IJCEAS

International Journal of Contemporary Economics and Administrative Sciences
ISSN: 1925 – 4423
Volume: 9, Issue: 2, Year: 2019, pp. 305-326
DOI: 10.5281/ zenodo.3596081

PLASTIC BAG REGULATIONS FOR A SUSTAINABLE ENVIRONMENT

Mehmet NAR[1]

Received: 19.05.2019, Accepted: 19.09.2019

Abstract

Global issues, which are among the most serious issues of our times, threaten the existence of humanity and the world. The most basic concept encountered regarding the aforementioned issues is the concept of sustainability. This matter becomes even more important especially when the use of plastic bags is considered. This study, which summarizes the most recent state of sustainable development, focused on environmental sustainability and plastic bag consumption and evaluated the negative effects of plastic bag use on the environment and health. In this context, the effects of the taxation regulations and pricing policies implemented against plastic bag use for the sake of creating a sustainable environment were analyzed.

Keywords: Environmental, Economics, Sustainability, Plastic Bag, Tax

JEL Classification Indices: *Q5, H4, I3*

Introduction

Since the 1980s, the use of plastic bags has gained steam all across the world. Plastic is a popular material that is used in many countries from Africa and Europe to Australia and America due to its features such as being hygienic, cheap and durable. However, plastic bags adversely affect human health and the biological environment as they can remain in nature as chemical waste.

This brings up the topic of imposing restrictions on fossil fuels, which are the source of plastic bags. The efforts made to recycle or dispose of plastic bags require more fossil fuel, which in turn increase environmental and human costs. This and other similar problems force countries to take measures such as imposing taxes, bans, and charges in

[1] Associate Professor. Department of Economics, Faculty of Economics and Administrative Sciences, Artvin Coruh University, Turkey. Email: 0608mehmet@gmail.com

order to restrict the use of plastic materials. Although it is difficult to measure the effects of taxation regulations, the preliminary findings are promising. With taxes, the fiscal burden on consumers can be increased and their directing power can be effectively benefited from in creating a sustainable environment and healthy generations.

Environmental Sustainability

Today, global issues are considerably diversified, ranging from demography, housing, and economy to politics, administration and security. In addition to these, perhaps the most important global issue is the environmental issue. Because global environmental issues are the kind of issues that reduce biological diversity, destroy the variety of species, annihilate the operation of biological systems and threaten the continuity of human life. They result in many fundamental problems such as climate change, environmental pollution, global warming (harmful gases creating the greenhouse effect) and the pollution of natural resources (Attfield, 2018; Lubkemann, 2010; Williams, 2018). The incremental growth of the aforementioned issues has forced countries and political institutions to take action in terms of the legitimacy of the matter. The fact that these issues are global has led to international cooperation in creating global principles, ideals, ethics and a common consciousness (Low and Gleeson, 2001; Zhang and Swartz, 2009).

In this sense, the United Nations Conference on the Human Environment (1972) is the first global conference where sustainable development and environmental issues were discussed. The most recent state reached in terms of sustainable development is the 2030 Agenda (Figure 1). This conference, which was a follow-up to the Millennium Development Goals, was held in New York in 2015. A total of 17 articles were agreed upon and accepted with signatures from 193 member states. The 2030 Agenda is universal, transformative and rights-based. It is an ambitious plan of action for countries, the UN system and all the other actors involved. The Agenda is the most comprehensive blueprint to date for eliminating extreme poverty, reducing inequality and protecting the planet. It goes beyond rhetoric and lays down a concrete call to action for people, the planet and prosperity. Instrument type goals are shown in five boxes: environment, resources, economy, education-health and governance. The ultimate aim is both to reach social objectives and make human well-being sustainable (EAC, 2013; Paoli, 2018; United Nations, 2017; Williams, 2018).

International Journal of Contemporary Economics and Administrative Sciences
ISSN: 1925 – 4423
Volume: 9, Issue: 2, Year: 2019, pp. 305-326
DOI: 10.5281/zenodo.

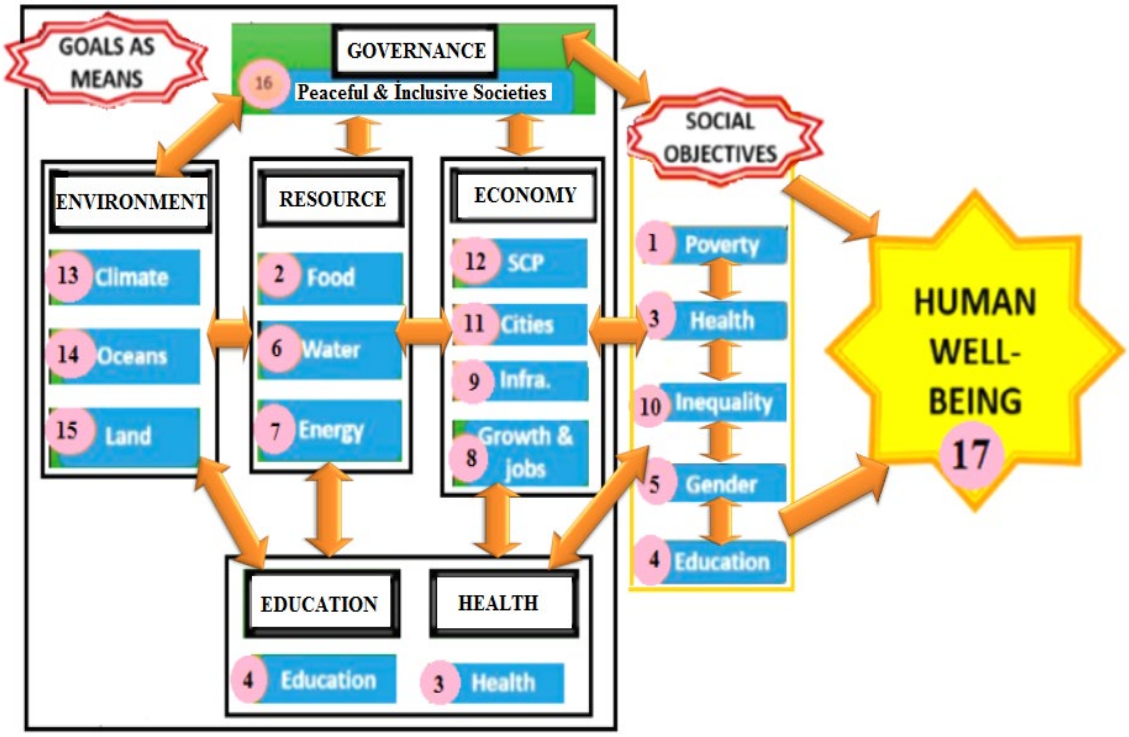

Figure 1: Sustainable Development Goals

Source: United Nations, 2017. Sustainable Development Goals (Five Categories of Means-Type Goals)

The word sustainable has roots in Latin, meaning "to hold up" or "to support from below". A community must be supported from below, by its inhabitants-present and future (Monto et al, 2005). In other words, sustainability is the realization of the continuity of productivity for multiple generations and thus the conservation of the potential of benefits or interests to exist in perpetuity (Banks, 2005). According to the classical definition given by the United Nations World Commission on Environment and Development, development is sustainable if it "meets the needs of the present without compromising the ability of future generations to meet their own needs" (Soubbotina, 2004). In addition to this, some other definitions are as follows: A process, the steering of which is based on minimizing losses and maximizing benefits. A model of durability, which ensures a decent existence to residents of the globe and prevents the self-destruction of the human civilization. A process, in which the shaping of the world does not collide with decent conditions of existence and the development of non-human life forms, and which concentrates on developing and satisfying higher human needs.

Mankind's unlimited existence (with quality of life above mere biological survival) by maintaining (conservation) fundamental life-supporting systems (air, water, soil, biosphere), the existence of infrastructure and institutions that distribute and preserve the components of this system (Pawłowski, 2011; Pawłowski, 2013).

Today it is seen that, the concept of sustainable development is mostly used to define basic areas such as international financial stability, market efficiency, health, access to information, peace, security, human rights and especially global public goods, which are global or regional goods that are generally related to the environment (Low and Gleeson, 2001; Zhang and Swartz, 2009).

Such goods and services with no competition or exclusion are divided into three groups: (i) *natural global commons*: goods that are very important in terms of the factors that affect human life such as the ozone layer and global climate, and can be exposed to excessive consumption with no exclusion and competition (ii) *human-made global commons*: goods and services such as universal norms and principles (human rights), information and internet with no competition or partial exclusion in consumption (iii) *global conditions*: areas such as peace, health, financial stability, freedom from poverty, environmental sustainability, equity and justice that are unraveled by global conditions. A continuous and regular supply is necessary in order for these goods to be considered as global goods. However, as there is no competition or exclusion in the consumption of the goods and services that are in this context, it is seen that they are insufficiently supplied within the global scope (Harris and Roach, 2017; Pawłowski, 2011; Sandler, 1999). Insufficient supply causes the emergence of public malignancies such as unbalanced ecosystems, radiation, global warming, human exploitation, injustice, income inequality, etc. This brings forward the issues of *sustainable conservation of the environment and financing problems* (Soubbotina, 2004; Williams, 2018).

Environmental sustainability is meeting the needs of future generations without interruption by reducing the discharges of toxic and other types of pollutants and all other emissions within the life cycle. With this purpose, it is necessary to create: (i) waste reduction (ii) clean production (iii) resource efficiency (iv) eco-productivity (v) life cycle analyses (vı) environmental design and (vıı) integrated pollution prevention mechanisms in consumption and production based human activities. The concept of ***eco-productivity*** explains the realization of more production using fewer natural resources and less energy. With

IJCEAS

International Journal of Contemporary Economics and Administrative Sciences
ISSN: 1925 – 4423
Volume: 9, Issue: 2, Year: 2019, pp. 305-326
DOI: 10.5281/zenodo.

waste reduction, the management of wastes, from their formation to their disposal without inflicting damage on the environment or human health is understood and the main objective is to minimize the use of natural resources through the recycling of waste (Freinkel, 2012; RG, 2015). ***Resource productivity*** refers to the use of raw materials and products in the time from their production to their consumption with minimum environmental effects. ***Clean production*** is the encouraging of the use of materials that are non-toxic or have low toxicity in the production phase. By this way, the waste of resources is prevented and pollution can be fought effectively. By making real-time ***life cycle analyses*** it is aimed to investigate the environmental effects of products and services in detail. With the ***environmental design*** method, it is aimed to develop environment-friendly products in other areas of production, particularly products that save energy. In addition, with the ***integrated pollution prevention and control mechanism***, the aim is to protect the environment at the highest level (EPA, 2017). Thus, the use of clean technologies (wind energy etc.) becomes obligatory for the prevention of the emissions and waste that result from large industrial and agricultural processes. For example, only the companies that fulfill the determined environmental conditions can operate. Therefore, it would be possible to make a systematic analysis of the interaction between industrial systems and ecological systems that results from physical, chemical and biological relationships. In the end, an approach that sees human beings and the environment as living organisms in the production and consumption relationships emerges (BSTB, 2012; UNEP, 2010).

On the other hand, computation mechanisms such as ecological, carbon, and water footprints are resorted to for the sake of environmental sustainability. An ecological footprint is a measure of the amount of bioproductive land and sea required to support a person's lifestyle. It includes the land needed to grow their food, dispose of their waste and absorb their carbon emissions. It is used to calculate the burden of humans on nature. Carbon footprint is a measure of how much CO2 is emitted as a result of all aspects of everyday life (Calcott and Bull, 2007). This method is again a good way to measure the effects of the damages we cause to the environment. The water footprint shows the amount of water humans consume. It is calculated according to the amounts of water consumed by individuals, communities or businesses or the contaminated water volume. These measurements provide the necessary data for freshwater bodies to be conserved in a sustainable way (Harris and Roach, 2017; UNESCO, 2008; Wikipedia, 2018).

Financing Environmental Sustainability

The excessive consumption of natural resources in parallel with the growth in the world's population causes environmental issues to increase. The conservation of the environment brings the issue of financing into question. Although, in practice, it is not possible to talk about any financial mechanisms that were presented clearly, global taxes are among the leading methods used in solving environmental problems (Andersen and Lindsnaes, 2007; Soubbotina, 2004).

Global taxes were first defined by forensic scientist James Lorimer (1884) in his book titled ***The Main Issues of International Law***. Even though global taxes were mentioned in the period when the United Nations was established, these taxes lost their importance as a result of the opposition from the United States government and large companies. There was no new perspective in this subject until James Tobin's (1972) tax proposal, namely the Tobin tax. With this tax, Tobin suggested collecting tax over short-term international capital movements. In 1977, the tax was considered as a possible source of income to combat desertification by the Washington-based Brookings Institute. In the year 1980, the United Nations, started applying global tax on seabed mining in accordance with the change made in the Law of the Sea Treaty. Global taxes were defined in the United Nations World Conference and the 2001 Zedillo Panel Report as "an obligation that is financed by a large number of countries and needs to be supplied from new and permanent sources". Below are the global taxes and other sources of income that are applied or considered to be applied (Perman et al. 2011; Cnossen, 2005; Moyer and Hyman, 2016).

- Taxes, User Charges, Fees and Levies: carbon taxes, aviation Tax, currency transaction tax, email and internet tax, world trade tax, international arms trade tax.
- Market Creation and Strengthening: leases, sale and trading permits, the Emissions Trading System.
- International Public Sources: contributions of international financial institutions and organizations such as IMF, WB, UN and WTO.
- National Public Sources: official development assistance, debt relief and debt-for-sustainable development swaps, reducing or removing perverse subsidies.
- Private Sector Resources: contributions of for-profit corporations, non-profit corporations.
- Global Environment Facility (GEF): The intergovernmental institution that tries to bring global benefits such as diversity, climate

IJCEAS
International Journal of Contemporary Economics and Administrative Sciences
ISSN: 1925 – 4423
Volume: 9, Issue: 2, Year: 2019, pp. 305-326
DOI: 10.5281/zenodo.

change, the conservation of international waters and the ozone layer, and the reduction of chemical materials that can remain in nature without dissolution to the highest level and provides grants for this cause (Binger, 2003; Cnossen, 2005; Harris and Roach, 2017).

Because human life is primarily dependent on environmental factors, global taxes related to the environment possess vital importance. These taxes are evaluated in the context of green tax reforms. The idea of the taxation of environmental pollution and the internalization of the emerging external costs (polluter pays) in theoretical literature was first mentioned by Pigou (1920) in his book titled The Economics of Welfare. This idea formed the basis of the theoretical studies. Pigou proposed a general environmental tax for the prevention of the pollution caused by the fog problem in London. An effective environmental tax is calculated as a tax that is equal to the marginal loss per unit (Cherry et al. 2008; Daugbjerg and Svendsen, 2001; Moyer and Hyman, 2016).

Environmental taxes are composed of **(i)** energy taxes **(ii)** transport taxes **(iii)** pollution taxes and **(iv)** resource taxes. **Energy taxes** are the taxes put on energy products that are consumed both in transportation and for fixed purposes. The most important energy products that are consumed in transportation are gasoline and diesel, while the energy products that are consumed for fixed purposes are fuel oils, diesel fuel, natural gas, coal and electricity. Carbon dioxide taxes are also categorized under energy taxes instead of pollution taxes. This is because carbon dioxide emission is directly related to energy consumption. **Transport taxes** are the taxes related to the ownership and use of motor vehicles. These taxes are concerned with transport equipment in the form of airplanes, ships or railroads and the transportation services carried out with this equipment. For example, while this tax can be applied once during the importation or sale of airplane equipment, a tax under the name of road tax can be taken from the transportation services that are carried out with airplanes (charter or scheduled flights). **Pollution taxes** are taxes that are applied to air and water emissions, levels of solid waste and noise pollution. **Resource taxes** include the taxation of matters related to the extraction of water resources or the consumption of forests. Within this context, these taxes aim to ensure the sustainability of forests and natural life such as wild flora and fauna (European Commission, 2016; OECD, 2001).

In the past ten years the share of environmental taxes in total tax revenues has been growing. However, despite this, pollution rates have been increasing above average. On the other hand, the share of the taxes

that are collected from employee compensation within the total tax revenue has remained more or less stable in recent years. Therefore, with eco-taxation which aims to bring an ecological tax reform or solve environmental problems, it is aimed to make natural resources sustainable, and reduce the tax burden on labor by encouraging environmental taxes. Today, the most popular taxes of this kind are carbon dioxide taxes or the taxes that are applied to plastic bags. These taxes are in force in a large number of EU countries and it can be said that environmental taxes in general have been gaining steam since the second half of the 1990s (Attfield, 2018; OECD, 2001).

It is obvious that environmental taxes have serious contributions toward the establishment of environmentally conscious economic growth. Within this scope, the 6th Environmental Action Plan of the EU is extremely important. Work towards the 7th Environmental Action Plan is ongoing in order to ensure the functioning of the process until the year 2050. These works reiterate the essential principles of the environmental policies of the Lisbon Treaty of 2009. According to the treaty, it is necessary to (i) establish effective international cooperation for the conservation of natural capital (ii) consume and produce resources effectively with a rational and environmentalist mentality and (iii) benefit from environmental taxes effectively in order for human health to be protected from threats related to the environment. 75% of the environmental taxes collected in the EU-28 are made up of energy taxes and transport taxes, with the weight mainly on the former. Pollution taxes are in third place at 21%, while resource taxes come in last place at 4%. Denmark is the country where environmental tax revenues are the highest in proportion to gross domestic revenue. According to data collected in 2012, Turkey is among the countries, along with Denmark and Slovenia, that collect the most environmental tax, while Spain has the lowest rate (European Commission, 2016; OECD, 2014).

Furthermore, it is predicted that the tax revenues collected from plastic bags, as with carbon taxes, will reach significant levels in later stages. This makes one think that environmental taxes can also be used towards closing budget deficits in addition to environmental protection activities, which are their main aim (Heine et al.2012; OECD, 2014).

Plastic Bag Issue

When talking about environmental protection activities, (i) traditional command and control tools, which are prohibition and supervision mechanisms, are emphasized. By using such tools pollution control can be ensured at a lower cost (ii) Economic stimulus-driven

International Journal of Contemporary Economics and Administrative Sciences
ISSN: 1925 – 4423
Volume: 9, Issue: 2, Year: 2019, pp. 305-326
DOI: 10.5281/zenodo.

regulations try to encourage individuals or businesses towards more ecological activities (iii) Market-based applications such as subsidy, pollution permits (marketable permit) and especially taxation are the most effective tools in terms of environmental sustainability. However, it is not possible to completely write-off plastic materials from our lives even if we implement all the other methods including taxational mechanisms, and neither is this the aim of tax regulations. The main aim of tax regulations is to create a habitat that is environmentally conscious, healthy and sustainable (Joseph and Greene 2015; Markandya, 1998; Plastics Europe, 2014).

In reality, plastic is a material that is too valuable to be thrown away as it is the raw material of many objects used in daily life. It is mostly produced for one-time use and its amount of production worldwide is increasing day by day (Figure 2). Plastic production has increased by 8.7% year on year from 1.7 million tons in 1950 to 288m tons in 2014. China is the world's biggest producer of plastic, accounting for almost a quarter of the output. The annual consumption of plastic bags is around 600 billion. In the USA, 150 billion plastic bags are consumed annually. This corresponds to 15 million barrels of petrol per year (Gibson et al, 2014; Joseph and Greene, 2015; UNEP, 2014).

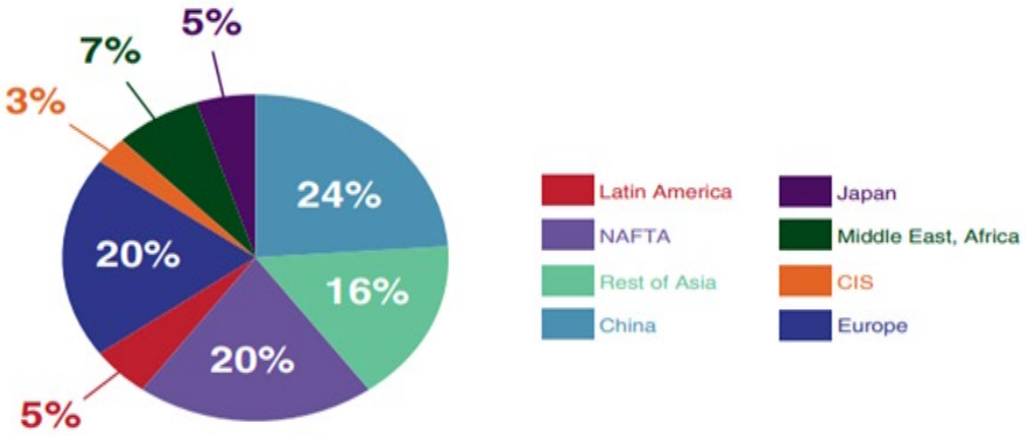

Figure 2: Plastic Production

Source: UNEP, 2014. Plastic Production (Per Region- Million Tonnes)

Paper can have plastic packaging and so can plastic itself. Almost everything is made of plastic. Many materials, from the protection of food and items such as plates, forks and knives to clothing items and children's toys, are manufactured from plastic. The use of plastic appears as an important factor in cost-efficiency calculations. That is because the

share of plastic within costs is extremely low. This way, more resource efficiency is achieved. In addition, more than half of all product packaging is of plastic, while safer water consumption is provided with plastic bottles. The efficient, strong and safe structure of plastic is benefited from in many areas including vehicle tires, car parts, window frames, smartphones, sports and construction equipment and protection-oriented materials such as hardhats and barriers (Markandya, 1998; Plastics Europe, 2014).

In addition, plastic bag production supports energy conservation by spending 40% less energy compared to paper bag production, and helps to reduce fuel emissions. Moreover, in comparison to the production of paper, the production of plastic requires 70% less air usage and 4% less water consumption. Plastic bags reduce the need for storage space as they take up very little space compared to paper bags. Furthermore, the recycling of one kilo of plastic requires 91% less energy than the recycling of the same amount of paper. Therefore, plastic bag manufacturers strongly oppose the plastic bag tax due to these and other similar reasons. Those who support the tax on the other hand say that the monetary enforcements that emerge with taxation lead people to behave more sensitively. Just as in taxation psychology, because the agitation caused by the sense of loss (paying tax) in humans is greater than the pleasure that is taken from using plastic (cheapness, simplicity, comfort), individuals generally adapt to the preferred course of action. Paying the tax resulting from the use of plastic materials creates financial deprivation in individuals. In fact, individuals do not prefer plastic bags unless necessary. This way, the individual does not experience a financial loss of money by not using plastic bags and prevents the pollution of the environment in a moral sense. However, the sacrificed convenience results in being deprived of the basic functions provided by the use of plastic bags such as cheapness, comfort, hygiene, lightness and durability (Lipscomb, 2008).

Waste problem that arises from plastic bag use is actually the main reason behind the taxes imposed on these products. With these taxes, it is aimed to: (i) make up the deficiency of waste collection areas, (ii) reduce the monetary costs that result from burning, stowage and regulation needs in the process of plastic waste disposal, and (iii) prevent environmental and human costs. That is because plastic bags, which are made from carcinogenic (toxic) materials and contain ethylene, oxide, benzene and xylene are very harmful to health and the environment. Apart from the diseases in humans that result from toxic materials, they affect the whole of life with their negative effects on animals, living

IJCEAS
International Journal of Contemporary Economics and Administrative Sciences
ISSN: 1925 – 4423
Volume: 9, Issue: 2, Year: 2019, pp. 305-326
DOI: 10.5281/zenodo.

organisms, air quality, plants and water resources. In addition to this, the disposal of this material is also an important problem. That is because there are two important disposal methods that are in the form of burning plastic bags or throwing them away and the use of both methods result in toxic chemicals being released. It should not be forgotten that the transformation of a plastic bag into small particles in nature takes thousands of years. Therefore, the "taxational regulations" manifested by countries are regarded as an important instrument. In practice, it is seen that taxational regulations reduce the rates of plastic bag use considerably. Also, the recycling action plans that countries put into practice increase the rates of recycling considerably (Green Living, 2014; Nordic Council of Ministers, 2006).

Unsustainability and Negative Health Effects of Plastic

Concerns regarding the effects of plastic on human health increasingly continue. There are 125.000 chemicals in the world today, very few of which have been tested in terms of their effects on human health. Today, in order for chemicals to be able to go into use in Europe they must be proved to be harmless. However, in the USA, they must be proved to be harmful to health in order for their use to be prohibited. The most basic problem is the presence of phthalate, which is used to soften plastic and bisphenol-A, which is used to harden it. Both materials are known as endocrine disrupters. Bisphenol-A is actually the main component of synthetic estrogen and polycarbonate. Polycarbonate is hard and clear plastic and is used in water bottles, storage boxes, baby bottles, sports equipment, electronic devices and the inner liners of all tin cans including baby formulas. In an experiment that was conducted on animals, it was proved that this material causes hyperactivity and learning disorders and can also lead to disorders in the brain system and visible attention deficit and hyperactivity in humans. There is also strong evidence that it causes gender shift in terms of the reproductive system. This means that male children become more feminine and female children become more masculine. Plastic is also associated with problems such as pancreatic and breast cancer, low sperm count, early puberty and miscarriage. In fact, 92% of more than 200 state-funded researches address problems originating from Bisphenol-A and point out that plastic and PVC pose significant threats to our environment, health and the creation of sustainable generations (Attfield, 2018; Schierow and Lister, 2010; Titow, 1986; TRT Belgesel, 2018).

Another chemical found in plastic is phthalate, which is the common name of a group of chemicals. It is found in personal care

products, toys, floor coverings such as vinyl floor covering and mostly PVC. The disorders it is associated with are nose inflammation, asthma, early breast development, insulin resistance, premature birth, obesity, eczema and thyroid disorders. In reality, we all wash ourselves with phthalate. It is not mandatory to specify this material in the labels of personal care products. However, the terms fragrance and perfume on labels mean that the product contains phthalates. In a research carried out by the University of Washington baby urine were tested and according to the results it was determined that the more creams, lotions, powders and shampoos are used on babies, the more they are exposed to Phthalate. American actor Peter Coyote is one of the few people that has had his body contents tested. Coyote spent two days eating canned food, heating food in plastic containers in a microwave oven and using shampoo, lotions, deodorant and air freshener. In the analysis conducted afterwards, it was revealed that the chemical material accumulation in his body increased by 11 times. This can cause a gender shift in babies to be born. In spite of this, six phthalates were prohibited in the USA and six different baby bottle manufacturers seized the production of all toys containing Bisphenol-A (Schierow and Lister, 2010; Titow, 1986; TRT Belgesel, 2018).

The pro-plastic bag social movements started in the late 1970s with the aim of saving trees and recycling (energy conservation) and continues to this day. Plastic is an important material but it does not belong in our bodies or our seas. Almost all of the garbage mountain located in the middle of the Pacific Ocean consists of plastic. Plastic bags fly off into rivers and then ocean. The seas and oceans make up 97% of the water in the world. Therefore, preserving these areas is one of our most important duties as humans. Failing to do so will result in the economic, physical and chemical effects caused by the plastic in the oceans (Figure 3) to increase and create bigger problems in the future.

Today, 260 species are being harmed due to digesting plastic or getting entangled in it. More plastic has been produced since the year 2000, than in the last century. The amount of plastic produced, which was ½ million tons in 1950, reached 260 million tons in the period between 2000 and 2010. One-third of this production consisted of disposable products such as plastic bags, plastic plates and plastic forks and spoons. The large creatures in the oceans decreased by 90% and annually 100.000 sea creatures lose their lives due to this (Schierow and Lister, 2010; Tim and Tim 2014; TRT Belgesel, 2018; UNEP; 2014).

International Journal of Contemporary Economics and Administrative Sciences
ISSN: 1925 – 4423
Volume: 9, Issue: 2, Year: 2019, pp. 305-326
DOI: 10.5281/zenodo.

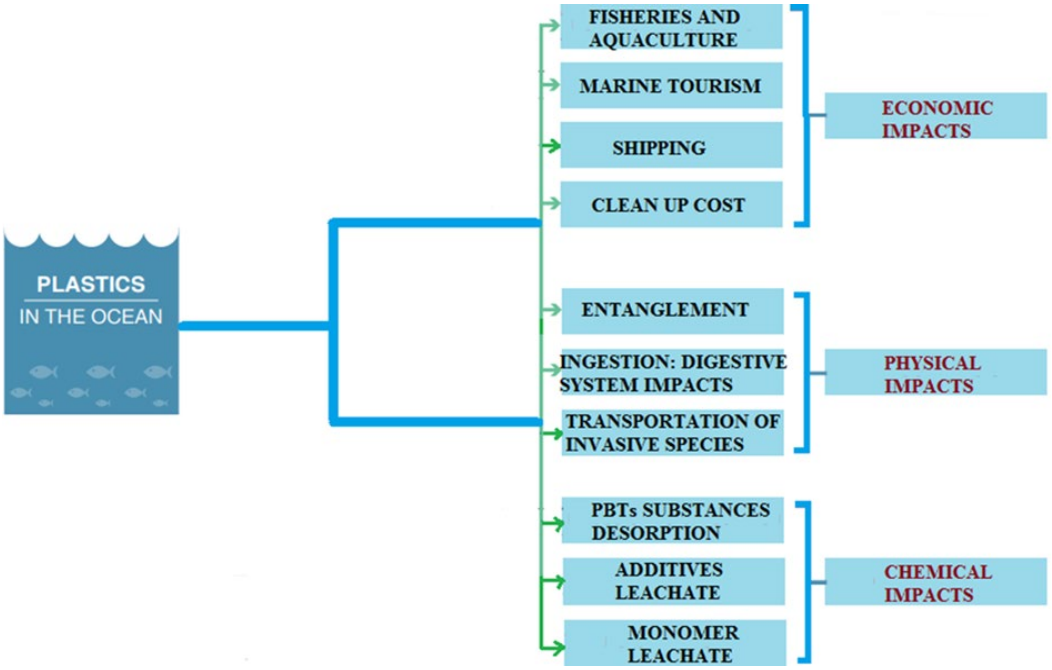

Figure 3: Impacts of Plastic

It is inevitably that the usage of disposable products must stop for the sake of a sustainable environment and sustainable generations. Not drinking water from plastic bottles, preferring products with less packaging and carrying fabric bags are some of the recommended applications that can be carried out for this aim. Biodegradable bags made of non-GMO corn specifically for this purpose have replaced plastic bags in Fairfax, California (Chipkin and Herrero, 2012). Efforts towards prohibiting the use of plastic bags in public institutions are important in terms of sustainability. For example, the use of plastic bags is prohibited in the Freie Universitat Berlin state library. In addition, plastic bottles can be converted into cash by being thrown in the machines that are placed in the entrances of supermarkets in Germany (Legrand et al, 2013). In Bangladesh and China, the production and consumption of some disposable plastic bags are completely prohibited (Tan et al, 2008). While in England, biodegradable designs and the production of non-toxic plastic bags are state-subsidized. The use of recycled materials is very important, as making new materials from old ones provides a vast amount of energy conservation (Lewis, 2012). For example, much like making furniture from scrap trees, producing new coke bottles from waste benefits industries considerably (Blackman and Carter, 2009). Furthermore, the prohibition of the use of plastic bags

would minimize the harmful effects of the toxic colorant materials on these plastic bags on the environment and humans (Kohak, 2000). In conclusion, the need to establish regulatory committees to limit the production of these materials and to ensure environmental sustainability is among the analytical methods in this respect (Hendrickson et al, 2006).

Plastic Bag Tax and Practices of Countries

A great number of countries have obliged each customer to pay **tax** or a **fee** for disposable plastic bags, with the regulations that were made in their tax laws. The results of doing so indicated that plastic bag usage decreased significantly (Scorse, 2010). With the increase in paper bag usage, it was also aimed to protect natural habitats such as oceans, rivers, lakes and wildlife and decrease the pressure on waste formation. Additionally, the taxes that are collected from plastic bags are compulsory payments. In this context, the relationship between the tax assessment and the environment should be established implicitly. In other words, it is necessary to establish a connection between plastic bags and taxation by determining the proven negative effects of plastic bags on the environment (NCSL, 2014; Tietenberg and Lewis, 2018). Furthermore, there is also a significant difference between the tax that is collected from plastic bags and the prices charged for these bags, as environmental charges are taken for specific environmental services, while taxation is a more general concept. In this regard, although the charges are close to the tax, the obligation of taxes and implementation of them throughout the country are the key determinant differences (Nordic Council of Ministers, 2006; Sinha and Plamondon, 2017).

Figure 4 shows the countries or regions in which plastic bags are banned or taxed. Countries that have banned plastic bags are shown in red, countries that have taxed them are shown in green and countries that have partially banned and taxed them are shown in yellow. The starred regions such as the USA, Canada and Australia indicate that there are bans or tax application in certain states. Approximately one million plastic bags are consumed in a minute, while approximately one trillion disposable plastic bags are consumed annually around the world. For the solution to the plastic bag issue, many countries have carried out tax regulations. Denmark was the first country to apply environmental taxes. In 1993 it started to collect plastic bag tax in accordance with the weight of the bags and by doing so plastic bag usage decreased by 60%. Another efficient application on this subject is the national bag levy which was accepted in Ireland in 2002. According to this tax 15 euro was taken per bag, which in turn decreased plastic bag usage decreased by 90% in five

International Journal of Contemporary Economics and Administrative Sciences
ISSN: 1925 – 4423
Volume: 9, Issue: 2, Year: 2019, pp. 305-326
DOI: 10.5281/zenodo.

months. The village of Modbury in England was the first village that banned nylon bag usage in Europe. In Germany, supermarkets charge 5 to 10 euro per plastic bag. Germans used 7 billion plastic bags in the year 2000, this number decreased to 6 billion in 2012. There are similar implementations in Belgium, Italy, France, Latvia, and Holland. For instance, the taxes on plastic bags in Belgium and Italy reduced consumption by over 90%. Bulgaria introduced a tax for each bag in October 2011 and bag consumption decreased by 70% in the first year of the application (Daugbjerg and Svendsen, 2001; Larsen and Venkova, 2014; Turner et al, 1998).

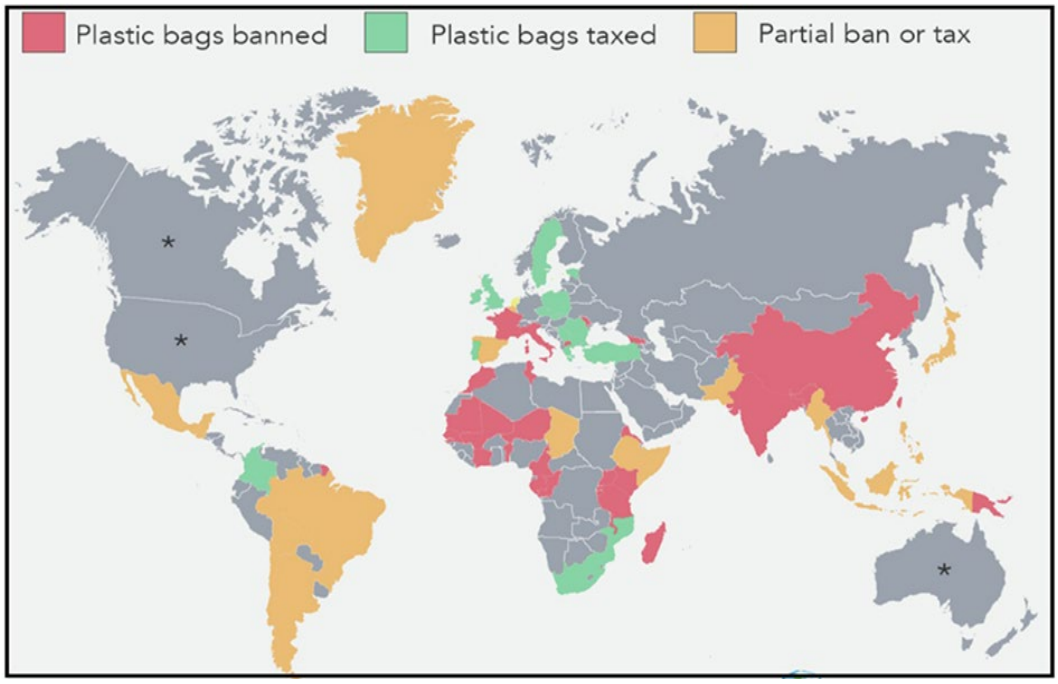

Figure 4: Where are Plastic Bags Banned or Taxed Around the World?

Source: Priceonomics. Bans/taxes exist in certain states and provinces in the U.S, Canada and Australia

Waste taxes were first introduced in 1996 in England, which has the strictest anti-plastic bag usage in the world. Although English tax applications are relatively low when compared to the tax rates of other European countries, they have reached significant results. First of all, plastic bag usage decreased by 30%. In addition to this, as a result of

reaching high amounts in the environmental taxes collected, the government decreased the social security contributions paid by employers. Therefore, tax revenues were returned to producers, employment and the economy. In this application, Marks & Spencer, which is one of the leading companies in England, started to charge 5 pence for plastic bags in the food sections from 2008. In Wales, from the year 2011 all shops began charging 5 pence for disposable plastic bags. Northern Ireland implemented the same application in 2013 and Scotland joined the countries that charge fees for plastic bags in October 2015 (Daugbjerg and Svendsen, 2001; Larsen and Venkova, 2014).

In the USA, over 100 states implement anti-plastic bag regulations. In addition to this, California banned disposable plastic bag usage from July 1, 2015. San Francisco is the first cities in the USA to charge fees for plastic bags. In the District of Columbia, disposable and non-recyclable plastic bag usage is prohibited in markets, drug warehouses, liquor shops, restaurants and food companies. In Hawaii, there is a virtual government prohibition. In Austin, which is the capital of the state of Texas, and in 11 cities including Dallas, there are bans or charges against plastic bags. The state of Maine, on the other hand, is in the process of finding a permanent solution to the plastic bag issue. In New York, within the scope of the recycling law, shops have implemented a deposit scheme, which guarantees that customers return the plastic bags to the shops. North Carolina encourages paper bag usage. In certain areas (such as sea turtle nesting site) plastic bag usage is prohibited completely. In Alaska, plastic bag usage is prohibited in nearly 40 rural settlements. In Rhode Island, paper and cloth bags are distributed to people with promotion exercises in order to reduce plastic bag usage. Since 1 January 2015, the output of plastic bags has been prohibited in all scales of retail shops. In Pennsylvania, shops that have an annual turnover of more than $1.000.000, charge two cents for disposable plastic bags. 50% of the income that is obtained from these charges are transferred to the IRS as tax revenue, while the other 50% is collected by the company itself (NCSL, 2014; Nordic Council of Ministers, 2006; Tietenberg and Lewis, 2018).

Similar applications can be seen in Mexico and Chile on a local level. In the city of Rio de Janeiro, Brazil in 2010 middle and large-scale supermarkets began enforcing a specific tax on the number of plastic bags used by the customers and later began applying $0.03 discounts for each item that is put in the bags. Furthermore, for every 50 plastic bags brought to the stores by customers, food products such as rice or bean are

IJCEAS
International Journal of Contemporary Economics and Administrative Sciences
ISSN: 1925 – 4423
Volume: 9, Issue: 2, Year: 2019, pp. 305-326
DOI: 10.5281/zenodo.

given or in some cities plastic bags are traded for cloth or reusable bags (Attfield, 2018; NCSL, 2014).

In Asia, the application of collecting tax from customers in parallel with the number of disposable bags decreased the usage rates by 24% in South Korea. Additionally, a great number of Korean citizens bring their own cups to cafés due to the taxes on plastic cups or bring their own shopping bags to shops. In Bangladesh, plastic bag usage, which is considered as one of the major reasons for sewage faults, has been limited substantially. In China, several states and cities developed policies for restraining plastic bag usage in the 1990s, but the level of achievement remains limited in application. China implemented a series of laws that limit the production and consumption of plastic bags with the Olympics held in Beijing. In this context, a charge way above the normal costs was applied to bags of a certain thickness. After one-year, plastic bag usage decreased to 40 billion bags and in 2013 and the number of saved plastic bags reached 67 billion. In 2009, big supermarkets and shops in Hong Kong started to charge 50 cents for plastic bags. In 1999, the government in India banned the usage of thin plastic bags that are used for carrying food due to the fact that they block the canals in severe flooding incidents and increase the number of deaths. In Bombay, activities against banning the usage of plastic bags are in progress (Larsen and Venkova, 2014; Scorse, 2010).

In Africa, Botswana implemented similar regulations in 2007, which decreased plastic bag usage by 50% after 18 months. Also in 2007, Kenya banned the production and importation of plastic bags. Rwanda implemented similar taxational regulations. Since the implementation of a new law in 2008, passengers that enter the country by plane are obliged to hand over any plastic bags they are in possession of from the moment they arrive. In South Africa, thin plastic bags were banned in 2003. Furthermore, the government implemented a law which charges customers for thick plastic bags and by doing so plastic bag usage decreased by 90%. Tasmania was the first state that banned plastic bags in 2003 in Australia, with the aim to protect natural life in general and whales and national parks in particular. Northern Territory and Australian Capital Territory states implemented their own bans against plastic bags in 2011 (Attfield, 2018; Larsen and Venkova, 2014).

In Turkey, plastic bag tax was first implemented locally by the Kadıköy Municipality in 2010 (Larsen and Venkova, 2014). In 2019, tax for each bag was implemented on a national level, under the name of the

plastic bag tax. As a result, plastic bag consumption decreased by 65-70% in the first month of the implementation.

Conclusion

Plastic manufacturers state that implementing taxes on plastic bags is meaningless as plastic materials protect water sources by decreasing water consumption, are reliable and durable, provide significant cost savings compared to the production of other similar products, solve the problem of solid waste storage and contribute to the environment within the context of recycling. On the contrary, those who defend tax regulations and bans state that plastics are carcinogenic, damage food chains, significantly pollute water, air, sea and oceans, increase the death of animals, cause the death of humans leading to blockages in sewages and in turn floods, threaten natural resources by decomposing in a longer time compared to other solid wastes and their elimination causes significant financial and environmental costs.

Tax implementations against the prevention of costs are important in terms of demonstrating the sanction power of taxes. Studies indicate that on average taxes have decreased plastic bag usage by over 70%. The taxes are mostly particular, in that they are usually collected according to the number of plastic bags. Additionally, there are tax regulations that are based on ad valorem, meaning that the taxes are taken on the value/content of the shopping bags. There is also an application in which deposits are applied to the bags. Another solution is subjecting bag manufacturers to high taxes in the manufacturing stage. On the contrary to this, state support and subsidy could be offered to eco-friendly, biodegradable bag producers. Local governments could create plastic bag waste tracking systems, in which each municipality could record the increase or decrease of plastic materials in their districts in recycle centers. According to the records, the districts that have less waste monthly or annually could pay less environmental tax, while the districts that have more waste could be subjected to higher tax rates.

All incomes that are collected through charges and recycling should serve their actual purpose, that is, should be spent on the protection of the environment and not turned into a tool for the financing of budget deficits. Otherwise, as stated by environmental activist Paul Watson, “Nature solves its problem by itself. If we are the problem, it will perceive us as a problem and solve us as well. Being an environmentalist is protecting nature and ourselves. We are in fact trying to protect ourselves. If we don’t learn how to live in the ecosystem,

International Journal of Contemporary Economics and Administrative Sciences
ISSN: 1925 – 4423
Volume: 9, Issue: 2, Year: 2019, pp. 305-326
DOI: 10.5281/zenodo.

nothing will happen to the world, we will be the ones that vanish off the face of the earth."

References

Andersen, E. & Lindsnaes, B. (2007). *Towards New Global Strategies: Public Goods and Human Rights.* Martinus Nijhoff Publishers.

Attfield, R. (2018). *Environmental Ethics: A Very Short Introduction*. Oxford University Press.

Banks, E. (2005). *Financial Lexicon*. Palgrave Macmillan, UK.

Binger, A. (2003). Global Public Goods and Potential Mechanisms for Financing Availability. *Background Paper*.

Blackman, R. & Carter, I. (2009). Environmental sustainability. Michigan University Press.

BSTB (Bilim, Sanayi ve Teknoloji Bakanlığı). (2012*). Çevresel Sürdürülebilirlik Terimleri.* https://anahtar.sanayi.gov.tr/tr/news/cevresel-surdurulebilirlik-terimleri/113 (accessed on 13 October 2018).

Calcott, A. & Bull, J. (2007). *Ecological Footprint*. WWF Group, UK.

Cherry, T.L., Kroll, S. & Shogren, J.F. (2008). *Environmental Economics, Experimental Methods*. Routledge, New York.

Chipkin, L. & Herrero, H.P. (2012). *Grassroots Sustainability - A Guide to Organizing a Thriving Community*. Lulu.com, USA.

Cnossen, S. (2005). *Theory and Practice of Excise Taxation*. Oxford University Press.

Daugbjerg, C. & Svendsen, G. (2001). *Green Taxation in Question: Politics and Economic Efficiency in Environmental Regulation.* Palgrave, New York.

EAC (Environmental Audit Committee). (2013). Outcomes of the UN Rio+20 Earth Summit. *Second Report of Session 2013–14*, Great Britain Parliament.

EPA (United States Environmental Protection Agency). (2017). *Pollution Prevention Law and Policies.* https://www.epa.gov/p2/pollution-prevention-law-and- (accessed on 20 May 2018).

European Commission. (2016). *Environmental Taxation and EU Environmental Policies*. EU publications.

Freinkel, S. (2012). *Plastic: A Toxic Love Story*. Houghton Mifflin Harcourt, USA.

Gibson, C., Farbotko, C., Gill, N., Head, L. & Waitt, G. (2014). *Household Sustainability*. Edward Elgar.

Green, L. (2014). *Plastic Bags Pollution: Effects and Solutions*. by Naylor.

Harris, J.M. & Roach, B. (2017). *Environmental and Natural Resource Economics: A Contemporary Approach.* Routledge.

Heine, D., Norregaard, J. & Parry, W. (2012). Environmental Tax Reform: Principles from Theory and Practice to Date. *IMF Working Paper*, WP/12/180.

Hendrickson, T., Lave, L.B. & Matthews, H.S. (2006). *Environmental Life Cycle Assessment of Goods and Services.* RFF Press Book.

Joseph, P. & Greene, J.P. (2015). *Sustainable Plastics: Environmental Assessments of Biobased, Biodegradable, and Recycled*. Wiley.

Kohak, E.V. (2000). *The Green Halo: A Bird's-eye View of Ecological Ethics*. Carus Publishing.

Larsen, J. & Venkova, S. (2014). *The Downfall of the Plastic Bag*. Earth Policy Institute.

Legrand, W., Sloan, P. & Chen, J. (2013). *Sustainability in the Hospitality Industry 2nd Ed: Principles of Sustainable Operations*. Routledge.

Lewis, H. (2012). Complying Whit Regulations. In: K. Verghese., H. Lewis., I. Fitzpatrick (eds.), *Packaging for Sustainability*. Springer Science Publishers.

Lipscomb, L. (2008). *Plastic Bag Recycling*. Retail Association of Nevada.

Low, N. & Gleeson, B. (2001). The Challenge of Ethical Environmental Governance. In: Gleeson, B., Low, N. (eds.), *Governing for the Environment*, Palgrave, pp. 1-26.

Lubkemann, S.C. (2010). Refugees and Forced Migrants. In: Z, Gajewski (ed.), *World At Risk: A Global Issues Sourcebook*, CQ Press, pp. 48-72.

Markandya, A. (1998). The Indirect Costs and Benefits of Green House Gas Limitations. *Handbook Reports*, UNEP.

Monto, M., Ganesh, L. & Varghese, K. (2005). *Sustainability and Human Settlements*. SAGE Publications.

Moyer, E. & Hyman, M. (2016). *Our Earth, Our Species, Our Selves: How to Thrive While Creating a Sustainable World*. Greenvironment Press.

IJCEAS

International Journal of Contemporary Economics and Administrative Sciences
ISSN: 1925 – 4423
Volume: 9, Issue: 2, Year: 2019, pp. 305-326
DOI: 10.5281/zenodo.

NCSL (National Conference of State Legislatures). (2014). *Fees, Taxes and Fines*. by Washington, D.C.

Nordic Council of Ministers. (2006). *The Use of Economic Instruments in Nordic and Baltic Environmental Policy*. by nordon NCM.

OECD. (2001). *Strategies for Sustainable Development*. OECD Publications.

OECD. (2014). *Taxation, Energy & The Environment*. by Tax & the Environmental Unit Centre for Tax policy & Administration.

Paoli, L.A. (2018). *The Prevention Principle in International Environmental Law.* Cambridge University Press.

Perman, R., Ma, Y., Common, M., Maddison, D. & McGilvray, J. (2011). *Natural Resource and Environmental Economics.* by Pearson Education Limited.

Pawłowski, A. (2011). *Sustainable Development as a Civilizational Revolution: A Multidisciplinary Approach to the Challenges of the 21st Century*. Taylor & Francis.

Pawłowski, A. (2013). Sustainable Development and Globalization. *Problemy ekorozwoju - Problems of Sustainable Development*, 8(2), 5-16.

Plastics Europe. (2014). https://www.plasticseurope.org.(Accessed on 24 Jun 2018).

RG (Resmî Gazete). (2015). *Atık Yönetimi Yönetmeliği*. Çevre ve Şehircilik Bakanlığı.

Sandler, T. (1999). Intergenerational Public Goods. In: I, Kaul., I, Grunberg., M, Stern (eds.), *Global Public Goods*, Oxford University Press.

Schierow, L. & Lister, S. (2010). *Bisphenol A (BPA) in Plastics and Possible Human Health Effects.* by CRS.

Scorse, J. (2010). *What Environmentalists Need to Know About Economics*. Palgrave Macmillan US.

Sinha, J. & Plamondon, C. (2017). *Life Without Plastic*. Page Street Publishing.

Soubbotina, T.P. (2004). *Beyond Economic Growth*. The World Bank.

Tan, Y., Lee, T. & Karean, T. (2008). *Clean, Green and Blue*. Institute of Southeast Asian.

Tietenberg, T. & Lewis, L. (2018). *Environmental and Natural Resource Economics*. Publisher: Routledge.

Tim, D. & Tim, M. (2014). *Beyond Sustainability: A Thriving Environment*. McFarland & Company.

Titow, M.V. (1986). *PVC Technology*. Elsevier.

TRT Belgesel. (2018). *Vazgeçiyoruz*. https://www.youtube.com/watch?v=P1PfR7RCrLI. (Accessed on 08 Aug 2018).

Turner, K., Salmons, R., Powell, J. & Craighill, A. (1998). Green Taxes, Waste Management and Political Economy. *Journal of Environmental Management,* 53(1), 121-136.

UNEP. (2010). *Assessing the Environmental Impacts of Consumption and Production*. United Nations Environment Programme.

UNEP. (2014). *Valuing Plastic Publication*. United Nations Environment Programme.

UNESCO. (2008). *Water Neutral*. The Water Research Report Series.

United Nations. (2017). *The 2030 Agenda for Sustainable Development*. by UNSSC.

Wikipedia. (2018): *Water Footprint*. https://en.wikipedia.org/wiki/Water_footprint. (accessed on 14 December 2018).

Williams, L.D. (2018). *5 Steps to a 5: AP Environmental Science*. McGraw Hill.

Zhang, J. & Swartz, B.C. (2009). Public Diplomacy to Promote Global Public Goods (GPG): Conceptual Expansion, Ethical Grounds, and Rhetoric. *Public Relations Review,* 35(4), 382–387.