Briefing Memorandum
Environmental Ethics

Historical Background and Social Impact

Many early cultures and religions held great respect for the environment. Some cultures believed that man was the steward of the earth, others that it is a gift (Wikipedia, 2021). In Chief Seattle's 1852 response to the United State's request to purchase his tribe's land, he demonstrated his people's connectedness to the land when he said, "Man did not weave the web of life. He is merely a strand in it. Whatever he does to the web, he does to himself." (Mahlness. 2009). Modern economic growth and the impact it is having on the environment make Chief Seattle's words prophetic. To understand why it is important to understand the nature of private goods and economic externalities.

A private good is generally considered to have two characteristics. First, there is a level of excludability, and second, there is a degree of rivalrousness. Excludability means that the owner or producer can prevent others from using or consuming the private good. Rivalrousness relates to the degree that one person's use or consumption reduces the good available to others. Excludability and revalrousness can be thought of as continuous scales leading to four types of goods: Private, Common, Club and Public (see diagram below):

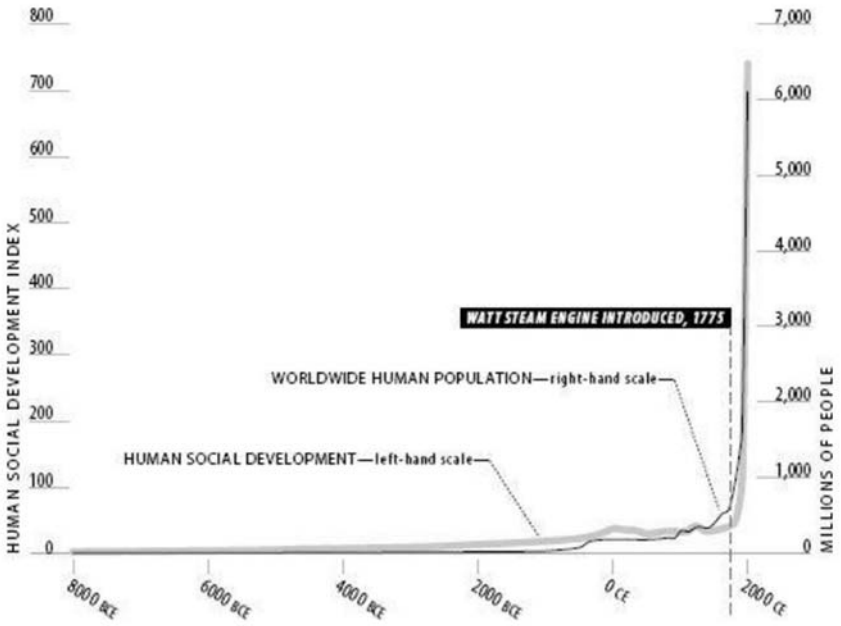
	Excludable	Non-Excludable
Rivalrous	**Private Goods** food, clothing, cars, personal electronics	**Common Goods** fish stocks, timber, coal
Non-Rivalrous	**Club Goods** cinemas, private parks, satellite tv	**Public Goods** air, national defense

Externalities are created whenever private, or club goods are produced or common or public goods are consumed. Externalities are the spillover effect from production and consumption that impact a third party who is not directly involved in the transaction. These spillovers can be positive or negative.

Externalities are positive with the third-party benefits from the activity. For example, we all benefit when a person improves themselves through education. Externalities are negative when there is a cost imposed on the third-party. For example, when a factory's production pollutes the air with harmful chemicals and the community must breathe that harmful air. As Chief Seattle said about man, "What he does to the web, he does to himself."

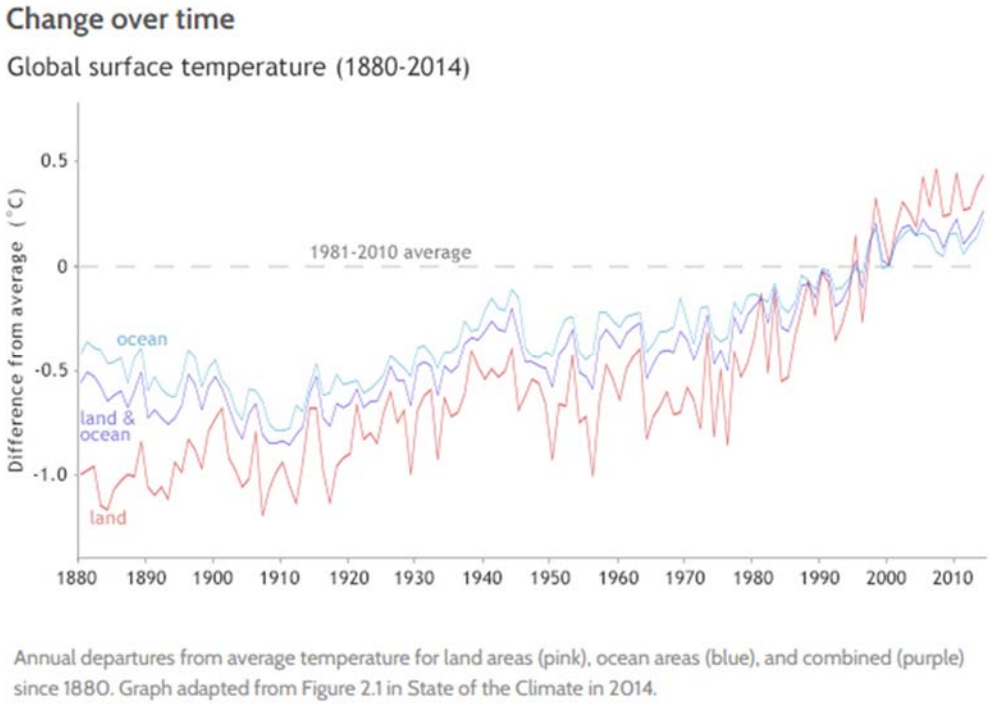
Western neoclassical economics views the environment as a resource allocation problem. Generally, the allocation problem is between private parties and can be resolved through price signals. Coase (1960) argued that all environmental issues could be eliminated through the price system so long as proper property rights assignment. However, resource conflicts can arise between individuals and between interest groups, between species, and between society and the biosphere (Hohl & Tisdell, 1997).

The invention of the Watt's steam engine in 1775 was a watershed moment in human history. The invention of the steam engine brought man into the machine age. No longer was man constrained by his muscle and the muscle of labor animals. As demonstrated in the below graph, social development and human population have exploded since 1775:



Source: Brynjolfsson & McAfee (2014)

The explosive growth has brought humanity into direct conflict with the environment. As Chief Seattle might have expressed it, “Man has pulled on the web of life and pulled hard!” The explosive growth has resulted in a change to the global surface temperature, which is having far-reaching impacts. See the chart below.

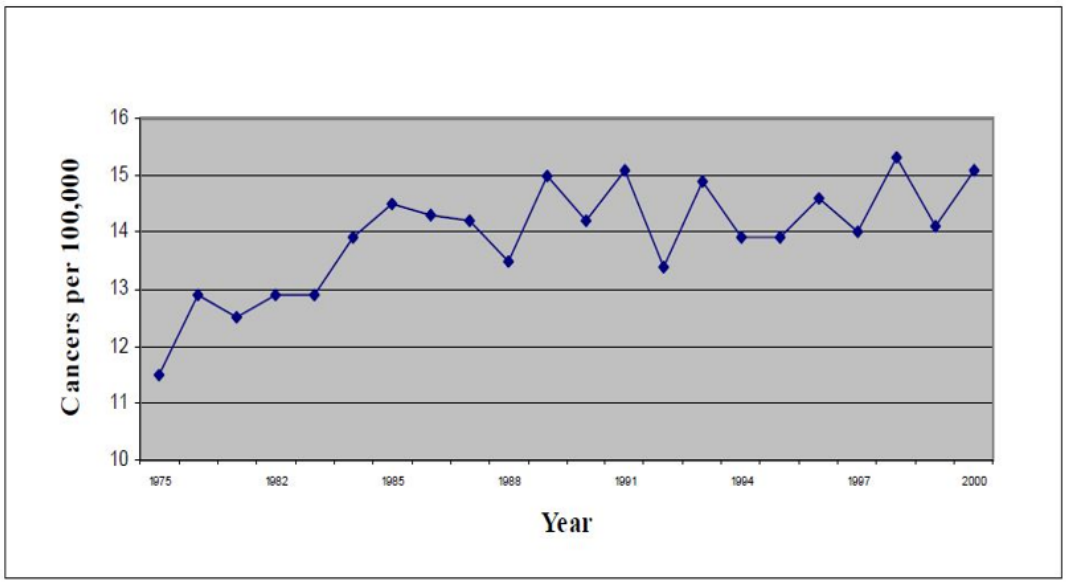


Source: 2014 state of the Climate

Not only is expansive economic activity changing the climate, but community health is being adversely impacted. The emissions from power plants and motor vehicles have been responsible for triggering or exacerbating respiratory ailments such as asthma. For example, in 1995, more than 5,000 Americans died from asthma. Asthma has been linked to 10 million lost school days, 1.8 million emergency room visits, and 500,000 hospitalizations. (Bullard, 1994).

Additionally, many studies have documented increased cancer rates associated with exposure to industrial chemicals in the environment. Especially vulnerable are children. Studies have clearly established links between childhood cancer and environmental factors such as exposure to solvents, pesticides, and other pollutants (Massey, 2004). See chart below.

United States Child Cancer Rates (1975 – 2000)



Source: Massey, R. (2004)

As conflicts with the environment and the harmful impacts from negative externalities have been increasing, policymakers are becoming more sensitive to changing environmental values and mankind's relationship to nature. Perhaps Chief Seattle is finally being heard.

Environmental Ethics

Environmental ethics, at least in the Western tradition, is a new discipline. The first professional journal to address the topic, Environmental Ethics, was founded only 43 years ago in 1978 (Palmer, McShane & Sandler, 2014). Environmental ethics can be examined using either the lens of an ethical system, values, or justice.

There are three standard ethical models: Consequential, Deontological, and Virtue Ethics. Consequentialism aims to bring about the best outcome given human action. The idea is encapsulated in the often-paraphrased quote attributed to Jeremy Bentham, "The greatest good for the greatest number." Normally, one considers the good to be human beings, but in environmental ethics, the

determination of the good has a much larger scope. For biocentric consequentialism, the aim is flourishing. In biocentric organismic flourishing, the good to be maximized is the flourishing of all organisms, while in biocentric ecosystem flourishing, the objective is to maximize the health of the ecosystem. In either approach, all life and not just human life are considered (Palmer, McShane & Sandler, 2014).

The deontological considers that rights and duties between people are what is most important. From this perspective, if one acts according to ethically defined rules, they have acted properly regardless of the consequences. What matters is what we owe to others, rather than creating better or worse states of the world. Deontological theories in environmental ethics emphasize rules and rights rather than maximizing the good. For example, deontological theories might consider the nonhuman rights of animals such that they are not tortured, killed, or confined (Palmer, McShane & Sandler, 2014).

In virtue ethics, actions are evaluated for their compliance with defined virtues. Virtues include standards of honesty, fairness, frugality, etc. For example, when the different potential forms of animal husbandry, virtue ethics might inquire whether actions comply with such virtues as compassion, efficiency, or environmental sensitivity (Palmer, McShane & Sandler, 2014).

Philosophers have been studying axiology, or the concept of value, since to days of Plato and Aristotle. There are two basic types of value: Extrinsic value, also known as instrumental value, and intrinsic value, also known as non-instrumental value. Extrinsic value is the value that something has as a means to an end or its value in producing something else. This type of value can include the value of a simple commodity such as metal or corn, or it can include the more esoteric values associated with recreational opportunities and ecosystem services. However, at the center of extrinsic value is the value of a thing in relation to other things. Intrinsic value is not comparing one thing with another but rather the value a thing has “in itself.” Intrinsic value is the type of value where a thing is worthy of respect in its own right of existence. Examples of intrinsic values might include the value given to a species, an entire ecosystem, or a natural wonder (Palmer, McShane & Sandler, 2014).

Building on these concepts of value, several environmental ethical value systems have developed. First, and likely the easiest to understand, is anthropocentrism. Anthropocentrism holds that the only thing that

has intrinsic value is man. In this view, human beings are either the only things with a moral status or the only thing that is morally significant (Palmer, McShane & Sandler, 2014). Under this view, man is free to treat the environment and the animals in it; however it is best for man. This does not mean that man is free to destroy the environment but only that there is no need to consider the worth of the environment, species, or the ecosystem beyond how it can be useful now and in the future. Another version of anthropocentrism is known as "extended anthropocentrism." This position maintains the moral supremacy of human beings but also recognizes that a self-interested species, such as man, can incorporate the idea that respect should be given to other natural beings and things, namely, the biosphere. These concerns can be extended to both the present and the future biosphere (Azqueta & Delacámara, 2006).

A second, nonanthroprocentrism system called ethical biocentrism has also developed within environmental ethics. This system describes an ethical position in which all living things have moral status. This position subordinates economics to ethical decision-making and thereby takes other species' intrinsic value into account when making economic decisions. A third system is known as econcentrism, which not only considers the intrinsic value of individual organisms but also of ecological collectives. Considerations using this approach include the value of soils, waters, plants, and animals. That is the entire ecosystem. Many environmental ethicists who defend ecocentrism also defend holism with respect to species. They argue that entire species and not just the individual organisms that make up a population as important. This view holds that the whole population of a given species should be considered to have intrinsic value. Finally, some environmentalists argue that wildness has intrinsic value and motivates a claim for environmental protection (Palmer, McShane & Sandler, 2014).

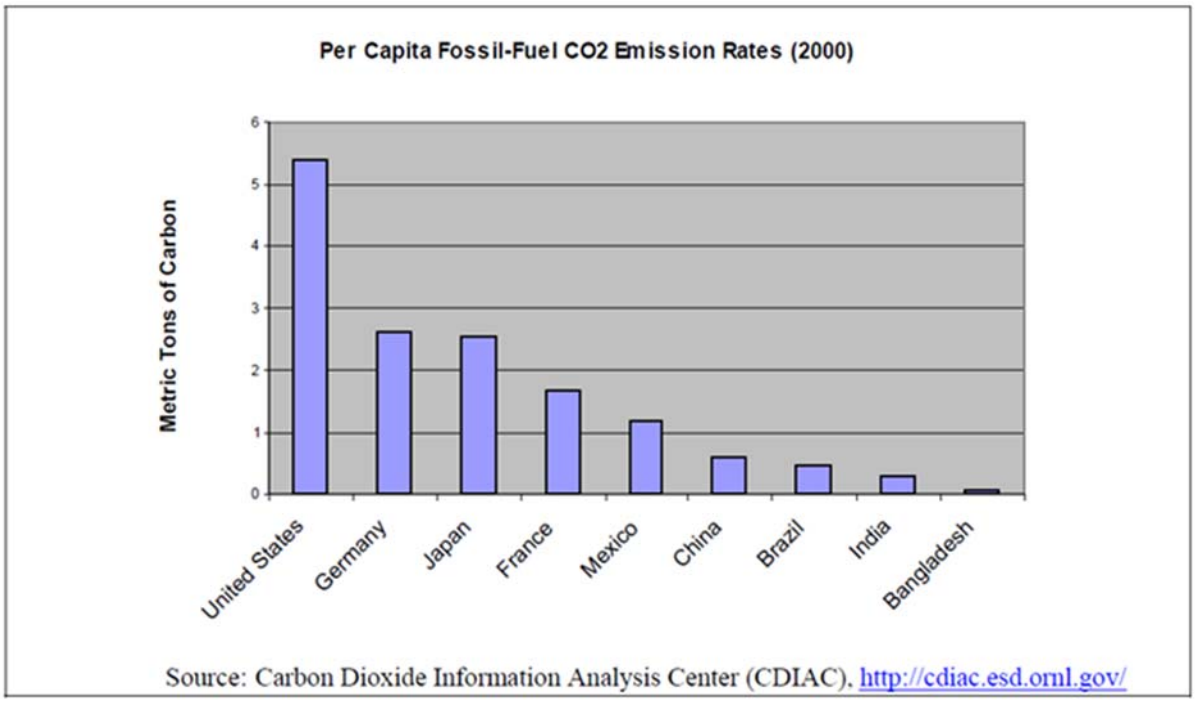
Another position towards the environment is known as environmental pragmatism. This approach does not maintain any theoretical commitments as those previously discussed. Environmental pragmatism is skeptical about identifying any theory of environmental ethics. Environmental pragmatists see value as contextual. Rather than preceding from a principal, pragmatists emphasize inclusive process and collaborative discourse when evaluating and justifying ecological policies. For example, pragmatists might argue that a sufficiently reflective anthropocentric position that considers the needs of ecosystem

services, future inhabitants, and natural aesthetics is likely to produce appropriate environmental policies. Such an approach, the pragmatist argues, avoids the need to argue over controversial nonanthropocentric ethical views and ultimately produces similar results. Additionally, as long as all cultural perspectives are represented and included in the evaluations and there is due recognition to the potential for long term environmental damage impacting future generations, then a healthy sense of human rights and justice should produce substantially correct environmental practices and policies (Palmer, McShane & Sandler, 2014).

In addition to ethical systems and their relationship to the environment, the use of natural resources and especially the creation of negative externalities by one person can impact other people. This raises issues of justice. Many philosophers hold that humans have an innate sense of justice. To paraphrase a famous line from U.S. Supreme Court Justice Potter Stewart, “We know it when we see it.” (Jacobellis v. Ohio, 1964). Justice is generally thought of in terms of what we owe one another (see Scanlon, 1998). Environmental justice can take several forms: Distributive justice, Participative justice, Global, Intergenerational justice, and Racial Justice.

Distributive justice concerns how the burdens of environmental pollutions are spread about the members of the community. Pollution distribution often has economic consequences between communities as well as health concerns (Massey, 2004). Relate to distributive justice is participative justice. Participative justice relates to the involvement of those affected by others' decisions (Palmer, McShane, & Sandler, 2014). Concerns of participative justice include whether only the wealthy or those seeking to gain from environmental exploitation should decide how externalities are distributed, or should those impacted also have a voice (Massey, 2004)? How those affected should be heard, and their degree of influence is also a component of participative justice.

Global justice concerns the larger view. Global justice has become more a concern, especially as global climate change has been linked to industrial activity. Rich countries are disproportionately responsible for CO2 emissions. See chart below.



However, low-income countries will be equally exposed to the climate-changing environmental impacts from CO2 emissions (Palmer, McShane, & Sandler, 2014). Additionally, the poor countries are likely the countries least likely to manage the impacts of climate change. In addition to climate change, poor nations can bear a disproportionate burden from toxic wastes that wealthier nations export (Massey, 2004). Related to the idea of wide impact issues is intergenerational justice. Intergenerational justice is concerned with the impact that current activities might have on future generations of peoples (Palmer, McShane, & Sandler, 2014). Here, the argument is that every person is entitled to enjoy the environment's services and resources. For this to occur, future generations must be considered on an equal footing with present ones when deciding the uses of natural endowments (Currie & Walker, 2019).

The final justice concern is those over race. Racial environmental justice refers to any ecological policy or practice that negatively affects - intentionally or unintentionally - groups or communities of color (Bullard, 1994). Racial injustice can be a serious phenomenon. For example, the Commission for Racial Justice's Toxic Wastes and Race 1987 study found:

> Three out of five African Americans live in communities with abandoned toxic waste sites.

> Sixty percent or 15 million African Americans live in communities with abandoned toxic waste sites.
>
> Three of the five largest commercial hazardous waste landfills are located in African American or Latino communities (Bullard, 1992).

As industrial activities continue to increase and cultural sensibilities evolve and mature, all these environmental ethic and justice issues are likely to become a more prominent part of the global consciousness.

Policy Choices

Environmental policy refers to a commitment to the law, regulations, and other policy mechanisms concerning environmental issues, including but not limited to water, land, and air (Islam et al., 2014). Several policy instruments deal with different environmental problems, such as market-based intruments, regulatory insturments, technology-based instruments, voluntary agreements, mixed instruments, and international framework (Islam et al., 2014; Harris& Roach, 2013).

Market-based instruments, also known as price or economic-based instruments, include tradable permits and pollution tax (Islam et al., 2014). Pollution tax sends information to polluters about the cost of the pollution without mandating firms to take a certain action. Still, the regulation creates a strong incentive for firms to take pollution mitigating action (Harris & Roach, 2013). Pollution tax reflects the principle of internationalizing external costs; for instance, as long as the marginal control costs are less than the tax, polluters will find it in their interests to reduces pollution. However, it is difficult to predict the total amount of pollution reduction that a given tax will produce (Harris & Roach, 2013). Another example of a market-based approach to reduce pollution is the tradable pollution permits. The total number of permits is normally set to equal the desired target level of pollution. Permits can be allocated freely to existing firms or sold at auction (Harris & Roach, 2013). Tradable pollution permits combine the advantages of direct “command and control” regulation, a strategy discussed below, and the more economically friendly market-based system.

Clean Air Act was first implemented in 1963; it is one example of a market-based instrument. In 1970, the Clean Air Act relied on “command and control” regulations focusing on health benefits regardless of economic cost (Currie & Walker, 2019). During the 1970s and early 1990s, there were two major amendments to the Clean Air Act. These amendments to the Clean Air Act were designed around a more market-based approach. However, components of the legislation’s command and control regulations were maintained. For example, certain permit review requirements were maintained to ensure compliance with the air quality standards (Currie & Walker, 2019). The Clean Air Act has had mixed results. A law with the Clean Air Act's pervasive scope has profound distributional effects. Some people and industries will benefit and others will bear the costs. Such a law will likely find it difficult to precisely balance the overall costs and benefits (Currie & Walker, 2019). This was the case with the Clean Air Act. For instance, poor and minority households gained the most in terms of health from the targeted nature of the Clean Air Act because these groups lived in areas most exposed to pollution. Poor and minority communities were the first to see improvement in air quality because those communities were targeted first by the Clean Air Act (Currie & Walker, 2019). However, other less poor communities potentially bore the cost of the earliest clean-up. Overall, however, the Clean Air Act most certainly lead to significant benefits over time and across specific policies (Currie & Walker, 2019).

The second policy instrument is the regulatory instrument, also known as the “command and control” approach. The command and control approach includes such items as emission standards, process specification, equipment specification, etc. (Islams et al., 2014). In general, the command and control approach targets specific actions that must be taken or standards that must be met without regard to the cost of meeting those actions or standards. Establishing automobile tailpipe emission standards is one such command and control approach. Under this approach, cars must meet certain tailpipe emissions criteria regardless of the cost of meeting those standards. The regulation can be policed through a car window inspection sticker indicating that the automobile meets the required standards (Harris & Roach, 2013). This approach's advantage is that it provides clear and uniform product requirements (Harris & Roach, 2013). The disadvantage to these approaches is that they may not produce the most cost efficient outcome. Additionally, older technology may find it too costly to meet the requirements be forced out of the market (Harris & Roach, 2013).

One specific example of this type of regulation is the Resource Conservation and Recovery Act Toxic Substance Control Act (RCRA). The RCRA was enacted in 1976 to regulate hazardous waste disposal (Harris & Roach, 2013). RCRA requires " cradle-to-grave" tracking of dangerous materials. It has reduced hazardous wastes from 300 million tons annually in the 1970s to 35 million tons in 2009 (Harris & Roach, 2013). Another example of command and control regulation is the Toxic Substances Control Act (TSCA). The TSCA was passed in 1976. It regulates all United States' chemicals. The TSCA gives the Environmental Protection Agency (EPA) the authority to review the safety of new substances and restrict the use of existing chemicals (Harris & Roach, 2013).

Another approach is the technology-based approach. Under this approach, laws will require that firms or products incorporate a certain pollution control technology (Harris & Roach, 2013). A similar concept is the best available control technology (BACT). Here the government will mandate that all firms use a control technology deemed most effective. The advantage of the technology-based approach is that the enforcement and the monitoring costs are low. If all firms adopt a specific technology, the technology's widespread use might help drive down the production costs, thus offering cost advantages (Harries & Roach, 2013). However, this approach is unlikely to be cost-efficient due to inflexibility to pursue a wide range of options (Harries & Roach, 2013).

The Clean Water Act, among other approaches, uses a technology-based system. The Clean Water Act was passed in 1972 and amended in 1977, and is administered by the EPA (Harris & Roach, 2013). The goal is to make all United States' lakes and rivers safe for fishing and swimming. The Act primarily focuses on the point source of pollution. As an example of its use of technology-based regulation, the EPA will specify the "best available technology" that a major point source of pollution must use and then require that the source obtain a permit to ensure compliance (Harris & Roach, 2013).

The last three policy instruments are voluntary agreements, mixed instruments, and international framework. Voluntary agreements are bilateral agreements negotiated between the government and private firms (Islam et al., 2014). Examples of voluntary agreements include the Public Voluntary Program, Negotiated Agreements, and Unilateral Commitments (Islam et al., 2014). Mixed instruments are rather straightforward. They include the combination of different instruments designed to underpin

and reinforce each other; under certain situations, using a few policies together can be far less expensive than attempting to create one overriding policy (Islam et al., 2014). International framework refers to the laws and regulations regarding environmental issues at the global level. Presently ecological problems have become of wider international concern (Islam et al., 2014). One example of an international law is the Paris Climate Agreement regulating climate change.

Recommendations

When forming a policy, several factors need to be taken into consideration. First, policymakers have to consider whether a policy instrument will be effective in achieving the desired outcomes. Second, the policymaker must consider whether the policy instrument will be cost-efficient. Third, policymakers need to consider the distribution of the costs and benefits of the policy. For example, the policymaker should ask whether the parties incurring the cost have a strong incentive to resist while simultaneously, the benefits are so widely distributed that no specific constituency emerges from the services endowed. Lastly, policymakers must consider who will be facilitated since policy cannot be implemented without government approval (Islam et al., 2014).

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