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Practicable Pollution Control Policies

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ABSTRACT: The most important element of continuing every living being is to have a safe environment. So, the arranged and naturally designed environment's elements must be protected from all kinds of pollutants. Toxic air pollutants which are the most harmful among other pollutants are emitted in smaller quantities but cause dangerous health effects such as cancer, inborn disabilities, and respiratory damage. The ecological condition of rivers and streams also demonstrates the need for further improvements. According to the Environmental Protection Agency's (EPA) National Rivers and Streams Assessment, most nations' rivers are in the worst biological condition. And less percent of rivers are in fair and good biological conditions that are not acceptable throughout the world. Pollution control policies vary around the world. The most effective approaches and policies should be selected to minimize unnecessary costs or damages and promote technological progress in pollution control. The roles of some organizations such as EPA, Clean Air Act, Clean Water Activation/Act, etc., are elaborated in this review article in detail. In this study, it is thought that by determining the most important advantages and benefits of policies around the globe death rates can be decreased by decreasing chronic diseases.

Keywords – *Air Pollution, Environmental Protection Association, Pollution, Water Pollution,*

Uygulanabilir Kirlilik Kontrol Politikaları

ÖZET: Her yaşam maddesini sürdürmenin en önemli unsuru güvenli bir ortama sahip olmaktır. Bu nedenle düzenlenmiş ve doğal olarak tasarlanmış ortam unsurlarının her türlü kirletici maddeden korunması gerekir. Diğer kirleticiler arasında en zararlı olan zehirli hava kirleticileri daha küçük miktarlarda salınır ancak kanser, doğum kusurları ve solunum hasarı gibi tehlikeli sağlık etkilerine neden olur. Nehirlerin ve akarsuların ekolojik durumu da daha fazla iyileştirme ihtiyacını göstermektedir. Çevre Koruma Ajansı'nın (EPA) Ulusal Nehirler ve Akarsular Değerlendirmesine göre, ülkelerdeki nehirlerin çoğu en kötü biyolojik durumdadır. Nehirlerin yüzde daha azı, dünya çapında kabul edilmeyen adil ve iyi biyolojik koşullardadır. Kirlilik kontrol politikaları dünya çapında farklılık gösterir. En etkili yaklaşımlar ve politikalar, gereksiz maliyetleri veya zararları en aza indirmeye ve kirlilik kontrolünde teknolojik ilerlemeyi teşvik etmeye yönelik bir bakış açısıyla seçilmelidir. EPA, Temiz Hava Yasası, Temiz Su Aktivasyonu / Yasası gibi bazı kuruluşların rolü bu derleme makalede ayrıntılı olarak açıklanmıştır. Bu çalışmada, dünyadaki politikaların en önemli avantajları ve faydaları belirlenerek kronik hastalıkları azaltarak ölüm oranlarının azaltılabileceği düşünülmektedir.

Anahtar Kelimeler– *Hava Kirliliği, Çevre Koruma Derneği, Kirlilik, Su Kirliliği,*

1. Introduction

In this study, the particular policies including the effective accepted and approved policies across the United States of America in which provided huge examples and case studies of normal and basic methods are elaborated. Later, in the review article, some European countries' approaches are explained mostly relying on economic conditions to be applied in the needed polluted environment.

By accomplishing the economic approaches of environment conservation like accommodating the tax system in a country, in one side the citizenry do not desire to use unneeded transportation and commercial vehicles and applying some other unwanted companies, on the other hand, if the citizens will use some contaminant sources of environment including the vehicles that extremely consume fuels, the taxes in which are gathered will increase GDP (Gross Domestic Product indicates domestic or inside a country's income amount of its inhabitants. That is, GDP is the value of a country's finite domestic goods and services during a given period) and the amount of general income of the related country. The countries especially the developing ones such as Afghanistan which does not apply the tax approach, the only and the most dangerous source of pollution is being originated from excessively utilizing of the various kinds of too old vehicles, administrating the non-standard producer companies like cement company, etc. Although pollution control policies surely grant countless advantages, require the allocation of some money as well. Accordingly, this question should be responded: "Do the advantages and positive results offset the allocated expenses?" As response, the most important positive results of allocating expenses in pollution control policy listed in this paper are: decreasing death rate, decreasing the diffusion of respiratory diseases, increasing the agricultural productivity level in the world, etc. (Lallanilla, 2019).

Pollution problems are often long-lived. Organochlorine pesticides such as DDT (dichloro diphenyl trichloroethane) are effective as an insecticide, but their potential toxicity is not limited to insects. It can harm human health like causing liver cancer, nervous system, inherent and reproductive harms. So, its use has been forbidden by many countries globally, including the United States. So, it's using has been forbidden by many countries of the globe including the United States. PCBs (polychlorinated biphenyls) and CFCs (chlorofluorocarbons) remain in the environment for many decades.
As emissions of such pollutants continue, the total amount in the land, air, water, and living things steadily increases. Even if pollution levels are reduced to zero, concentrations can remain at harmful levels for decades. Dealing with cumulative pollutants requires urgent action and stringent control policy measurements in practice. Some of the effective pollution control policies in practice are limiting the runoff pollution from agriculture, forestry and urban areas (Roome, 2015). For better and easier control of the environment's polluters, it is required to determine them in the specific groups. Therefore, in this article, those are grouped in four environmental contaminants; stock, non-stock, horizontal and vertical contaminants that are explained in detail with their influencing level and period of effecting the environment and alive things which have to resist in continuing of their life on it.

Also, "Environmental taxations across the countries as a definite, remarkable and practical control policy" is expressed in this study. According to the Organization of Economic Cooperation and Development (OECD) report in 2015, due to the taxation system exerting, proportionately, in Slovenia, Turkey, Denmark, Italy, and the United Kingdom, they achieved 2% of GDP by accommodating that system.

In this study, the secondary data were used from various resources, including the latest and the newest published books, the newest published journal of recent years across the world. These resources were investigated to find the best approaches of "Pollution Control Policies in Practice," which covers all around the world's pollution situation. As the amount of pollution is increasing at an unprecedented level across all corners of the globe that causes too many chronic diseases, not only for humans and other diverse of animals

but also at the same time it is making ineffective and susceptible the agricultural variations. Therefore, preparing some practicable control policies is important for eliminating or decreasing the amount of contamination at the least level in the world. In this article, the most effective and beneficial practical policies are assimilated together and briefly expressed to be useful in internationally decreasing pollution.

As literature, it should be clarified that there could not be found the same studies and published pamphlets done to specify the practical pollution control policies, but some studies which have been done related to pollution, environmentalism and so on required to be explained here with the objectives have been appointed to be achieved. Accommodating the capital tax system investigated by Eichner and Pethig (2019) is one way of controlling pollutions if this system is implemented, in the case of local contamination its rate is zero whereas in trans-boundary pollution its rate down under zero (negative). The only inefficient point of this system is being forgettable and not remarkable about the benefits and costs of the capital system and considering it at the margin level (Eichner and Pethig, 2019). So, this system could not be a comprehensive and suitable approach to pollution control and necessitates bringing some changes and new arrangements in its accomplishment.

As argued earlier, there are numerous contamination sources that fossil resources are the most dangerous and risky among them. Extraction of fossil resources increases Gross Regional Product (GRP), whereas transferring it via passing farther distances from extraction places and navigable rivers decrease GRP. Moreover, it makes various kinds of pollutions to the extracted region and causes creating so many other contaminations until the last region where should be transited to be consumed (Kalkuhl and Wenz, 2020).

One influential factor in every country in approaching every policy of pollution control is being and affecting of lobby groups, especially in the developing countries that its residents depend on direct utilizing from the natural environmental sources like cutting and various using of forest sources. In such countries, the lobby groups are the strongest channel that has the capabilities to provide ways of reaching so many economical endowments of internal and external donors and facilitate the process of policymaking. That kind of supports and interaction support also facilitates the compliance of environmental protection agreements globally like the agreement of Tokyo protocol on CO_2 emission. While the effectiveness of lobby groups in implementing such pollution control policies is noteworthy, its effectiveness differs between rich and developing countries. In particular, every environmental group provides ways of increasing the level of policy stringency through environmental policymakers (Fredriksson et al., 2005). Shortle and Dunn (1986) have performed a study in "The Relative Efficiency of Agricultural Source Water Pollution Control Policies," published in 1986. In this publication, the net benefits of four common strategies that have been proposed for reaching agricultural non-point contamination reduction have focused on and examined. The four strategies are (a) economic incentives stimulant applied to estimate run-off; (b) considering of run-off standards; (c) economic motivations of performed to practices of farm management, and (d) practical standards of farm management. Although in this study some efficient methods that provide the pre-steps of applied approaches of contamination have been expressed, there are some other gaps that require to being determined in accordance to practically be applied by related societies. Therefore in this study in the light of these strategies such as pollution control policies are being specified clearly (Shortle and Dunn, 1986).

The study on clearing the incentives for non-point pollution control has done by Segerson (1988). In this paper, the general stimulant scheme for controlling non-point pollution is described. Likewise, the single and multiple contaminant problems are explained by using the relevant mathematical formulas. This and the other relevant studies could be useful for controlling the pollutants and a supporter for other ways of controlling the pollution level but not clearly and specifically (Segerson, 1988). Gao et al., (2009) have carried out research related to "Historical Analysis of SO2 Pollution Control Policies in China" in 2009. It should be said that one of the recent researches have been being accommodated in the last decades is this study. But it is not described as the ways and policies of controlling pollutions practically. And some gaps require being filled (Gao et al., 2009).

In this study the only focus is on describing the practical policies of controlling the sources of pollution which are influencing the main elements of the environment including; water and air are explained in detail. The concept of "Practical policies" which could not be found as a finalized study via researchers in the previous periods shows having a high degree of originality in this study across the globe. In all over the globe pertaining to the pollution control policies have been carried out many researches and many articles have been published, while none of them distinctly determine the beneficial and advantageous approaches of administrating and getting under control the different resources of pollution around the world. Briefly, not performing and accommodating the similar studies in the recent last years, conducting the practical studies like this study is required and simply can be useful for abating the pollution sources and also this feature express its originality level. Moreover, this study will be an influential resource for conducting the next studies relevant to pollution control.

There have been carried out so many investigative/exploratory researches, but no one of them is determined the practical policies and approaches of controlling the various sources of pollutions. Therefore, this study necessary to be beneficial in reducing pollution worldwide in order to define these practical policies carried out under the name of "Pollution Control Policy in Practice". Consequently, in this study, some other findings are briefed under the conclusion title and it is recommended to accommodate the practical approaches of controlling the pollutions in every corner of the globe for having and witnessing the cleanest living environment in the near future for us and for the next generation. Otherwise, they will be unpleasant from today's generations for not doing something on this subject.

Finally, in this study, the most important practical policies of pollution control policies which are not explained in the literature are expressed that fill the gaps of some similar studies in this subject and is going to provide the ways for conducting the next researches.
The paper is organized as follow: in section 2 grouping of polluters are explained in detail, section 3 pollution damages, section 4 benefits of pollution control, section 5 water pollution with its control policies and regulations, sources of water contamination, section 6 air practicable pollution regulations, section 7 evidence from the clean air act, section 8 other pollution regulations, section 9 European chemical policy of controlling pollution, section 10 environmental taxation across the countries as a particular control policy of contamination and in the last section conclusion and discussion.

2. Grouping of Polluters

All over the world, the only assimilator of diffused residual things is the environment. The risks are being done by such unwanted bars relate to the capacity of the environment to grasp the different kinds of wastes. Such ability and capacity of the environment are called the absorbent capacity of the environment. Whether the diffusions of such environmental pollutants are beyond the absorbent ability of the environment, the contaminants riskily amass on the environment.

2.1. Stock Pollutants

Contaminants in which the environment does not have the absorbent ability or has the least capacity of assimilating them called stock contaminants like; bottles that are not biodegradably thrown to the waysides, heavy and useless metals, resistant synthetic chemical materials like polychlorinated biphenyls (PCBs) and dioxin (Tietenberg and Lewis, 2018).

2.2. Non- Stock Pollutants

Contaminants that environment has some absorbent ability or capacity of their absorption. As the diffusion rate of such pollutants does not be more than the absorbing capacity of the environment, the contaminants cannot be accumulated over the environment. For instance, the transforming of much more organic contaminants injected into an oxygen-rich river into the less-dangerous inorganic matter by the residing bacteria or many other cell-alive substances and the absorbing of Carbon-dioxide by oceans and various kinds of plants.

2.3. Horizontal Pollutants

Contaminants are grouped to horizontal and vertical based on their permeability degree on the existing zones. The horizontal aspect is dealing with the special territory in which the dangerousness of the diffused contaminant experiments. The dangerousness level of pollutants varies based on the source of emission. That is to say, the dangerousness caused through local contaminants experiments near the source of diffusion. But the dangerousness level caused by a regional and zonal contaminant is known at farther distances from the source of pollution releasing. Simultaneously, it is possible to categorize one pollutant in more than one category, for instance, Sulfur - Oxide, and Nitrogen – Oxide as pollutants grouped in the local and regional pollutants groups. The global contaminants risks affect the entire planet (Tietenberg and Lewis, 2018).

2.4. Vertical Pollutants

The vertical zone of penetration can be described if the dangerousness is made basically through ground level focusing on an air contaminant or via centralization in the upper atmosphere level. Some contaminants for example; lead and its very small fragments and dangerousness are explained basically by focusing on the contaminants which are located near the earth’s surface. Some other pollutants such as; ozone-depleting substances and greenhouse gases, the risks are dependent on their centralization in the upper surface of the

atmosphere. For a better understanding of the subject Figure 1 retrieved from Tietenberg and Lewis (2018) should be seen.

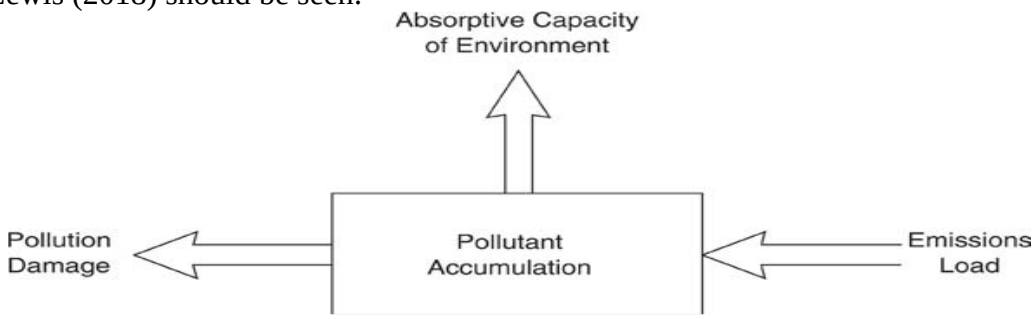

Figure 1. Describing the type of relationship between emissions and pollution damage

Note; the figure expresses that there is a direct relationship between pollution damage and emission load amount. When the amount of pollutant accumulation increased the absorptive capacity of the environment decrease.

3. Pollution Damages

Exploiting and utilizing of untouched materials result the environmental dangerous not recycled materials. So, nowadays some governments adjust landfills in order to protect and save the public safety and health, conducting such rule and regulations often eliminate about all unwanted and unpleasant dimensions of such landfills to the host societies. Consequently, those communities in which pollutants damages are not located in their geography, are all utilizing the existence of such facilities.

The community at the local level has to be wholly announced about the damages that it will encounter through a regional or zonal hygienic landfill and have to be completely authorized to reject or accept the suggested recompense packets. In particular, extra complexities arise due to the fact that it is more dangerous to keep hazardous wastes under control and they are difficult to transport and disposal.

3.1. Environmental pollution effects on agriculture

The result of human extremely technology using in order to manipulate the ecosystem is a serious and extended problem that not only negatively affects the agriculture sector but also affects human health. There are different ways that human affects the environment (biological and natural resources total surrounding) like; breeding of crops, reclamation of land, irrigation, deforestation which makes temporarily and permanently soil degradation, air contamination, erosion of soil, desertification and so on that influence farming and its productions. Therefore, soil micro-organisms' destroying, infertility and prolonging of gradually agricultural activities decreasing have been made farmers release their farm and seek non-existent alternatives of livelihood.

Soil is one of the most important components of the environment that support the life of all living beings containing humans, flora and fauna in the ecosystem. This too important component of the environment is in danger due to environmental contamination especially oil pollution. Before the advent of oil, the prospecting environment was friendly and livable, the soil was fertile and suitable for cultivating, and level of farm productions was high and enough to undertake the livelihood and commercial needs.

Oil flows unfavorably influence the fishery industry, which is one of the primary and ancient occupations of humans, by changing the color of water and causing fish and other aquatic alive beings death.

Green covers, while it is a protector of soil from erosion via wind and water, provide organic materials maintaining levels of nutrients that are very necessary for healthy plant growth. Green covers' roots maintain the stability of soil structure and facilitate water penetrating.

Based on a research report conducted in Nigeria, it has been specified that environmental pollution reduces the level of soil nutrients and fertility (80.3%), crop yield and growth are negatively affected by pollution (80.6%). More than half of the respondents (82%) have attested that environmental contamination has dealt ruthlessly with aquaculture activities and has extremely negative effects on their animals (Godson-ibeji and Chikaire, 2016).

4. Benefits of Pollution Control

The environmental protection agency proceeds to determine the quantity and monetize the consequences and costs getting the diffusions decreasing wanted via United States policy. The advantages and benefits measured by this study consist of lower and decreased rate of death, decreasing of respiratory sicknesses, types of heart diseases, increasing agricultural productivity, decreasing the structural damages, chronic bronchitis, lead poisoning, visibility of environment and so on (Tietenberg and Lewis, 2018).

Important considerations in the choice of pollution policy include the patterns of costs and damages as well as options for improved pollution-control technology. Policies should be selected with a view toward minimizing unnecessary costs or damages and promoting technological progress in pollution control. Pollution policies in practice have led to major pollution reduction in some cases, but not in others. In the United States, emissions of criteria air pollutants have been significantly reduced since the 1970s, and progress has been made in reducing toxic pollutants.

Water pollution policies have reduced point source pollution, with less progress on addressing non-point source pollution. For potentially toxic chemicals, the burden of proof in the United States is on regulators to determine whether a chemical is safe. Meanwhile, recent chemical policy in the European Union situates the responsibility of evidence on producers to demonstrate a chemical's safety. Pollution problems are often long-lived. Organochlorine pesticides such as DDT, PCBs (polychlorinated biphenyls), and CFCs (chlorofluorocarbons) remain in the environment for many decades. Chemical pollutants with the largest impacts include formaldehyde and benzene. As emissions of such pollutants continue, the total amount in the land, air, water, and living things steadily increases. Even if pollution levels are reduced to zero, concentrations can remain at harmful levels for decades. Dealing with cumulative pollutants requires urgent action and stringent policy measures. Early pollution regulations in the 1960s and 1970s primarily used standards and technology-based approaches. Market-based approaches have become more common in recent years. Particularly, in policy responses to acid-rains and global climate changes (Harris and Roach, 2013).

5. Water Contamination

5.1. The Common Policies of Water Contamination

The policies of water contamination are not the same all over the world. This study is begun with detailed findings of the United States policy in which prepares wealthy examples of a usual legal method to rules and regulations. Later in the article, the European Approach will be explained that has relied more excessively on economic motivations.
The United State policy of controlling water contamination happens before the federal controlling of air contamination. The authorities have had more time to benefit from their earlier mistakes and being inexperienced. So, it might be supposed that the policy of water contamination control would be better than air pollution control (Sharif and Mithila, 2013).

5.2. Water Pollution Regulations

The main federal law regulating surface waters over the United States is the Clean Water Activation/Act (CWA), which was done in 1972 then amended in 1977. The CWA set very ambitious goals like; to make all the country's lakes and rivers safe from fishing and swimming by 1983 and eliminating all discharges of pollutants into navigable waters by 1985. While progress has been made, none of these goals have been attained, even now. For example, a 2007 assessment of the country's lakes found that 56 percent were rated as "good," 21 percent as "fair," and 22 percent as "poor." (Catharine, 2015).

The ecological condition of rivers and streams also demonstrates the need for further improvements. According to the EPA's National Rivers and Streams Assessment, most of the nation's rivers (about 46 percent) are suffer from poor biological conditions; about 25 percent are rather in fair condition and just 28 percent partly having a good condition. The assessment notes that more than 40 percent of the nation's rivers suffer from excess nutrient loading. High concentrations of phosphorus and nitrogen, used as agricultural fertilizers, can lead to algal blooms, which result in reduced oxygen levels and mortality of aquatic animals and plants (Zhan et al., 2014).

The CWA primarily focused on point-source pollution; pollution from a different source or diffused from distinguishable sources of pollution for instance; drainpipe, chimneys or so many other canals. The CWA relies upon both standards and technology-based approaches to regulating point sources. For example; it directs the EPA to specify the "best available technology" for various types of facilities. Reducing industrial discharges is the most important promotion which has been made.

The original CWA did not address non-point original contamination or pollution from sources such as storm water and agricultural run-off. Because of the diffuse nature of nonpoint source pollution, it is more difficult to control. Subsequent legislation has primarily placed the responsibility for regulating non-point-source pollution with the individual states, although the EPA has established numerous guidelines, such as suggested measures to limit runoff pollution from agriculture, forestry and urban areas (Harris and Roach, 2013)

5.3. Water Pollution Effects on Human Health

Water commonly becomes contaminated through chemical particles and microorganisms. The polluted water is toxic for humans and the environment and causes human health

issues such as cancer, cardiovascular, etc. The amount of available water is less than the amount necessary for live beings. Water contamination has occurred at all rivers of the world containing Asia, Latin America, and Africa.

Water pollution can occur in several ways:
1) Sewage and wastewater; can be domestic (from sinks, showers, toilets), commercial, industrial, agricultural, and rainwater that washes road salt, grease, residuary, etc. from the ground into waterways. On the basis of UN findings in 2017 worldly most people do not have access to facilities like toilets or latrines and determined that 673 million people around the globe defecate outside.
2) Agriculture is the main source of river contamination, especially in rainy seasons that pollutants such as animal wastes, fertilizers, pesticides, etc., are getting washed from farms toward waterways. The riskiest agricultural contaminants are phosphorous and nitrogen that pave the way for algal blooms growing, these blooms result in toxin production that finally concludes the dying of fish, marine mammals and seabirds even harm humans. Moreover, when these algal blooms die, bacteria produced as the algae decompose use up oxygen in the water that this lack and shortage of oxygen causes "dead zones" in the water where fish cannot live. Based on the United Nations Educational, Scientific and Cultural Organization (UNESCO) approximation, there are roughly 245,000 square kilometers of dead zones worldly.
3) Plastic and garbage can be entered into the water by the residuary falling of ships, trash blowing into the ocean, garbage swept into the sea and oceans through rivers, throwing people's trash on the beach and so on. When they enter into the water, harm marine life and human health, fish likely eat trashes mistakenly supposing food but unfortunately cause ending of its life. As plastics slowly break apart, micro-plastics in size less than 5mm are formed that subsequently; fish may consume them and afterward be eaten by humans.
4) Oil; can pollute water when oil tankers spill their cargo via entering the sea from farms, factories, shipping, and cities.
5) Radioactive waste; can enter the water and make it risky to humans, the environment and marine life, able to remain thousands of years in the environment.
6) Fracking; a process of extracting natural gas or oil from rock. It results in underground water supplies pollution due to applicable technique (uses a tremendous amount of chemicals and water in a high pressure to crack the rock) (Anna, 2020).

5.3.1. Water pollution and human health

There are certain ways in which water pollution can directly affect human health;
a- Ingesting micro-plastics; a person may ingest or consume micro-plastics through eating polluted seafood or drinking water. Based on research conducted at Tokyo Bay in 2016, scientists examined 64 anchovies for micro-plastic consumption; in that study, it was found that 77% of them had micro-plastics in their digestive systems. Micro-plastics likely cause inflammatory reactions, oxidative stress and metabolic disorders in humans.
b- Consumption of water polluted by sewage; according to WHO's note, 2 billion people use a drinking water source with fecal pollutants. Polluted water can harbor bacteria that cause diseases such as; diarrhea, cholera, typhoid, hepatitis A, polio and dysentery. Based on UN reports, every year, approximately 297,000 children less than five years old die from diseases linked to poor hygiene, unsafe drinking water, and poor sanitation.
c- Drinking water, including chemical waste, chemical pollutants like fertilizers, heavy metals, and pesticides, can result in serious health problems if consumed. Polluted water causes hair loss, spots, and itchy. An individual who ingests chemical toxins with his/her

drinking water can be at the risk of cancer, altered brain function, hormone disruption, damage to immune and reproductive systems, kidney problems and cardiovascular. Even swimming in polluted water can also trigger; rashes, respiratory infections, and pink eye (Anna, 2020).

5.4. Sources of Water Contamination

For making policies it is beneficial to recognize the sources of contamination. The sources of water contamination generally grouped into two sources; a: Sources of contamination that commonly bring out via a pipe, ditch and outfalls into surface waters at a specific location. b: Source of contamination which typically affects sprayed and indirect ways, consists of runoff of fertilizers and pesticides from grasses and farms after heavy rains. Directly throwing oil spills, ocean garbage, and trashes (primarily plastics) in the oceans are the main primary sources of contamination in the oceans. Figure 2 requires to be seen.

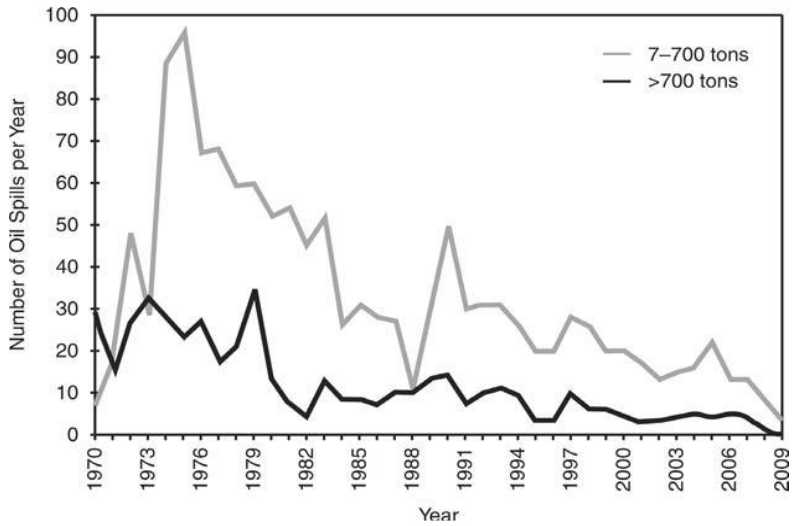

Figure 2. The decreasing frequency of oil spills from tankers and barges (Tietenberg and Lewis, 2018)

Note: The figure explains that oil spills are the highest level from 1973-1976, between the years of 1970-1973 and 1988-1991 are less than 1973-1976 while is higher than other specified periods specified in the figure. The lowest decrease of oil spills frequency starts after 1997 and almost steadily prolongs until 2009.

More recently, a vast amount of plastics have been found in the ocean. Much of these plastics are ingested by sea life and kill thousands of marine birds and mammals each year (Tietenberg and Lewis, 2018).

6. Air Pollution Regulations

The US's major federal legal governing quality is the CAA (Clean Air Act), first passed in 1970 and significantly revised in 1990 (Roome, 2015). The goal of the CAA is to set regional pollution standards for the conservation of human safety through an “adequate margin of safety”(World Bank, 2014).

The CAA divides air pollutants into two categories. The first category includes six major or criteria of air pollutants, including; 1- carbon-monoxide, 2- types of sulfur-oxide, 3- nitrogen-oxide, 4- lead, 5- the small and particulate matter and 6- ground-level ozone.

Atmospheric concentrations of the criteria pollutants have declined substantially since the passage of the CAA, with an aggregate decrease of 69 percent between 1970 and 2014 (Reed, 2013).

The second category of pollutants regulated by the CAA is toxic air pollutants (harmful air pollutants than the mentioned sources of contamination in the first category, as determined in the CAA of United States). These pollutants are emitted in smaller quantities but cause dangerous safety impacts, including cancer, respiratory problems and damages. Mercury, arsenic, and vinyl-chloride are the warning and examples of toxic air contamination. Initial progress on addressing toxic air pollutants was slow, but the 1990 CAA amendments directed the EPA to establish technology–based regulations for large sources emitting one or more of nearly 200 hundred toxic air pollutants. The EPA has issued rules and regulations in more than 80 main industrial sources majors consisting of oil refineries, mills of steel and chemical plants. The regulations have reduced toxic air pollution from large sources by more than about 70 percent. However, further regulations are still needed for smaller sources and address the complete list of toxic air pollutants. An assessment of toxic air pollutants published by the EPA in 2015 concluded that approximately in every 25,000 people in the United States, one has an increased probability of undertaking cancer due to inhaling toxic air pollutants (Sharif and Mithila, 2013).

Air pollution regulations/laws are not the same over-all countries, on behalf of other countries Turkey's (as a transcontinental country) air pollution regulations/laws are expressed in this study.

6.1. Air pollution regulations/laws in Turkey

On the basis of material 56 of the Turkish constitution in 1982, living in a safe and clean environment is a personal right of each citizen of Turkey. In this county environment meaning is to portray all components of the environment like; soil, air, water. So, approving of the mentioned article is called the basic principle of air pollution in Turkey (Aydin et al., 2011).

Besides that, there is a Penal Code in Turkey that plays an important and valuable role related to this subject. According to material 181 of the mentioned Penal Code the inhabitants that intentionally empty their residue and wastes in the environment that cause a risky situation should be imprisoned and while it has a finalizing influence they will be punished twice.

Environmental law No. 2872's objective is; "making sure environmental maintenance on this opinion that it is a common, national and natural property of this country residents thorough a tolerable environmental and developmental principle.

It is forbidden to throw the residuary or wastes to the environment or sorting, transporting and sending them away in any way that someone wants. Also, engaging in some other activities that are against the necessitated criteria is not allowed.

Road Traffic Law contains a provision indirectly related to air contamination. That law prohibits the diffusion of dust/smoke that disturbs the environment, especially by utilizing old and ancient vehicles. Such actions are considered a criminal matter and cause a fine. Exhaust emission is called the other polluter in Turkey, especially around the crowded

provinces. The related organ distinguished a limitation after conducting the pertaining investigations to how exhaust emission should be used (Aydin et al., 2011).

Moreover, Non-Governmental Organizations (NGOs) and provincial directorate of agriculture have an important role in having a clean environment especially air protection around Turkey. Provincial presidencies of agriculture organize arranged meeting programs and offer the influencing seminars to the farmers in order to do not burn the stalks in winter and summer seasons in which not only cause air pollution but also results agricultural lands' exhaustion and its weakness (Esengun et al., 2006).

Also, another affecting factor of air contamination is warming system. In Turkey, since natural gas has been being used, a substantial decline has been observed in air contamination. The relevant law no. 3378 was approved in 1987 and substituted with natural gas market law (NGML) No: 4646 in 2001. The main objective pertaining to both laws is to make sure the supply of natural gas is competitively way and protect a high-quality of it to final consumers that are not disturbing environmental safety and its maintenance when using.

Relating to the conservation of Air Contamination, the regulation approved in 1986 was directly influential in air contamination. Its target was to control smoking and dusting, liquid substances stored under pressure, energy, and gas diffusion on atmosphere to protect humans' environment against hazards that arise via such atmosphere.

There are some exceptions relating to air quality. Article No: 4 about Conservation of Air Quality explains that the approved law will not be enforceable on protecting the environment and human health against radiation and nuclear gasoline related to radioactive materials. But fortunately, many reforms and changes were brought in the Atomic Institution of Turkish Energy in 1982 Law No: 2690. Based on the law when performing the atomic activities the relevant Institutions have to remark the required measurement for protecting the environment and human health against radiation.

Turkey has developed several official statements about the contamination of air. For instance, the Montreal Treaty, Proclamation of Substances Importing in which evacuate the layer of Ozone and prevent importing those materials distinguished in Montreal Convention and Declaration on Importing of Radioactive Materials and Using of Device or Machines.

Finally, around the country, the approved law/regulations are: Regulation to control air contamination that caused via facilities of industry in 2004, Regulation to evaluate and administrate quality of air ratified in 2008, and Regulation to control air contamination engendered by a heating system approved in 2009 (Aydin et al., 2011).

7. Evidence from the Clean Air Act

Does Reducing Pollution Make Economic Sense?
In 1997, based on a research report of EPA for discovering positive net benefits over the 1970-1990 period produced by CAA to the congress. According to the results of that research, the value of the current benefits was $22.2 trillion and costs were $0.52 trillion. By subtraction of costs from benefits, the net benefits were equal to $22.2-$0.52=21.68

trillion. Therefore, according to this study the air contamination control policy of the United States made a very good and convincing economic sense in this period.

Based on an issued report of the United States EPA in according to specify the benefits and costs of CAA between (1990-2020) years, cost amounts which were being conducted in 1990 CAA amendment requirements are expected to be raised nearly to $65 billion per year (2006 dollars) in 2020. Approximately half of the consent costs ($28 billion) arise from contamination controls accommodated on various types of cars; $ 10 billion arises via decreasing air contamination from electrical utilities. In the U.S per person living, nearly $200 costs by 2020 produce almost a $6000 impact as benefits through improvement of air quality (Tietenberg and Lewis, 2018).

8. Other Pollution Regulation

Other pollution regulation focuses on hazardous wastes and chemicals. The Resource Conservation Recovery Act (RCRA) was legislated in 1976 to arrange the access of hazardous and risky wastes. Under RCRA, the EPA has designated hundreds of chemicals as hazardous. Not just because of toxicity but also for other reasons such as corrosiveness and flammability. The RCRA requires "cradle-to-grave" tracking of hazardous materials, including any transportation of materials. It also sets safety standards for facilities that treat, store, or dispose of hazardous materials. The RCRA has been effective in reducing hazardous waste generation, which declined from about 300 million tons annually in the 1970s to 35 million tons in 2013 (Victor, 2019).

Regulation of other chemicals covered under the Toxic Substance Control Act (TSCA) in the United States of America, the primary federal U.S. law regulating the use and sale of toxic chemicals), passed in 1976. The Act gives the EPA the authority to review the safety of new chemicals and restrict the use of existing chemicals. Unlike most other major pollution laws, the TSCA does direct the EPA to consider economic costs and benefits explicitly when evaluating chemicals. For existing chemicals (those already in use before 1980), the liability of testimony requires EPA to demonstrate a chemical poses an "unreasonable risk." This essentially grandfathered the use of 62,000 chemicals, in most cases without information about potential health and environmental impacts. As of 2015, the EPA has required testing of only 250 existing chemicals and regulated only five (World Bank, 2007).

The TSCA is more stringent in regulating new chemicals. The EPA must be notified when a new chemical is to be produced, providing time for the EPA to review the potential risks of the chemical. However, even then it is up to the EPA to request testing from the manufacturer, which is normally not done. Of the approximately 40,000 new chemicals submitted to the EPA under the TSCA, about 10 percent have been subject to regulatory action such as additional testing or restrictions (World Bank, 2014).

In contrast to the United States, the European Union has significantly enacted a more powerful chemical policy that embodies the precautionary principles. Called Registration, Evaluation, Authorization, and Restriction of Chemicals (REARC), the policy locates the loads of evidence on chemical producers to determine the health and safety of their chemicals.

9. European Chemical Policy of Controlling Pollution

The European Union's ambitious chemicals policy (REARC) got an effect in 2007 was phased in over an 11-year period. Based on the EU's website for REARC, a large number of substances have been produced and located for many years on the markets in Europe. Therefore, accepted as one of the basic reasons for developing and accepting the REARC regulation, often at a very high level and yet there are not sufficient details on the dangerousness that they put on to mankind's safety and the environment.

Multiple manufacturers of such chemicals may join together to reduce the costs of testing. In addition to requiring testing for all new chemicals, REARC requires manufacturers to provide test results for existing chemicals. REARC's necessities are accommodated to all chemicals which are manufactured or are imported from outside Europe into Europe. As of 2016, 168 chemicals have been identified as "substances of very high concern." These chemicals must be authorized under REARC for each specific use (World Bank, 2007).

Ultimately, REARC is going to provide a long-time contributor for creating a sustainable industry, protected and healthy environment in Europe.

10. Environmental Taxation across the Countries as a Practical Pollution Control Policy

Countries obviously vary in the contingency of their environmental policies. While it is conceptually difficult to compare pollution policies across countries, one measure that has been used to compare policies is the degree of environmental taxation across countries. The following figure shows environmental tax revenue in several countries that are members of the Organization for Economic Cooperation and Development (OECD), calculated as the percentage of gross domestic product (GDP; the final annual market value of services and goods which are produced within a nation's border, include its citizens and foreigners) not GNP (gross national product; final annual market value of services and goods which are produced by a nation, irrespective of where such manufactures and the country's citizens take place) (Harris et al., 2001; Reid et al., 1988). Figure 3 should be referred to again.

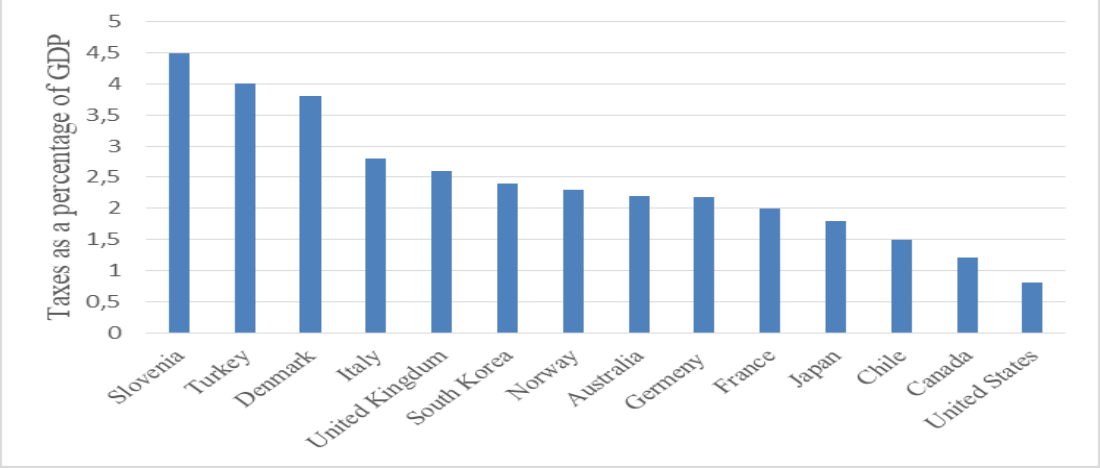

Figure 3. The evaluation of environmental taxation system over the organization for economic cooperation and development (OECD) countries (OECD, 2015).

Note: Countries with relatively large environmental tax revenues include Slovenia, Turkey, Denmark, Italy, and the United Kingdom. Each of these countries has environmental tax revenues above 2 percent of their GDP. Among developed countries, environmental taxes as a percent of GDP are lowest in the United States. However, we should not necessarily conclude that the United States has the laxest environmental policies, as we need to consider other policy instruments, such as standards and technology-based policies. In fact, local air pollution levels in the United States are more than 20 percent lower than the OECD average (Oakland Institute, 2015)

11. Discussion and Conclusion

Policies should be selected with a view toward minimizing unnecessary costs or damages and promoting technological progress in pollution control. Pollution control policies in practice have led to major pollution reduction in some cases, but not in others. In the United States, emissions of criteria air pollutants have been significantly reduced since the 1970s.

Controlling and protecting of environment pave the way of getting the uncountable much more positive results in the world, including the reduction of mortality, low fewer occurrences such as severe bronchitis diseases, breathing and heart sicknesses also providing the best visibility, decreasing structural risks and improving the productivity level of agriculture.

There are the most three risky ocean contaminant sources including ocean dumping, oil tiny particles or spills and so many other trashes (primarily plastics) which are thrown up directly in the ocean. It is required that the local societies must be completely announced of the dangerousness that will encounter by regional and zonal hygienic landfills also be completely empowered to easily reject or accept the suggested compensated packs. As emissions of pollutants continue, the total amount in the land, air, water, and living things steadily increases. Even if pollution levels are reduced to zero, concentrations can remain at harmful levels for decades. Therefore, dealing with cumulative pollutants requires urgent action and stringent policy measures.

Countries with relatively large environmental tax revenues include Slovenia, Turkey, Denmark, Italy, and the United Kingdom. Each of these countries has environmental tax revenues above 2 percent of its GDP. The EPA has issued rules and regulations in more than 80 basic majors of industrial sources, including an oil refinery, steel engines, chemical plants, etc. The regulations have reduced toxic air pollution from large sources by more than about 70 percent.

Finally, as the basic practicable control policy, the taxation system accommodation should be accepted and applied in all over the countries to reduce the increasing level of pollution, especially tax system requires to be accommodated on the small, middle and big manufacturer companies. Besides that, the government of every country should be responsible to control the environmental situation by the professional team continually and if the continuing of producer companies result an unacceptable contamination such producer firms should be instantly closed and make it to end all its activities.

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