problems in whole the world because of its many effects such as on temperature, drought and floods. So, results of the present and future studies will play important role in solution of the problem. In this context, a questionnaire included demographics, socio-economic and knowledge about global warming of individuals was conducted with 400 voluntarily individuals selected between end of 2016 and beginning of 2017 to determine the knowledge levels and awareness of people on global warming to contribute solution of the problem.

Results of the present study showed that 94% of individuals had knowledge about global warming based on data analysis. Individuals come to mind first in terms of global warming of melting of glaciers (20%) and climate/seasonal changes (21%).

**KEYWORDS:** Global warming, aridity, awareness, Isparta, people

---

### INTRODUCTION

Chancing of environment such as global warming is one of the main problems in biological life in the century also emphasized in many studies [i.e.,1-6]. Global warming is defined as the recent and ongoing rise in earth surface temperature. It is clear that the warming will be effective on earth temperature, disasters like hurricanes, frequent drought and flood. Other effects of global warming include higher or lower agricultural yields, further glacial retreat, reduced summer stream flows, species extinctions [7].

A global phenomenon has the potential to adversely affect human lives when corrective measures are not taken. Global Warming occurs because of greenhouse gases such as carbon dioxide, methane, and nitrogen oxide, and also human activities included exhaust from automobile and industrial combustion engine, gas flaring during hydrocarbon refinery, deforestation and overgrazing. However, individuals are not aware of the importance of the environment on human life, and to exhibit negative behavior towards the environment, disrupting the natural balance and damaging to the environment. For instance, It is emphasized that climate change is an area that is in dire need of publicity to help the public make informed decisions in its adaptation and mitigation [8].

One of the main ways in raising environmental awareness from family level to public and finally future generations of countries. There are several studies about the awareness and knowledge of people about global warming [i.e., 9-16] in different countries.

The aim of this study is to determine the knowledge levels and awareness of global warming based on participated individuals to contribute to the solution of the problem.

### MATERIALS AND METHODS

#### Material

The study was conducted in Isparta province called also Lake District of Southern Turkey (Figure 1). The province is located between 30° 20' and 31° 33' east longitudes and 37° 18' and 38° 30' north latitudes at 1035 meters altitude asl. The city is located in the transition zone between the Mediterranean climate and continental climate. It has a continental climate with cold, snowy winters and hot, dry summers. Total population of the province is 448.298 while it is 244.085 in central district. Isparta province is composed of 68.4% mountains, 16.8% plains and 14.8% plateaus.



Figure 1: Geographical position of Isparta province

**Methods**

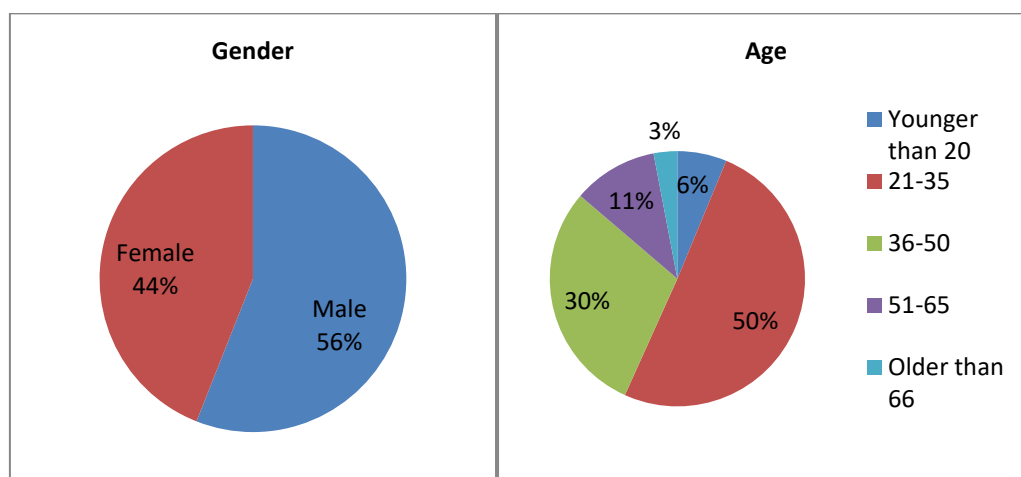
A survey questionnaire included 36 multiple-choice questions to estimate public awareness and knowledge level to global warming was administered to 400 chosen randomly respondents in Isparta province between end of 2016 and beginning of 2017. Survey questionnaire included was two main parts. The first part of the questionnaire was about general demographic and personal information while the second part was relate to assess their knowledge and awareness about global warming issues included climate change, causes and impacts of the phenomenon as well as respondents responses. Multiple possible choices were given for each question.

The collected data was performed by the SPSS ver. 20.0 statistical software and statistical package from Excel 2007 (Microsoft Corporation).

**RESULTS AND DISCUSSION**

**Demography**

According to the data drawing from the implemented questionnaire, the profile of individuals was 224 males. Their ages varied between 21 and 35 graduated high schools and employed as public servants or students (Figure 2). It was known that personal information such as age, gender could be main effect in the questionnaire. For instance, It was reported that Male and female students exhibited significant difference in respect of their awareness and knowledge towards global warming [17].



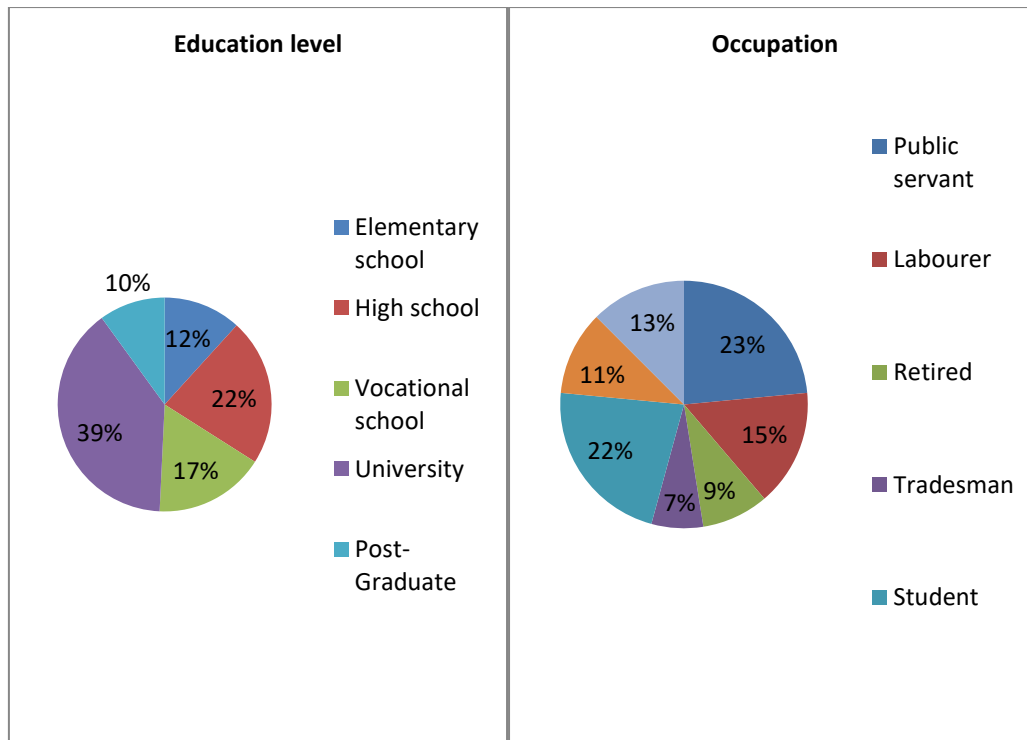
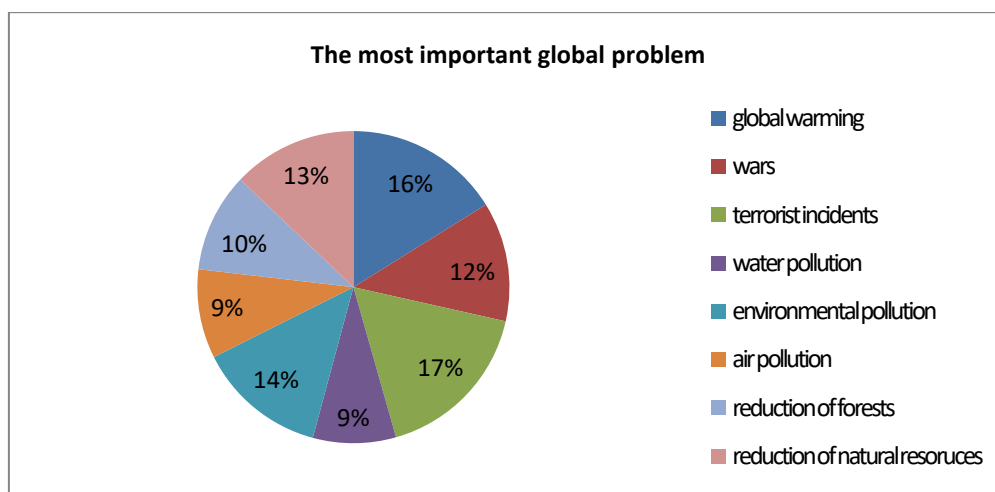


Figure 2: Gender, age, education level and occupation of subjects

**Global warming**

It was replied that the most important global problem for individuals was terrorism and global warming in the present study (Figure 3). In an Indian study carried out by Sah and Bellad (2015) reported that more than three quarters (83.75%) of the participants stated cardiovascular and respiratory problem to be the major health issue due to global warming [17]. In the same study it was also reported that less than half (45.75%) participants ranked greenhouse gases to be the major cause for global warming. Similar results was also found by [18] and [10].

It was understood that 94% of participated individuals by television and radio (47%). Individuals came to mind first in terms of global warming of the glaciers and climate/seasonal changes (Figure 3). The most prevalent source of information on climate change is TV channels 48% and the internet and online sources with 24% [13]. Similar results was also found by [19].



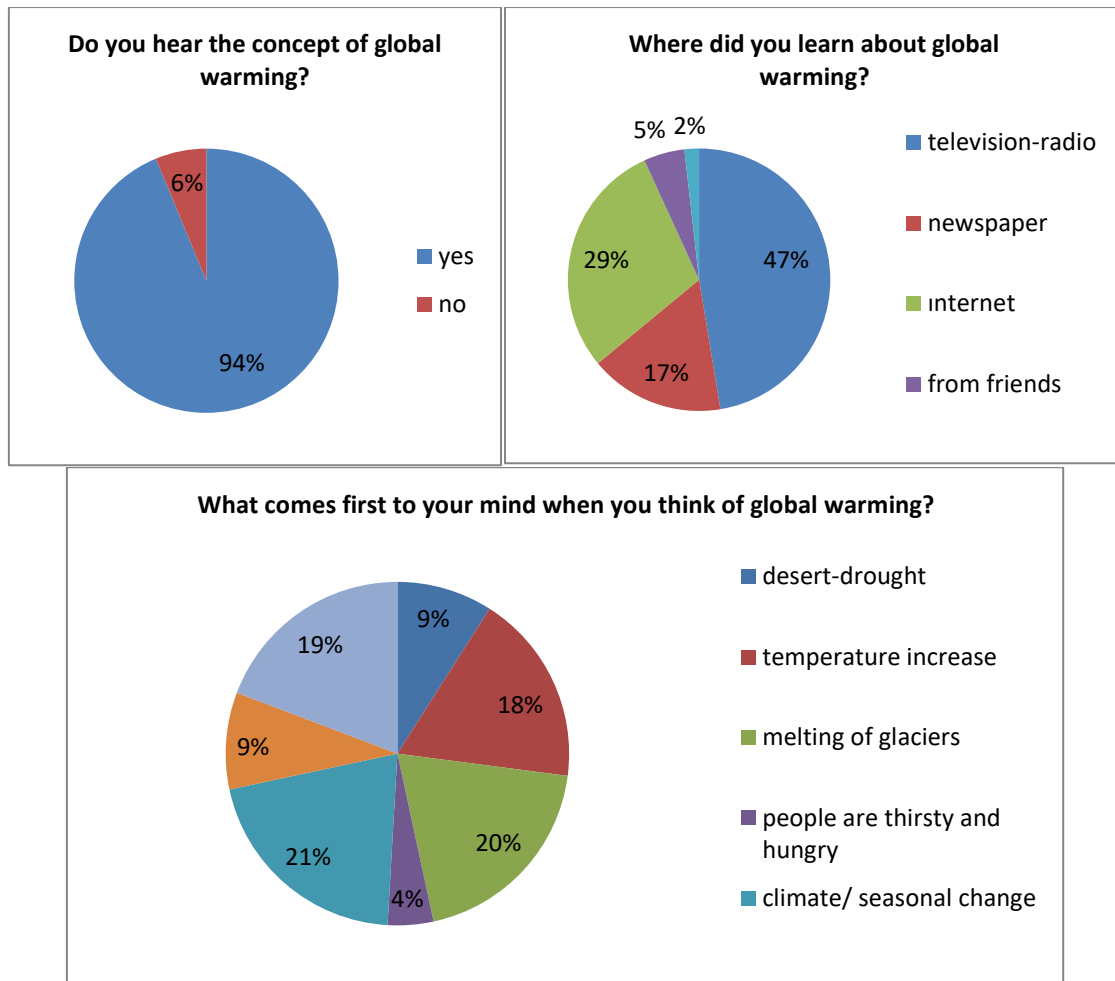


Figure 3: Opinions of individuals on global warming

As seen from Figure 3, the individuals emphasized water and air pollution was also main global problems. Beside, results of the survey questionnaire showed that they had some knowledge about global warming (Figure 3).

**Awareness and knowledge level to global warming**

To determine knowledge level on global warming of participants, they replied the questions as agree or disagree with the statements. The results were given on Table1. According to the results given in Table 1, It could be said that individuals awarenessed on global warming (Figure 2). Similar results were also found by [16, 18, 20, 21]. It was also reported for primary school teachers [8]. It was found that 30.5% of the respondent had adequate awareness of global warming, 33.5% had fair knowledge, while 36.0% had poor level of awareness in Kenya [14]. This showed that the awareness level of most of the respondents was generally poor for the country.

It was clear that obese people are often knowledgeable about the consequences of global warming. It was reported that developed countries had more shares in global warming (50.8%) [18]. It was found that industrialization triggered global warming [20, 21]. When respondents were asked to pinpoint who cause climate change on a global scale, 56% indicated that developed countries are the most responsible [13].

As a result of awareness, majority of the students (57.5%) were willing to walk or cycle instead of driving and only (12%) students were willing to plant trees for combating global warming [17]. It was found that 504 school teachers interviewed, 44.6% had adequate level of knowledge while 5.4% were totally unaware of the global warming [22].

**CONCLUSION**

The results of the survey on the global warming knowledge level of the individuals participating in the survey show that the level of knowledge about the global warming of individuals is higher than the average. However,

periodic published and advertisement material regarding global warming is still needed to increase awareness and knowledge in the province. It could be considered larger than province level, as well. According to results of the present study it could be concluded that the level of climate change awareness among the individuals was not significantly low but there were significant gaps in their knowledge which needs to be addressed for a better solution to contribute the global warming.

Public participation in global warming mitigation programs could be enhanced significantly by increasing people's understanding of and knowledge about all aspects of global warming.

Table 1: Global warming knowledge levels of subject

	Strongly disagree		Disagree		No idea		Agree		Strongly agree	
	f*	%	f	%	f	%	f	%	f	%
1-The increase in the amount of greenhouse gas causes the problem of global warming by causing more heat trapped on the earth	11	6.1	4	2.2	16	18.9	73	14.08	75	41.9
2-As a result of rapid industrialization, our world has entered the global warming process	1	0.6	4	2.2	20	11.2	94	52.5	60	33.5
3-Developed countries have more share in global warming	1	0.6	9	5.0	10	5.6	91	50.8	68	38
4-Continuous development of science triggered global warming	7	3.9	33	18.4	27	15.1	80	44.7	32	17.9
5-The problem of global warming is only a regional question that concerns people living in that region	114	63.7	38	21.2	-	-	14	7.8	13	7.3
6-The ultimate reduction of global warming is an economically expensive process	24	13.4	34	19	2	1.1	39	21.8	65	36.3
7-Global warming has its benefits in addition to its damages	78	43.6	45	25.1	2	1.1	18	10.1	13	7.3
8-Countries need to act jointly in global warming and all other environmental problems	3	1.7	11	6.1	2	1.1	41	21.9	122	68.2
9-Damage to natural areas accelerates global warming	2	1.1	25	13.9	5	2.8	57	31.8	90	50.3
10-There is no relationship between forest fires and global warming	77	43	55	30.7	11	6.1	26	14.5	10	5.6
11-Global warming will increase even further with the accumulation of more CO <sub>2</sub> (carbon dioxide) gas in the atmosphere.	2	1.1	22	12.3	15	8.4	69	38.5	71	39.7
12-As a result of global warming, drought and desertification will increase.	7	3.9	26	14.5	-	-	69	38.5	77	43
13-The air temperature will not be affected by global warming.	74	41.3	64	35.8	8	4.5	23	12.8	10	5.5
14-As a result of global warming, ice, rivers, lakes and sea levels will rise	6	3.4	24	13.4	13	7.3	69	38.5	67	37.4
15-As a result of global warming flood disasters will be experienced, especially coastal areas will be flooded	4	2.2	32	17.9	3	1.7	69	38.5	71	39.7
16-The unconscious consumption of cosmetic products that people use has triggered global warming	5	2.8	42	23.5	12	6.7	70	39.1	50	27.9
17-As a result of global warming, the habitats of plant and animal species will change, even some species will disappear	9	5	34	19	9	5	46	25.7	81	45.3
18-Public transport should be preferred for transportation in order to reduce the effects of global warming	4	2.2	28	15.6	2	1.1	70	39.1	75	41.9
19-To reduce the effects of global warming, houses must be insulated against heat loss	3	1.7	30	16.8	17	9.5	50	27.9	79	44.1
20-To reduce the effects of global warming; natural energy sources such as water, sun, wind should be used.	2	1.1	25	14	10	5.6	67	37.4	75	41.9
	<b>Strongly disagree</b>		<b>Disagree</b>		<b>No idea</b>		<b>Agree</b>		<b>Strongly agree</b>	
	<b>f</b>	<b>%</b>	<b>f</b>	<b>%</b>	<b>f</b>	<b>%</b>	<b>f</b>	<b>%</b>	<b>f</b>	<b>%</b>
21-To reduce the effects of global warming, plastics, bags, food containers must be recycled.	1	0.6	23	12.8	4	2.2	76	42.4	75	41.9
22-With more afforestation of the earth, the effects of global warming can be reduced.	2	1.1	23	12.8	4	2.2	61	34.1	89	49.7

23-Global warming and its consequences will bring to the end of the world.	8	4.5	51	28.5	36	20.1	51	28.5	31	17.3
24-Urbanization must be stopped to prevent global warming.	8	4.5	59	33	38	21.2	59	33	15	8.4
25-Global warming will slow down if adequate measures are taken	3	1.7	26	14.5	9	5	87	48.6	54	30.2
26-I do not believe global warming makes a difference in human life	4.1	21.9	33	18.4	22	12.3	60	33.5	23	12.8
27-Global warming is an international economic question rather than an environmental issue for states.	8	4.5	30	16.8	8	4.5	76	42.5	57	31.8
28-Thanks to the world's self-renewal nature, the threat of global warming will disappear over time.	38	21.2	66	36.9	25	14	33	18.4	17	9.5

f is the number of participants to the question.

## REFERENCES

- [1] Gul, A., Topay, M., Ozaydin, O., 2009. Against the threat of global warming, the importance of urban forest. In: Paper Presented at the International Davraz Congress, Isparta, Turkiye.
- [2] GCRI, 2011. Global Change Research Information Office, 2011. What human activities contribute to climate change? [www.gcric.org](http://www.gcric.org).
- [3] Ozbayrak, O., Uyulgan, M., Alpat, S., Alpat, S.K., Kartal, M., 2011. A research on high school students knowledge related to global warming. *Journal of Buca Education Faculty*, 29, 58–67..
- [4] EPA, Environmental Protection Agency, 2013a. Frequently asked questions about global warming and climate change: back to basics Available at: <http://www.epa.gov/climatechange/basics/>
- [5] EPA, Environmental Protection Agency, 2013b. Overview of greenhouse gases Available at: <http://www.epa.gov/climatechange/ghgemissions/gases.html>.
- [6] Oshuntokun, A.2003. Environmental Problems of Nigeria. Lagos: Friedrich Ebert Foundation.
- [7] Venkataramanan, S., 2011. Causes and effects of global warming. *Indian Journal of Science & Technology*, 4(3).
- [8] Ochieng, M.A., Koske, J. 2013. The Level of Climate Change Awareness and Perception among Primary School Teachers in Kisumu Municipality, Kenya. *International Journal of Humanities and Social Science*, 3:174-179.
- [9] Afnan Mahmood Freije, A. M., Hussain, T., Salman, E.A., 2016. Global warming awareness among the University of Bahrain science students. *Journal of the Association of Arab Universities for Basic and Applied Sciences*. February 2016
- [10] Demircioglu, G., Demircioglu, H., 2015. Investigation on various variability's of the degree of information and awareness of Trabzon on the global heating. *Journal of Research in Education and Teaching*.No:4/2, 248-259p
- [11] Kalipci, E., Oztas, H., Ozdemir, C., 2009. The level of environmental engineering department students for the application of their environmental information in daily lives. [dergipark.ulakbim.gov.tr/akdeniz/article/view File/.../5000044276](http://dergipark.ulakbim.gov.tr/akdeniz/article/view/File/.../5000044276)
- [12] Aydin, F., 2014. Determination of Knowledge Levels of Secondary School Students' Global Warming. *Turkish Journal of Education*. Volume 3 Issue 4.
- [13] Al Buloshi, A.S., Ramadan, E., 2015. Climate Change Awareness and Perception amongst the Inhabitants of Muscat Governorate, Oman. *American Journal of Climate Change*, 2015, 4, 330-336.
- [14] Adio-Moses, R. O., Aledajena, J.A., 2015. Assessment of knowledge and awareness of global warming among inhabitants of industrial areas of an urban community in a developing country. 6th International Trade and Academic Research Conference (ITARC),The Business and Management Review, Volume 7 Number 1.
- [15] Rao, V.S., 2011. Public Awareness about Global Warming in Hyderabad, India. San Jose State University. Master's Theses and Graduate Research. [http://scholarworks.sjsu.edu/etd\\_theses](http://scholarworks.sjsu.edu/etd_theses).
- [16] Temelli, A., Kurt, M., Kurt Kececi, S., 2011. Primary school teachers' views on global warming. 4 (2), 208-220. [www.keg.aku.edu.tr](http://www.keg.aku.edu.tr)
- [17] Sah, J.K., Bellad, A.A., 2015. Awareness and knowledge about global warming among the school students of south India. *Al Am een J Med Sci*, 8(3):230-234.
- [18] Aydin, F., 2010. Secondary school students' perceptions towards global warming: A Phenomenographic analysis. *Scientific Research and Essays*, 5(12), 1566-1570.
- [19] Guloglu, Y., Bulut, A., 2016. Determination of Knowledge Levels of Forestry Students on Climate Change (Kastamonu University Forest Faculty Example). *Kastamonu Univ., Journal of Forestry Faculty*, 16 (2): 640-654.
- [20] Orbay, K., Cansaran, A., Kalkan, M., 2009. Teacher candidates' perspective on global warming. *Ahmet Kelesoglu Education Faculty Journal*, 27, 85-97.
- [21] Eroglu, B., 2009. Determining knowledge levels of science teachers' candidates about global warming (Master Thesis). <http://tez2.yok.gov.tr/>.
- [22] Hegde, S.S., Murthy, N.S., Shalini, C.N., Sandeep, K.R., 2012. Awareness of global warming among school teachers in Coastal Karnataka. *Indian J. Prev. Soc. Med.*, 43:383-388.