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GLOBAL ENVIRONMENTAL PROBLEMS NEED ECONOMICAL SOLUTIONS

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Abstract

Environmental issues are generally global concern as a result of economical views. One of the greatest challenges is global warming. Greenhouse gas emissions escalate global temperature. Carbondioxide emissions can be modeled with economical model via estimating Environment of Kuznets curve. Environmental Kuznets Curve (EKC) describes the relationship between the measured levels of environmental indicators and income per capita. This study focuses on global awareness of environment, pollution indicators, Kyoto Protocol, and economical approach.

Keywords: Global Environmental Problems, Pollution Indicators, EKC

INTRODUCTION

One of the global problems is the issue of environment. Environmental problems consist of many components, that's why it is complex. Human beings face to solve climate change and global warming due to global increase of temperature with escalating greenhouse gas emissions (Weart, 2008). Greenhouse gases are mainly CO₂ (60%) and others -NO_x gases, SO₂ emissions etc.- (Ozturk and Acaravcı, 2010). Environmental problems can be solved by global perspectives. Human mind becomes eco-friendly matter because of awareness of environment. Global responsibilities of environment require some improvements such as having high quality standards, having enough budgets for clean-up systems, pushing international organization for saving environment, having enough eco-friendly technology etc.

Determining of environmental problems can be used economical approach. Environmental Kuznets Curve is one of the environmental models. In environmental economics literature, inverted U-shape EKC has been used as an environmental indicator since 1990s. Bölük and Mert (2015) underlined the reality that Environmental Kuznets Curve as a good tool for describing the relationship between the measured levels of environmental indicators and income per capita. In conclusion, when environmental problems are negatively affected, environmental and economic development become more important issue based on this relationship. Environmental parameters such as CO₂ emissions are one of the most applied emissions in EKC applications (Tutulmaz, 2015). EKC actually summarizes as environmental degradation enhances with per capita income during early stages, and then decreases with per capita income after reaching at a threshold (Ozturk and Acaravcı, 2010).

GLOBAL AWARENESS OF ENVIRONMENT

The first step was pollution of environment. After this point global attention was occurred. Basically, humans are altering the ultimate planet via burning of fossil fuels, urbanization, deforestation,

agriculture and industrial processes (Tong and Ebi, 2019; Moslin, 2009). As Human population increases, pollution trends would be the same direction. Especially, population increased with Industrial Revolution. Particularly, over the past decades, greenhouse gases in the atmosphere significantly have been increased (Tong and Ebi, 2019).

Along the other greenhouse gases CO_2 is the major component in the atmosphere. Because CO_2 is responsible for more than 60% of the greenhouse effect (Ozturk and Acaravcı, 2010). Global warming is a result of greenhouse gases which are the one of the most important environmental problems in the last three decades (Ozturk and Acaravcı, 2010). When pollution increases climate change occurs and another issue will be come through which is health. Population health and health system are negatively affected and these inter-relations are complex including climate, social and environmental conditions and human health (Tong and Ebi, 2019). Climate changes many things such as (i) quantity and quality of food and water, (ii) enhancing air pollution, (iii) changing the distribution of vectors/pathogens and disease transmission dynamics, (iv) declining eco-physical buffering against extreme weather and climate (Ebi et al., 2018; McMichael, 2013; Tong et al., 2016; Watts et al., 2018).

It is clear that climate change and global warming will be resulted with serious problems in the near future. These are (i) extreme temperature, (ii) heat waves, (iii) wildfires, (iv) droughts, and (v) floods (Anderson et al., 2019; Annell and Reynald, 1996). In addition, it will be a reality very hot weather and heavy precipitation in the future (Xu et al., 2017).

POLLUTION INDICATORS

Nowadays, climate has been drastically changing by enhanced atmospheric greenhouse gases in the world (IPCC, 2007). Some parameters give an explanatory idea for better understanding. In environmental sciences as well as the others, various environmental indicators are used in climate change. It can be defined as (i) CO_2 emissions, (ii) SO_2 emissions, (iii) nitrogen oxide (NO_x), (iv) particulate matter, (v) biodiversity and (vi) water and soil pollution (Barra and Zotti, 2018). CO_2 emissions are generally used as pollution indicators for scientific researches. The major greenhouse gas is CO_2 and the current atmospheric concentration of CO_2 is 411 ppm which values higher than any time in the past 800000 years (IPCC, 2018; NASA, 2019).

KYOTO PROTOCOL

Especially, economic development, environmental protection and their relation have long been great attention in terms of concern and research (Huang et al., 2008). Global warming and climate change have been one of the hottest environmental issue in the past decades. For combating global warming, United Nations Framework Convention on Climate Change (UNFCCC) developed a special protocol named a Kyoto Protocol (Ozturk and Acaravcı, 2010). The Kyoto Protocol assumes the most far-reaching global environmental agreement ever considered (Li et al., 2004).

In 1979, The First World Conference about global climate was held (Li et al., 2004). In the late 1980s, the second action was organized by United Nations (UN) which set up the Intergovernmental Panel on Climate Change (IPCC) (Li et al., 2004). The first assessment was reported by UN in 1990 (Li et al., 2004). In June 1992, at Rio de Janeiro, 154 countries signed a UN Framework on Climate Change which was the first landmark on international negotiations based on global climate change (Li et al., 2004). Finally, the Kyoto Protocol to the Framework on Climate Change was agreed with 160 nations delegates on December, 1997 (Li et al., 2004).

Kyoto Protocol has legally binding greenhouse gas (GHG) emissions marks for developed countries (Woerdman, 2000). The Kyoto Protocol requires industrialized countries to decline their greenhouse gas emissions by at least 5% from 1990 levels by the duration of 2008-2012; however, developing countries do not have to obligatory commitments (Li et al., 2004). The Kyoto Protocol has three mechanisms for elevating emission reduction: (i) international emission trading (IET), (ii) joint implementation (JI), and (iii) the clean development mechanism –CDM- (Woerdman, 2000).

ECONOMICAL APPROACH: Environmental Kuznets Curve (EKC)

Economical view is essential for better explanation and good definition. It is clear that economic development creates problems in terms of environmental protection and environmental quality which investigated by economic approaches (Huang et al., 2008). One of the economical approaches is Environmental Kuznets Curve. Ozturk and Acaravcı (2010) reported that “*EKC say environmental degradation increases with per capita income during early stages of economic growth, and then declines with per capita income after arriving at a threshold.*” Represented by inverted-U curve and named Kuznets Curve in the economic literature (Tutulmaz, 2015).

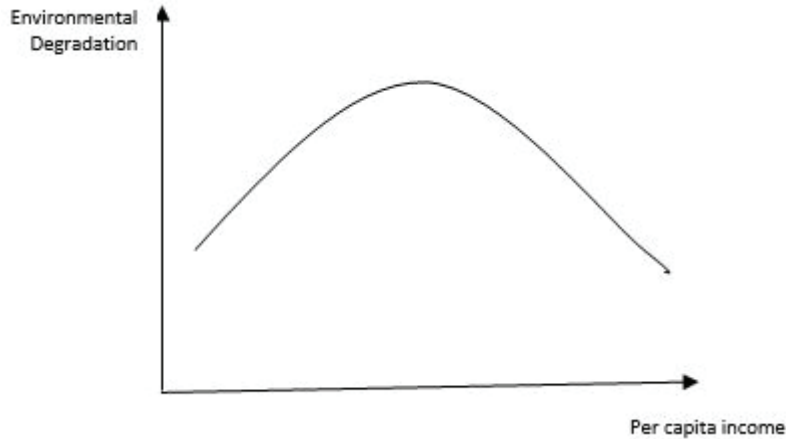


Figure 1. EKC curve (Tutulmaz, 2015).

Higher income level causes a shift in the economy from high polluted to low polluted and finally decline environmental degradation (Bouvier, 2004; Barra and Zotti, 2018). Actually, economic growth influences economy in three ways: (i) scale effect, (ii) composition effect, and (iii) technique effect (Akbostancı et al., 2009). Technique effect contains innovative techniques, more pollution free techniques and cleaner technologies (Akbostancı et al., 2009). So, technique effect requires environmentally-friendly approaches. Many studies about using EKC for evaluating environmental matter are summarized in Table 1.

Table 1. Selected EKC studies in literature (Adapted from Ozokcu and Ozdemir, 2017).

Literature	Environmental Indicators	Results
Shafik Bandyopadhyay (1992)	Deforestation, per capita CO ₂ emissions, water	CO ₂ ; monotonically increasing
Holtz-Eakin and Selden (1992)	per capita CO ₂ emissions	Quadratic inverted-U shape, cubic N-normal
Moomaw and Unruh (1997)	per capita CO ₂ emissions	Inverted U-shape for quadratic, N-shape for cubic
De Bruyn, van der Bergh and Opschoor (1998)	per capita CO ₂ emissions, nitrous oxide (NO _x), sulfur dioxide (SO ₂)	Monotonically increasing
Cole (2004)	per capita CO ₂ emissions, 9 more air pollutants and water pollutants	Inverted U-shape for CO ₂ , inverted U-shape and inverted N-shape for other pollutants
Narayan and Narayan (2011)	per capita CO ₂ emissions	Inverted U-shape in Middle Eastern and South Asia panels
Franklin and Ruth (2012)	per capita CO ₂ emissions	Inverted u-shape

CONCLUSION

Climate change and global warming are definitely important for human being. This review describes pollution, pollution sources, climate change and greenhouse gas emissions, environmental awareness, pollution indicators, and economical approach (EKC). Global environmental problems can be defined by economical model like EKC. Many studies were used EKC as an indicator for pollution degree determination.

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