Governance and Environmental Regulation in Light of Crowdsourcing

Shadi Ghasemi & Sobhan Tayebi

M.A, International Law, Allameh Tabatabai University, Tehran, Iran

University Lecture, Tehran, Iran

A B S T R A C T

Today's generation of biosphere knows well that the requirement of life and existence is nothing but inalienable protection of the inhabited planet and its environment and that extra efforts must be made to maintain it. The issue which the special view towards it has been reflected in the light of sustainable development and has been realized based on the principle of common but differentiated responsibility. This issue is clearly tackled within two outstanding principles: one is the principle of sovereignty, and the other is the standard of regulation. Although states, through the governance and simple roles in the international arena, should, in compliance with the treaty system, prepare the ground for the adherence and implementation of environmental protection norms, the role of citizens in environmental regulation, as well as realization of the principles of participation and sustainable development, is so vital. This study endeavours to show that, with the involvement of citizens in the regulation process, access and dissemination of information, and implementation of international environmental norms and principles, one can be hopeful for the realization of environmental governance and further support and preservation of the biosphere. This research seeks to make a solid critical analysis of governance and environmental regulation in light of crowdsourcing by utilizing library resources. The question of this study is whether the bilateral interaction of environmental governance and crowdsourcing can lead to the complete realization of environmental protection and regeneration. Nevertheless, based on the principle of necessity, the international community should seek to investigate the dimensions of the usage of crowdsourcing in resolving environmental issues.

Introduction

In recent years, the importance of paying attention to environmental issues has been more on the surge than ever. Today, humans, who have already experienced various social, political, economic and technological crises at different stages of history, are still engaged in trial and error in order to find the best solution and plan to tackle these problems and have taken a variety of paths in finding solutions for these crises. In the last half-century, humanity has been involved in a crisis that this time does not have much chance of trial and error to find the best solution to resolve it. The nature of environmental destruction crisis is such that its dreadful impacts are unprecedented than in the past and are also irreparable in many instances.

As environmental problems go beyond borders, and not only do they have irreparable harmful effects on humans and other organisms, but they would also threaten the whole life on the planet, which we know has gone through a long, difficult and unbelievable path to life and then evolution happened as we now know of the earth and its organisms. Environmental issues require a neutral and comprehensive approach and structure that should not be limited by power and a structure which are not restrained by the borders. Therefore, this time, humans will no longer have the opportunity to try out the different ideologies of states or even the ideology and solutions offered by experts and politicians in small groups because they possibly fail to tackle all aspects of the crisis and provide comprehensive solutions.

The participation of more groups of individuals and citizens, while intelligently respecting the principles and structure, can be more accurate and efficient in considering various aspects and mitigating the risk of errors in decision-making in the environmental field. Hence, an attempt is necessary to build a structure to protect the environment through the leadership path of public participation and focus on the voluntary contributions of population groups and then crowdsourcing to be realized by the effective role of governments that are dealing with governance and having the means of legislation and regulation. This process is studied in this research in order to investigate its relationship with the environmental problem. In this regard, we need different and more intelligent tools or methods for the optimal and accurate management of the environment compared to the past. A tool that can provide us with the possibility to take into account all dimensions of complex environmental issues regarding the general practices, regulations and management style. The following discussion deals only with part of the importance of the research and investigation for this tool and the more effective and intelligent methods.

1- Cross-border Environmental Issues That Cross Political Boundaries

In the last few decades, all have revealed the necessity of cross-border protection and its universality. None of the environmental elements, including water, air, animals or traces of hazards and harms, or environmental protection and care can be confined within borders. As the adverse effects of accidents such as oil well fires in Kuwait or the Chornobyl nuclear accident were not limited to the Kuwaiti and Russian borders, so, solving issues such as combating desertification, protecting the ozone layer and sea resources and tackling environmental pollution is not possible with national or even regional efforts, but certainly requires global participation. The broad scope of the impacts and consequences of environmental issues would challenge even the well-established principles, such as the territorial sovereignty of states over environmental resources (Poorhashemi, 2022). As the nature of international environmental principles and procedures show, the principle of sovereignty, which is a customary principle in international law, is based on respect for the maintenance of sovereignty of states under which no state or government may allow its territory to be the land of damage and urgency to other territories. Nonetheless, this has been adequately emphasized in the Trail Smelter arbitration case. In some areas, such as ocean management, finding solutions to global environmental problems may also require challenging the previous assumptions of international law. (Leary and Pisupati, 2010).

As Rosemary Rayfuse Research mentioned, understanding the possibility of destroying marine biodiversity in areas beyond the national jurisdiction would challenge traditional international law principles, such as the high seas being open to all states. Therefore, it is no less than a paradigm shift required to make a proper reaction toward environmental issues in the oceans.

2-Technology, Emerging Phenomena and Environmental Regulation

The increasing role of new technologies in the environment or innovative environmental technologies, especially their precise nature, has made regulating and managing the environment more challenging. Technological progress has changed various political, economic, social and environmental areas. As some scientists have maintained, claims about the certainty of the problem of technical progress speed represent an attitude that is sometimes known as "technological determinism" or, in other senses, technological progress. This indicates that while independent of social forces, technology causes social change and is the opposite of technological determinism or "social constructivism," which assumes that social and cultural forces determine technological changes. Determinism implies that social and political systems can control how new technologies or technical processes evolve (,Hagemann and Other2018). And this kind of optimism equates technological progress with social progress. Many critics of technology in the past century have assumed it as uncontrollable, autonomous, pervasive, and unavoidable. They believed that technology was an independent and rebellious force that would destroy everyone. Today, however, similar arguments are occasionally seen in articles about online privacy and security issues.

Regardless of the fact that which school of thought considers technology as a conduit of freedom or a threat, perhaps the most crucial point of view is the one who consider the unique characteristics of the impacts of technology in the power of social and economic influence in society. On the other hand, these technologies are inherently resistant to control and monitoring, as many researchers have expressed about previous technologies. Technological realities gradually incapacitate the more authoritarian mechanisms that legislators traditionally use for monitoring. In fact, as mentioned above, the attitude of a wide range of scientists and policymakers is that the problem of speed and acceleration of technology against traditional monitoring systems is not only natural, but it is intensifying, and this indicates that

there is a broad consensus in this regard. This consensus *per se* leads to an unbiased search for soft legal practices that can improve the inefficiency of rigorous legal processes.

Researchers should devote their attention to creating a dynamic legislation environment and the legal structure's overall effectiveness. In other words, instead of relying on specific tools in regulation, they should avail themselves of a set of more appropriate tools in order to better design the regulatory system in each case (Hodge and Other, 2010).

In addition to the effect of emerging technologies on regulation, emerging technologies often create challenges for coordinating the regulatory bodies; the reason is widely known as different industries, and sciences intersect with each other in these technologies. Today, it isn't easy to delineate the boundaries of science or industries among most modern technologies because they are multi-dimensional and interrelated. Many of them have standard features and elements that are often built based on each other.

Even more problematic, especially in the case of new applications, is that regulatory classifications or the duties of various regulatory bodies may conflict. That is why most policy-making researchers in the technology field agree that future monitoring of these technologies is ambiguous, as no single entity can adequately manage all the innovative aspects of these emerging technologies. In the past, there could have been cases where traditional law-making institutions sometimes lacked enough information to make the right decisions. But, at present, in a world where a lot of information emerges every few minutes, each one may be effective in decision-making or regulation concerning technical issues. In fact, traditional national and international law-making institutions now have the problem of dealing with large amounts of information, making the norm-making process very difficult for them (Hodge and Other, 2010).

Another issue that should be considered regarding the regulation of modern technologies and their impacts

on the global environment or modern environmental technologies is impartiality, as well as not allowing political opinions and decisions to enter into this field. It is essential to know that the integrity of scientific and technical analysis would be undermined as they are used in order to justify political opinions. Nonetheless, interpreting the data almost always involves the use of subjective judgments. Therefore, predictions and models should be valid in the eyes of those who use such evidence in their decision-making process. Scientific opinions should be unbiased to prove their validity. Furthermore, global policy-making institutions should not expect political recommendations or a definitive interpretation of scientific findings from transnational scientific groups. The best performance of these groups in dealing with global needs is when they present a wide range of scientific research and emphasize the disagreements among the technical experts (Leary and Pisupati, 2010).

Another significant issue is that economic and ecological systems are very complex, and our understanding of them is very primitive and does not allow us to make definitive predictions of the future. Thus, the best way could be for alternative agreements and methods to predict different "futures."

A possible approach to facing uncertainty regarding modern phenomena can be that agreements between countries and non-governmental benefits are dramatically contrasting about the future. It is not necessary to consent to predictions in these agreements; instead, only an agreement must be reached on the appropriate responses provided in the case of events. On the other hand, it should be noted that what will make a difference in the future of international environmental law and global environmental governance is the increasing role of non-governmental actors. Meaningful participation of stakeholders in processes related to the formation of norms of international environmental law is vital. Therefore, as a result of research conducted on the future of international law, the future response of international

environmental law and international environmental management to existing and emerging environmental challenges will necessarily be a multi-dimensional and evolutionary process that, in many cases, uses the existing mechanisms and strengthens them.

3- Collective Role and Public Participation

Many of the questions raised about the developments in the field of new technologies are ultra-scientific in terms of nature. They go beyond risk and risk management and deal with problems such as the application and control of innovations. For example, it is noted that "if there is a concern about the safety of an innovation based on science and expert supervision, there will be general uncertainty about the purposes of using this innovation, and the public's attitude to using that innovation will not have an understanding of the type of scientific doubts and risks." So, the vital challenge in this context is to find a tool through which civil society can involve in the social, political and moral dimensions of a science-based technology and the result of that innovation becomes democratic.

As in the environment and human rights, the "right to environmental information" also entails such issues. Such a challenge goes beyond risk management or innovation management, and its realization is not easy and requires examining a wide range of perspectives or establishing new organizations, as well as extensive activities in the areas of gathering public ideas and, subsequently, creating interactions between people and beneficiaries with technology, (Lewinski, 2005).

Hard effort for public participation is part of the reflection of the speed of innovation growth. However, this can arise from concerns about possible social reactions to using some technologies. Sometimes, this concern is motivated by a tendency to prevent conflict. For example, some countries have evidence that this public engagement is often aimed at increasing the general adoption of technology.

The most effective way is to emphasize broader goals in the context of public participation. When these activities are applied only to ensure the use of new

technologies, the value of participation in the relevant activities and discourse will not be fully realized. Instead, in the context of public participation, one must look for a critical component in the innovation management system. Also, the initiatives that contribute to the functioning of government social intelligence in this regard can be warmly welcomed, including opportunities for discussion among various groups and the general public.

In this regard, to facilitate public participation and discourse, a formal and growing process has been established for achieving these goals. For example, techniques such as Tetracycline-Controlled Transcriptional Activation (RTTA) and Constructive Technology Assessment (CTA), created in the Netherlands, are usually described with three components:

• Conducting social and technical field surveys that are a combination of analysis of stakeholders and regular and dynamic planning;

• Premature but controlled experiments through which to identify the unpredictable effects of specific technologies and, if necessary, reduce;

• Dialogue between experts and the general public to express demands for technology development and innovation (Lewinski, 2005).

Tetracycline-Controlled Transcriptional Activation (RTTA) has the same goal as previously stated, but it usually focuses less on experimentation and more on the process of knowledge development. This method uses measures such as focusing on groups and scenario development to explore the different stakeholders' values and discover possible alternative results. This method uses the forms of social survey research in order to investigate the evolution of science and perceptions and values over time to strengthen communication and identify emerging problems. This social and technical model is used for prospective analysis as it is used in retrospective analysis.

An important feature of systems that support adaptive management, such as Constructive Technology Assessment (CTA) and Tetracycline-Controlled

Transcriptional Activation (RTTA), is making the scenario predict events. This is done through the participation of experts and the general public. Indigenous knowledge helps to ensure that the process is shaped by various social and moral perspectives and considerations as well as scientific and technical ones. Another possibility that will lead to a significant strengthening of the approach of this plan is that if a general meeting is held on the development of new technologies and the results of the meeting can directly affect the approach of managers and policies, the final decision will be a reflection of a desirable plan.

Convening an anticipated consultative meeting can cover a wide range of global perspectives and should be able to examine fundamental questions about the purpose, direction and control of innovation as well as issues related to risk and regulation. This type of meeting is conceptually different from those held by stakeholders gathered with different desires and seeking consensus. (Lewinski, 2005). The importance of governance and proper management of various activities of societies on environmental issues is such that most of the events that international environmental law has successfully managed have benefited from this approach. Maximizing the impact of these diverse efforts requires the maximum participation and participation of all stakeholder communities.

The right to public participation in the decision-making process, access to justice and a range of other factors all play an essential role in strengthening the efficiency of "environmental governance". Therefore, the kind of environmental governance depends on the way decisions are made and how communities and other stakeholders participate which is not easily achievable on a global scale. Especially when we witness that a "kaleidoscopic" international legal and political system is gradually emerging. The system describes how to adapt and balance the needs and demands of all stakeholders and communities, which is a major challenge for the future of international environmental law and, more importantly, international environmental governance (Leary and Pisupati, 2010).

In this regard, it can be noted that although the formation of participatory networks of stakeholders and the general public has been investigated so far, merely creating a partnership network does not guarantee that environmental problems will be effectively addressed. No significant research has been conducted on how participatory governance is arranged, taking into account the different characteristics of ecosystems, the results and the impact that such an approach has on state sovereignty. However, there is no clear understanding of the relationship and harmony between features and issues relating to crowdsourcing and environmental issues. In order to establish coordination between social and environmental elements to solve environmental problems, such collective networks with multiple functions and objectives must seek to strike a favourable balance between many outstanding and possibly contradictory structural features. This requires more efforts to advance unconventional forms of governmental and private leadership focusing more on "network structure" and facilitating its creation than commanding and controlling (Bodin, 2017).

In this way, it can be understood that realization of environmental governance requires the creation of a precise and organized structure so that to be able to transcend borders and state sovereignty and impartially address the integrated global environment and cover all the broad, diverse and changing dimensions and factors affecting the environment. And also, it needs to apply all modern science and knowledge to achieve the most accurate predictions and possible approaches in different environmental change scenarios in ecological management consistent with the speed of change.

Designing such a structure is very difficult because it requires a comprehensive and multi-dimensional attitude that best accommodates all dimensions, facilities and conditions in its layout. Accordingly, achieving the such goal will not be feasible except through the participation and establishment of extensive partnership networks where all experts,

scientists and the general public can present their opinions and findings freely and without bias. And rely on each other's knowledge to achieve the most accurate and complete conclusions and decisions to manage the environment.

4. Crowdsourcing

One of the tools that can be used in effective management and regulation of the environment is the use of the "crowdsourcing" method in different environmental areas. This tool or method, which can be used in other scientific and commercial fields, allows people with different backgrounds, knowledge, experience and perspectives to participate in a particular subject. Crowdsourcing is based on the sense that groups of people can make intelligent decisions and get better results than a small group of professionals or the most intelligent people.

If we would like to define crowdsourcing, it is an activity involving a large population or a large group of people to achieve a common goal. This concept has already been strengthened and expanded by new technologies, social media, and the Internet. Due to the spread of mass communications, it is now possible for everyone to participate in crowdsourced activities under any circumstances. (CrowdsourcingWeek, 2022). In another definition, it has been broadcasted to people and calls for free participation in problem-solving. Different people in the community offer solutions that, the solution or solutions found belong to the institution that has outsourced the problem.

One of the prominent features of crowdsourcing is that people who participate in crowdsourcing can belong to different backgrounds. For example, some amateurs or volunteers work in their free time or experts or small businesses previously unknown to the person who initiated the crowdsourcing (Howe, 2006). Currently, crowdsourcing has mostly been transmitted to the Internet, which provides a very useful place for it. People tend to act more effortlessly on web-based projects that don't get judged or scrutinized physically. Also, because the Internet provides them with a

possibility, people feel more comfortable sharing information. On an online platform, instead of spending a lot of time communicating with other people, you can pay more attention to the specific needs of a project (De Vun, 2009).

Despite the above definition, it is impossible to obtain a comprehensive image of the efficiency and effect that this concept and methodology can contribute to projects and activities related to managing environmental issues regardless of the principles or principles of crowdsourcing. This is because the primary basis for crowdsourcing is crowds wisdom, which means that large and diverse groups can always solve problems better than any individual.
However, groups can only leverage wisdom when composed of many independent thinkers. In groups where no one thinks independently, the members of the group will imitate without thinking critically of others, and the members of the group produce no new things and the mentality of the people become more and more alike. Therefore, as discussed in the general contribution section of the present paper, it is necessary to be independent of the opinions and thoughts of people when participating.

The wisest groups have decentralized structures, meaning that all members can be self-organized and operate in small sub-groups without being controlled by a central leader. However, in the case of a decentralized structure, it will work intelligently to collect and analyze the various results and information obtained from the group member's efforts at a central location so that the people can have a broader view. Taking such a principle into consideration would make it possible to ensure the diversity of opinions and their impartiality and on the other hand, to develop the order needed to collect opinions and evaluation on the subject can be provided. It should be noted, however, that individuals would be willing to cooperate as a group when they believe that they will gain long-term social, political and economic benefits (Surowiecki, J. 2005).

Suppose the challenges and requirements of effective environmental management discussed in this paper are studied along with the definitions and principles of crowdsourcing. In that case, we can then argue that the strict application of these principles when designing the crowdsourcing structure of environmental issues is likely to cover and resolve many of the challenges and existing questions with the potential of crowdsourcing.

In a framework similar to environmental governance, with participatory culture and developed communication technologies, traditional institutions can create transparency and accessibility with digital partnership methods that one of which is crowdsourcing. Although this method still seems new and strange in this field, it can somewhat become a norm. Based on case studies on crowdsourcing in policy-making, it is crystal clear that citizens would like to influence policy, whether constitutional amendments or prioritizing the public services in budgeting.

People like to use digital tools to express their opinions and share their knowledge of related topics. Crowdsourcing, among other collaborative methods, creates new and extraordinary possibilities for citizens to operate in the established political processes. It provides citizens with a new tool to manage their collective behaviour and empowers them to make more evidence-informed political decisions. It also offers new possibilities for citizens to participate in traditional policy-making. Although it remains yet unclear to what extent this method has potential, how it can integrate into everyday political decision-making, and how it will reshape it in the future (Aitamurto,2012).

A report on the use of crowdsourcing for policy-making in Finland noted: "The motivational factors that led to the collective participation were the use of

the possibility of influencing the law, civil responsibility, learning and consulting with peers". The desire to influence the law was considered both an external and internal stimulus. To the extent that, for example, the partnership was aimed at changing the law in its favour to gain more financial gain, and its motivation was external. But when trying to influence the law for social reasons (e.g. the preservation of nature for future generations), the stimulus was internal.

Among the internal factors, a sense of civil responsibility was a powerful motivation, as seen in other forms of political participation, such as voting. In addition, participation in this mode of regulation through crowdsourcing was often seen as a moral obligation and, if done successfully, civil responsibility. Learning and consulting with peers were also among the internal motivations. These factors are similar to those observed in crowdsourcing journalism, citizenship law, and Wikipedia. In contrast, however, the drivers in policy-making through crowdsourcing differ from those seen in other areas of online collectivism and collaboration on a large scale.

Recreation, spending time, pleasure in solving the problem, a sense of creativity and job progress were not seen among the motivational factors of participating in crowdsourcing policy-making. This case shows that participation in Finland research has been experienced primarily as a political action. This was due to concerns for the protection of the rights of individuals, groups or more critical issues such as nature and a sense of civil responsibility. Thus, crowdsourcing for policy-making is different from other collection projects that are often of a "less serious" nature, emphasizing creativity and intellectual stimulation or practicing individual skills (Aitamurto and others, 2017).

As mentioned above, crowdsourcing can be used in various areas where the way of using this method to achieve the goal must follow the principles. Now, considering the definition and foundations of crowdsourcing, as well as observing some of the experiences of applying this method in the realization of democracy and policy making, it was determined to a large extent that the use of crowdsourcing can play an essential role in achieving the goals of governance, management and global environmental norm-making. Looking at environmental issues on the one hand and the potential of crowdsourcing on the other hand, it seems that we can address issues such as: sharing and having access to environmental information, collecting environmental data, and creating a space for comprehensive and detailed research on the problems caused by new technologies and phenomena and the effects of the environment composed of scientists active in the relevant scientific field as well as creating a space for an exchange of ideas about research and decision-making by expert groups or the general public in the following issues.

Crowdsourcing has been used by community participation in forecasts for the future of the environment and selecting potential approaches in response to the realization of any estimates. Although a thorough and details examination of this topic could not be done in this article and should be surveyed meticulously and comprehensively in future research, the obvious thing is that a careful and profound analysis of the issue can make sure that the method of crowdsourcing can be used as a whole for the realization of the more effective management and regulation of the environment.

Conclusion

This research aims to provide a solution for further realizing the goals, principles and aspirations of international environmental law. It endeavours while exploring some of the challenges and needs facing the management and regulation of the environment in the current situation, such as cross-border environmental issues, complex codification of emerging environmental phenomena and the necessity of public

participation, to introduce a tool and method that can cover such challenges and needs as much as possible and provide a solution for each one. Accordingly, crowdsourcing was examined as a method which includes participation platform, solutions, collaberation and cooperation among large groups of individuals in different and diverse issues. Now, after studying and exploring the use and solution which crowdsourcing can have for environmental issues, it can be said that this method, if designed correctly, could lead to the resolution of some issues such as the necessity of public access to environmental information, environmental problems caused by technologies, need for conducting extensive research in this field, need for collective participation and fair decision-making in issues such as the selection of future approach in the environmental field. It seems that an appropriate approach in the future is to thoroughly and meticulously investigate the role of crowdsourcing and then the architecture of the crowdsourcing structure in environmental issues, including the topics to be discussed in future research on the subject of the present study.

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