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PRECAUTIONARY PRINCIPLE AS AN EPISTEMOLOGICAL PROBLEM – IS IT PROTECTING OR PARALYZING?

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Introduction

Sustainable development is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987). There are several underlying principles for the concept of sustainable development. These principles were described by the Rio Declaration on Environment and Development, which is a document created at the 1992 United Nations "Conference on Environment and Development."

The Rio Declaration comprised of 27 principles which are intended to lead sustainable development in the world. These principles include the right to development, environmental protection, eradication of poverty, capacity building, public participation, internalization of environmental costs, environmental impact assessments, notification of natural disasters, youth mobilization, resolution of environmental disputes, and also the precautionary principle.

We can summarize the precautionary principle as "prevention is better than cure" or "better safe than sorry." The principle is applied when a scientific evidence shows that a specific activity or policy results in harm, however the evidence is not conclusive, and there is still time to take a preventive

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action. The harm might be against people, the environment, plant life, or animal life, and it may not be reversible, as in the example of extinction of species.

There are both critics and supporters of the precautionary principle. Supporters refer to its range of applications and flexibility. Supporters worry that the principle might be interpreted loosely. Policy decisions include various interest groups such as consumers, companies, and environmentalists. As a result, lack of agreement on the definition or the extent of 'harm' can cause a loose interpretation for the principle, which will cause an excuse for inaction.

Critics argue that the principle is exercised very easily, without consensus on what counts as acceptable scientific evidence of harm. Therefore, they argue that it will slow down or stop development of technologies. Critics assert that, all new technologies include risks, and this should be examined and balanced against the costs of abandoning new technology and innovations.

In this paper, I argue that the precautionary principle protects us from any possible environmental harm, instead of paralyzing us regarding the implementation of new technologies and innovations. I am going to discuss the precautionary principle as an epistemological problem, by answering the criticisms, and also by mentioning the historical evolution of the principle, its definition, its uses in the international agreements, and a case study.

Historical Evolution of the Precautionary Principle

In this section, I would like to mention the historical evolution of the precautionary principle shortly. Note that precaution is different from prevention, because it deals with potential risks, whereas prevention deals with known risks (Origgi, 2014: 223). For the aim of this paper I will focus on the history of precaution as a principle.

The concept of precautionary principle comes from the principle of foresight (or *Vorsorge*) which was originated in Germany in 1970s. This principle states that environmental harm should be prevented by the society, by means of carefully planning in advance, and by stopping potentially dangerous actions (Tickner & Raffensperger, 1998).

The principle of foresight (or *Vorsorgeprinzip*) became an important principle in the environmental law of Germany in the beginning of 1970s. Tick-

ner and Raffensperger states that (1998) it "has been invoked to justify the implementation of vigorous policies to tackle acid rain, global warming, and North Sea pollution. It has also led to the development of a strong environmental industry in that country."

After putting strong environmental policies into action, Germany started to press the other EU states to introduce equivalently strict standards, partly to avoid its own economy from getting in a disadvantageous position, in terms of competition. Therefore, the rationale for spreading "the precautionary principle was therefore tied strongly to preserving economic competitiveness as well as promoting forward-looking environmental practices" (World Health Organization [WHO], 2004). All Heads of State of EU approved the principle in 1990, and it was later included in the Maastricht Treaty, and the treaty was signed in 1992.

"One of the most important expressions of the precautionary principle internationally"[1] is the Rio Declaration from the 1992 United Nations Conference on Environment and Development. The declaration states the principle as following: "In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation" (United Nations, 1992).

A communication regarding the precautionary principle was published by the European Commission in the year 2000. After the adoption of the communication, the principle has become a part of EU policies, including areas beyond the environmental policy.

Uses of the Precautionary Principle in International Treaties

The precautionary principle is increasingly implemented in international treaties. Important examples are as following: "Montreal Protocol on Substances that Deplete the Ozone Layer in 1987, International Conferences on the Protection of the North Sea in 1987 and in 1990, Nordic Council's International Conference on Pollution of the Seas in 1989, Bamako Convention on Hazardous Wastes within Africa in 1991, Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area in 1992" (Tickner & Raffensperger, 1998).

1 Tickner & Raffensperger, 1998.

Definition of the Precautionary Principle

In 2005, UNESCO published a definition of the precautionary principle:

> When human activities may lead to morally unacceptable harm that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm.
>
> Morally unacceptable harm refers to harm to humans or the environment that is: threatening to human life or health, or serious and effectively irreversible, or inequitable to present or future generations, or imposed without adequate consideration of the human rights of those affected.
>
> The judgment of plausibility should be grounded in scientific analysis. Analysis should be ongoing so that chosen actions are subject to review.
>
> Uncertainty may apply to, but need not be limited to, causality or the bounds of the possible harm.
>
> Actions are interventions that are undertaken before harm occurs that seek to avoid or diminish the harm. Actions should be chosen that are proportional to the seriousness of the potential harm, with consideration of their positive and negative consequences, and with an assessment of the moral implications of both action and inaction. The choice of action should be the result of a participatory process.

Case Study: Asbestos

When a new technology comes with a suspected negative effect, it takes a very long time to prove a causal relationship, and to implement an appropriate administrative response. In order to depict this phenomenon, I would like to present the following case study.

Lucy Deane, who was "one of the first Women Inspectors of Factories in the UK" (European Environment Agency [EEA], 2001), presented the earliest record of the medical hazards of the asbestos work. Deane listed asbestos business as a dusty occupation which needed to come under examination, in year 1898, "on account of their easily demonstrated danger to the health of workers and because of ascertained cases of injury to bronchial tubes and lungs medically attributed to the employment of the sufferer" (EEA, 2001).

One year after Lucy Deane's report, the first lung disease case related to asbestos was reported in a middle aged man. Reportedly (EEA, 2001), he had

worked for fourteen years, and he was the only survivor of a group of ten people working in the same room. He also said "they all died about thirty years of age" (EEA, 2001).

This information attracted the UK government's attention to the issue. Consequently, in 1906, an investigation for industrial diseases was conducted. Also, in that year, around 50 deaths amongst asbestos textile workers were reported by a French factory inspector. This report was largely ignored, however some 90 years later, it was the French ban on asbestos "which led to the high-profile case at the World Trade Organization (WTO) in 1999" (EEA, 2001).

During the period of 1940-1950, mesothelioma[2] cases were detected in relation to asbestos exposure. Moreover, in 1955, a South African doctor named Dr Sleggs noticed various cases of this uncommon type of cancer "at the centre of the asbestos mining areas." It is found that in all 47 cases of this type of cancer, except two cases, there was an exposure of asbestos (EEA, 2001).

Afterwards, mesothelioma cancer was also identified in asbestos workers in the US and the UK. "From 1964 to 1975 the media in both the United States and the United Kingdom kept asbestos high on the political agenda" (EEA, 2001). In 1986 the World Health Organization decided that "all three types of asbestos were carcinogenic and, as with other carcinogens, there was no known safe level of exposure to any of them" (EEA, 2001).

In 1987, new regulations regarding asbestos were put into force. In 1998, a prohibition on each kind of asbestos was introduced by France, together with an EU ban. As a result, "Canada filed a complaint against the ban at WTO, but this was rejected by the WTO Disputes Panel. Then Canada appealed against this ruling to the WTO Appellate Body, which found in favour of France and the EU" (EEA, 2001). See the following table for a chronology of the early warnings and actions regarding asbestos. The case study is discussed further in the 'Criticism' section.

This case study shows that after the initial early warning regarding asbestos came in 1898, it took a hundred years to ban all forms of asbestos. A precautionary approach could have saved thousands of lives.

2 "A very rare cancer of the chest or abdomen" (EEA, 2001).

Table 1 - Asbestos: early warnings and actions (EEA, 2001)

1898	UK Factory Inspector Lucy Deane warns of harmful and 'evil' effects of asbestos dust
1906	French factory report of 50 deaths in female asbestos textile workers and recommendation of controls
1911	'Reasonable grounds' for suspicion, from experiments with rats, that asbestos dust is harmful
1911 and 1917	UK Factory Department finds insufficient evidence to justify further actions
1918	US insurers refuse cover to asbestos workers due to assumptions about injurious conditions in the industry
1930	UK Merewether Report finds 66 % of long-term workers in Rochdale factory with asbestosis
1931	UK Asbestos Regulations specify dust control in manufacturing only and compensation for asbestosis, but this is poorly implemented
1935–1949	Lung cancer cases reported in asbestos manufacturing workers
1955	Doll establishes high lung cancer risk in Rochdale asbestos workers
1959–1960	Mesothelioma cancer in workers and public identified in South Africa
1962/1964	Mesothelioma cancer identified in asbestos workers, in neighbourhood 'bystanders' and in relatives, in the United Kingdom and the United States, amongst others
1969	UK Asbestos Regulations improve controls, but ignore users and cancers
1982–1989	UK media, trade union and other pressure provokes tightening of asbestos controls on users and producers, and stimulates substitutes
1998–1999	EU and France ban all forms of asbestos
2000–2001	WTO upholds EU/French bans against Canadian appeal

Criticism against the Precautionary Principle

Since its implementation, the precautionary principle has evoked much controversy. Major criticisms against the precautionary principle includes

that it "is too vague to guide actual decision-making", it is "inherently incoherent", and "its implementation would result in adverse effects" (Ahteensuu, 2007: 367).

Another criticism states that "The Precautionary Principle will slow or perhaps stop development or innovation since the burden of proof is on the product/service before it comes to market" (Paralyzing Precautionary Principle, 2014). It is further explained as following: Since the principle proposes the testing required to determine if a product is safe, this will discourage the innovation and development of new products and services. Because the testing cost to determine safety will be required before the product goes to the market.

On the other hand, it is possible to answer this criticism as following. Precaution does not mean to apply absolute bans and denials. In addition to the economic growth, it redefines the concept of development as including the ecological health. "The idea of precaution is to progress more carefully than we have done before" (Tickner & Raffensperger, 1998).

Tickner and Raffensperger also states (1998) that precaution "would encourage the exploration of alternatives, better, safer, cheaper ways to do things, and the development of cleaner products and technologies. Some technologies and developments may be brought onto the market more slowly. Others may be phased out."

The principle is criticized as it will slow down or stop development of technologies. If the slowing down of technological development results in the protection of the human life and the nature, I think we cannot call this as a problem. Because the human life and the nature are valuable. For example, in the asbestos case, another cost-benefit analysis was made (EEA, 2001) and it states that "If lives are valued at EUR 1 million each, which is common in transport studies, then the costs of the estimated 400 000 European asbestos cancer deaths expected over the next few decades is EUR 400 billion." I think no one would accept 1 million euro in exchange for their lives.

Moreover, if we need to live without certain technologies or materials, we have the ability to do so, as humans. Human beings have been on Earth for about two hundred thousand years, and when compared to that time period, we have been using most of the technologies or materials for a very short period of time. For example, asbestos has been used industrially for almost a hundred years, and we have been using cell phones for 15-20 years. This shows that most of the technologies or new materials are not essential

for the survival of the human. And even if leaving a technology may cause some inconvenience, it would eventually cause us to research for better and safer technologies.

The principle is also criticized as it is too strict for an uncertain future, because we never know what will happen. I argue that this is not the case, on the contrary, the principle is necessary for an uncertain future. For example, the report "Late lessons from early warnings: the precautionary principle 1896-2000" (EEA, 2001) illustrates several cases such as asbestos, fisheries, radiation, hormones, ozone layer. In all of the cases, there had been an early sign of warning (in some cases the warning started from 19th century), however people resisted or ignored these warnings and doubts, because there was not enough scientific proof. Consequently, most of these doubts turned out to be correct. Therefore, when we look at our past experiences, we see that this principle is necessary, and actually vital, in face of an uncertain future.

Before scientific certainty is provided, policy makers should take actions in order to protect the environment and the health of people from harm, this is the idea that underlies in the center of the precautionary principle. "It demands that humans take care of themselves, their descendants and the life-preserving processes that nurture their existence" (WHO, 2004). As it is stated in the Bergen Conference on Sustainable Development (in 1990), "it is better to be roughly right in due time, bearing in mind the consequences of being very wrong, than to be precisely right too late" (WHO, 2004).

Examining the costs and benefits of actions and inactions in the abovementioned case of asbestos will help us to understand the function of the precautionary principle better. According to a research by the Ministry of Health and Social Security of the Netherlands, if a ban had been introduced in 1965 (instead of in 1993), after the negative signs of mesothelioma had been recognized, "34,000 victims and 41 billion NLG (the former currency of the Netherlands) in building and compensation costs" would have been saved. "This is compared to the 52,600 victims and 67 billion NLG in costs expected over the period 1969-2030" (EEA, 2001).

On the other hand, many jobs and much profit for companies were generated by asbestos. However, these profits hardly include "the ill health and contamination costs of asbestos, which were 'externalized' onto workers with disease, their families, the health service, insurance carriers and building owners" (EEA, 2001).

As a result, it seems that the precautionary principle is mostly criticized by employers, however applying the principle will be beneficial for the long-term interests of workers or society. If governments and companies had taken precautionary actions in the past, environmental injustices of today would not happen. Therefore, when we turn back to the question "If the precautionary principle protects us from any possible environmental harm or if it paralyzes us regarding the implementation of new technologies and innovations?" I think it definitely protects us from any possible environmental harm.

To understand the theoretical background of the abovementioned criticisms, we should pay attention to the criticisms made by Cass Sunstein in his book *Laws of Fear* (2005). He stated that "the precautionary principle is based on fear and fear should not guide our actions" (Origgi, 2014: 216). However, it is known that our fears are the emotions that are formed through our evolution in order to keep us alive and to protect us from danger (Carey, 1998: 5-6). Therefore, fear might be the emotion to guide our actions in dangerous situations.

Sunstein also states that (2003) the precautionary principle is affected by five psychological biases that are subjects of behavioral economics and social psychology, and these are:

- *Loss aversion:* "people dislike losses far more than they like corresponding gains" (Sunstein, 2003: 1008).

- *The myth of a benevolent nature:* "a mistaken belief that nature is essentially benign, leading people to think that safety and health are generally at risk only or mostly as a result of human intervention" (Sunstein, 2003: 1009).

- *The availability heuristic:* "people focus on some risks simply because they are cognitively available, whereas other risks are not" (Sunstein, 2003:1009).

- *Probability neglect:* "people are sometimes prone to neglect the probability that a bad outcome will occur; they focus instead on the outcome itself" (Sunstein, 2003: 1010).

- *System neglect:* "when a single problem is placed in view, it can be difficult to see the full consequences of legal interventions" (Sunstein, 2003: 1010).

Even though it is influenced by these psychological biases, we should keep in mind that this principle was arisen from a necessity, which is caused by "the perception that the pace of efforts to combat problems such as climate change...is too slow" (Kriebel et al., 2001: 871). There are also the weaknesses of our laws and regulations, as shown in the following questions: "if the laws governing toxic chemical release are effective, then why are mercury levels in freshwater fish so high that pregnant women should not eat them? How is it possible that human breast milk may not meet U.S. Food and Drug Administration contaminant limits for baby food?" (Kriebel et al., 2001: 872).

Even if our fears and biases are involved in the formation of the principle, I think the precautionary principle is valuable "because it provides an alternative to a purely technology-based environmental management, it brings ethics into the discussion, allows environmental rights a voice, and challenges the appropriateness of cost-benefit analysis as a decision-making tool" (Adams, 2002: 302).

Conclusion

The precautionary principle is one of the principles which are intended to lead sustainable development in the world. Historically, it has evolved as a principle because of a need to prevent evitable harms that may arise from new technologies, products, innovations. The precautionary principle is a good example of two essential components of contemporary environmental policymaking: "a steady shift to more internationalized standard setting and the penetration of environmental principles into non-environmental policy sectors such as trade, industry and energy" (WHO, 2004).

The definition of the precautionary principle is also important because "it explains the idea that scientific uncertainty should not preclude preventative measures to protect the environment" (Borne, 2011). Uncertainty is a part of the scientific development, and this is acknowledged to a greater extent as science progresses. Borne states that (2011) this is "particularly visible in large scale environmental phenomena such as global warming where direct cause and effect relationships are ambiguous and complex."

The precautionary principle ensures that the well-being of society is considered in the decisions in case of scientific uncertainty. "When there is substantial scientific uncertainty about the risks and benefits of a proposed activity, policy decisions should be made in a way that errs on the side of caution with respect to the environment and the health of the public" (WHO, 2004).

When we look at the past, as in the asbestos case, some warnings of the harmful products was given a hundred years ago. However, taking action to prevent these harms took a hundred years, too. If the principle had been implemented in time, substantial harm would have been prevented today. Similarly, if we implement the principle today, a lot of harm will be prevented in the future. That is why precautionary principle is valuable; it helps us to avoid irreparable damage to human health and environment, and it protects us.

Abstract

Precautionary Principle as an Epistemological Problem – Is it Protecting or Paralyzing?

The precautionary principle is one of the principles which are intended to lead sustainable development in the world. Historically, it has evolved as a principle because of a need to prevent evitable harms that may arise from new technologies, products, innovations. We can summarize the precautionary principle as "prevention is better than cure" or "better safe than sorry." There are both critics and supporters of the precautionary principle. Critics argue that it will slow down or stop development of technologies. In this paper, I argue that the precautionary principle protects us from any possible environmental harm, instead of paralyzing us regarding the implementation of new technologies and innovations. I discuss the precautionary principle as an epistemological problem, by answering the criticisms, and also by mentioning the historical evolution of the principle, its definition, its uses in the international agreements, and a case study.

Keywords: Precautionary Principle, Sustainable Development, Environmental Philosophy, Technology

Öz

Epistemolojik Bir Sorun Olarak İhtiyatlılık İlkesi

İhtiyatlılık ilkesi, dünyada sürdürülebilir kalkınmaya yol göstermeyi amaçlayan ilkelerden biridir. Tarihsel olarak, yeni teknolojilerden, ürünlerden, yeniliklerden kaynaklanabilecek önlenebilir zararları engelleme ihtiyacı sonucunda bir ilke olarak gelişmiştir. İhtiyatlılık ilkesi "önleme tedaviden daha iyidir" veya "üzülmektense tedbirli olmak iyidir" cümleleri ile özetlenebilir. İhtiyatlılık ilkesinin hem muhalifleri hem de destekçileri vardır. Muhalifler, bu ilkenin teknolojinin gelişimini yavaşlatacağını veya durduracağını savunmaktadırlar. Bu makalede, ihtiyatlılık ilkesinin yeni teknolojilerin ve yeniliklerin uygulanması konusunda bizi durdurmak yerine bizi olası herhangi bir çevresel zarardan koruduğu iddia edilmektedir. Bu makalede, ihtiyatlılık ilkesi epistemolojik bir sorun olarak ele alınarak, eleştirilere cevap verilerek ve ayrıca ilkenin tarihsel evriminden, tanımından, uluslararası anlaşmalarda kullanılmasından ve bir örnek vakadan bahsedilerek tartışılmıştır.

Anahtar Kelimeler: İhtiyatlılık İlkesi, Sürdürülebilir Kalkınma, Çevre Felsefesi, Teknoloji

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