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The Economic and Environmental Damages Subject To Compensation under Civil Liability in the Nuclear Field

[1]Abdulrahman Ahmad N. Alhathi, [2]Khalid Ali Y. Alshahrani and [3]Ali Muhammad Muhammad Al-Darwbi
[1,2]Assistant Professor in Privet Law, Department of Law, College of Business Administrative, Najran University, Najran, Kingdom of Saudi Arabia.
[3]Phd (Law) from the Islamic University of Medina
[1]aaalharthe@nu.edu.sa, [2]kaalshahrani@nu.edu.sa and [3]Addaroobi27@gmail.com
[1]https://orcid.org/0009-0002-7180-3452, [2]https://orcid.org/0009-0004-5925-4141 and
[3]https://orcid.org/0000-0002-2953-8846

Abstract: *Using an analytical and critical approach, this study explores the economic and environmental damages eligible for compensation under the civil liability regime in the nuclear field. It examines the concepts, types, and methods for assessing such damages. The study finds that nuclear environmental damage includes any harm originating from a nuclear facility that affects the environment or any of its components due to the hazardous properties of nuclear fuel, radioactive materials, or waste. The competent court adjudicating nuclear-related economic or environmental damage has discretionary authority to assess compensation in accordance with provisions set forth in nuclear-specific laws and relevant international agreements.*

The study recommends expanding the scope of compensation for nuclear damage without imposing restrictive limitations, allowing the assessment of compensation to be based on scientific, medical, and evidentiary findings. This ensures that affected individuals are not denied their rightful compensation due to narrow interpretations of nuclear harm.

Keywords: *Nuclear energy, compensation, economic damage, environment, restoration.*

INTRODUCTION

While the traditional view of law emphasizes the protection of human beings and the safeguarding of their rights, this does not imply that legal protection is limited to that aspect alone. In fact, the law also extends to the protection of other vital elements such as property and assets. Although the primary concern of legislators and legal scholars is to protect individuals and ensure their safety, this aim does not preclude expanding the scope of protection to encompass broader areas. The law, therefore, goes beyond merely protecting individuals and includes environmental and natural surroundings as essential components that directly impact human life and its quality.

Consequently, modern legislation has evolved to accommodate this broader perspective, and legal protection now includes humans, property, and the environment, within a holistic framework that acknowledges the significance of each element in building a stable and balanced society.

The term “environment,” in its broadest sense, refers to a set of cultural, civilizational, psychological, and material factors. It differs from “nature” or “natural environment,” which includes elements such as water, air, soil, as well as animals and plants in their original state. As human civilization has advanced, man has introduced new components into the natural environment, most notably urban infrastructure. Therefore, the environment in its comprehensive sense includes both natural elements and those created by humans.

This study analyzes the issue of defining the scope and types of economic and environmental damage that necessitate financial compensation under the civil liability rules applicable to the nuclear sector.

It also examines the legal and technical mechanisms and standards used in determining and calculating compensation. Furthermore, the study highlights the practical challenges associated with identifying

environmentally and economically significant damages subject to civil liability in nuclear incidents.

The objective of this study is to define economic and environmental damage in general, and in the nuclear context in particular, and to identify the types of such damage that warrant compensation under the specialized rules of civil liability for nuclear damage.

RESEARCH METHODOLOGY

This study employs an analytical methodology to examine economic and environmental damages eligible for compensation under the civil liability framework in the nuclear field.

The research aims to clarify the concept of economic and environmental damage in the nuclear context and to identify the types of damage that merit compensation in accordance with nuclear civil liability provisions.

THE CONCEPT OF ECONOMIC AND ENVIRONMENTAL DAMAGE

It is evident that economic damage falls under the broader category of financial harm. It represents the financial losses suffered by the injured party or the gains that were foregone. In tort liability, loss includes the missed benefits of monetarily valuable assets from which the injured party was deprived due to the harmful act (Al-Shoubari, 2016).

Undoubtedly, there is a strong correlation between environmental pollution and the process of economic development and prosperity (Al-Shar'a, 2014).

For instance, in most nuclear incidents, the resulting losses often exceed the value of the nuclear plant itself. A case in point is the partial meltdown at Three Mile Island in Pennsylvania, USA, where nuclear experiments led to damages exceeding $2 billion (Ahmed, 2016).

With regard to environmental damage, it is important to distinguish it from environmental pollution. While pollution always causes harm to the environment, not all environmental damage qualifies as pollution. The term "pollution" is narrower than "damage," as there are many harmful effects on the environment that do not fall within the legal definition of pollution (El-Feel, 2013).

The definitions of environmental damage vary significantly due to its expansive spatial and temporal dimensions, making it difficult to establish a precise and comprehensive definition (Belbali, 2017).

A FEW OF THESE DEFINITIONS ARE SUMMARIZED BELOW

Francis Caballero defined environmental damage as: "any harm directly affecting the environment, regardless of its consequences for persons or property" (Rahmani, 2016).

Similarly, it was defined as: "damage to the natural environment, independent of any human material or physical interest" (Zanka, 2012).

Another definition states: "it is the adverse impact on the environment, including living and non-living entities, caused by an unlawful activity or a lawful one carrying inherent risks" (Abdel Hafiz, 2005).

Furthermore, environmental damage has been described as "harm resulting from a range of natural and human activities that alter the environmental characteristics of a location, directly affecting people's bodies, property, or causing moral harm, while also harming other living or non-living organisms.

Therefore, environmental damage can be defined as present or future harm to any component of the environment resulting from human activity" (Al-Ta'i, 2013).

Conversely, it has also been defined as: "any harm affecting environmental integrity or putting human life at risk" (Hamidani, 2017). According to Abu Amro (2017), environmental damage is "any deterioration or destruction of the environment or one of its components." It is also described as "harm caused by environmental pollution that affects elements of the environment itself, with repercussions on humans and other living organisms".

The Saudi Environmental Law, issued by Royal Decree No. (M/165) dated 19/11/1441 AH, defines environmental harm in Article 1 as: "any adverse effect on the environment that diminishes its environmental or economic value, affects its usability, alters its nature, or causes an imbalance among its elements—whether directly or indirectly".

Therefore, definitions of environmental damage cannot be confined to a single scope, as they vary with the type of environment and sources of harm. Consequently, environmental damage encompasses several key domains, including (Hamida, 2007):

1- Damage to biological diversity.

2- Damage to natural landscapes, resulting in the loss of aesthetic value and tourism resources.

3- Damage causing the loss of economic resources through the destruction of environmental elements.

Nuclear environmental damage, specifically, is defined as harm that affects a component of the ecosystem as a result of a nuclear incident, regardless of its type or extent, or due to nuclear testing or radioactive waste. This type of damage impacts both environmental components and human health (Belbali, 2017).

In brief, nuclear environmental damage refers to any harm caused by a nuclear facility that adversely affects the environment or one of its components due to the hazardous properties of nuclear fuel, radioactive materials, or nuclear waste.

COMPENSATING ECONOMIC AND ENVIRONMENTAL DAMAGES

Article (2) of the Saudi Civil Liability Law for Nuclear Damage stipulates: “For the purposes of implementing this law, the nuclear damage giving rise to civil liability includes: 1. Death or injury; 2. Loss or damage to property. Such damage also includes, as determined by the competent court:

1. Economic loss resulting from such loss or damage;
2. The cost of measures of reinstatement of the impaired environment, unless such impairment is negligible and those measures have already been taken or will be taken;
3. Loss of income derived from the economic benefit of using or enjoying the environment due to substantial impairment;
4. The costs of preventive measures and any loss or damage caused by such measures;
5. Any other economic loss not resulting from environmental damage.”

THESE CATEGORIES OF DAMAGE CAN BE FURTHER ELABORATED AS FOLLOWS

1. Economic Loss Resulting from Loss or Damage:

This refers to non-material damages directly related to death, personal injury, or property loss, such as loss of employment due to bodily injury. Compensation is provided for the financial consequences of such loss.

For the damage to be compensable, a direct “economic interest” in the affected property must exist. Insurance companies often reject claims if no clear, direct relationship exists between the economic loss and the physical harm from a nuclear incident. However, if an economic interest is quantitatively tied to the physical damage, insurers may assess the associated risks (Abdul Latif, 2019).

2. Costs of Environmental Reinstatement Measures:

Unless the damage is negligible and the reinstatement measures have already been or will be taken, compensation is required for restorative efforts. The Saudi law defines such measures as those approved by the competent authorities of the country where they are implemented, aimed at restoring or reviving components of the environment damaged by a nuclear incident. Similarly, Article 1(g) of the 1997

Convention on Supplementary Compensation for Nuclear Damage defines these as reasonable measures approved by competent authorities to restore or replace damaged environmental components. The responsible authority is designated under the national law of the country where the damage occurred. Notably, the intent to return the environment to its pre-incident state must be guided by a reasonableness standard, as full restoration may be scientifically or economically unfeasible (Tony, 2019). The Saudi law does not specify which entity may claim damages for purely environmental harm, but this study suggests delegating such authority to the Ministry of Environment, Water, and Agriculture or relevant national environmental centers.

3. Loss of Income from Economic Use or Enjoyment of the Environment Due to Severe Damage:
This damage type applies where the environment is used for economic activity. Individuals using the environment non-commercially are not eligible for compensation. The lost profit must result from substantial and verifiable environmental degradation, and not merely from fear or rumors. An example includes revenue loss by a beachside hotel that suffers cancellations due to pollution (Abdul Latif, 2019).

4. Costs of Preventive Measures and Any Associated Loss or Damage:
According to Saudi law, preventive measures are actions taken after a nuclear incident, in line with national legislation, aimed at preventing or minimizing nuclear harm. The 1997 Convention includes these as reasonable actions by competent authorities to restore or replace environmental components. Compensation for preventive measures is valid even if the damage did not actually occur, provided there was a serious and imminent threat. Such measures may be taken by private individuals under government orders, or by public authorities such as civil defense units when responding beyond routine public service duties (Ishteyat, 2015). Compensation includes damage caused by implementing these measures, e.g., destruction from heavy machinery or road damage during decontamination operations. The Chernobyl disaster underscored this need, as the USSR claimed damages in other countries were due to those governments' overcautious protective actions, thus not compensable. Notable examples of this damage type include the cost of nuclear fuel disposal (Abdul Latif, 2019).

5. Other Economic Losses Not Arising from Environmental Damage:
These include losses from causes other than environmental degradation, death, personal injury, or property damage. Examples include unofficial public boycotts of goods suspected of radioactive contamination, declines in tourism due to fear, price fluctuations in key commodities like petroleum, gold, or precious metals, and shifts in stock and bond markets. Such losses, while not tied directly to environmental harm, death, or physical injury, still merit consideration (Tony, 2019).

CONCLUSION

Compensable damages under nuclear civil liability include: economic loss from loss or damage, environmental reinstatement costs (unless the damage is minor), loss of income due to environmental impairment, costs of preventive measures and their consequences, and other economic losses unrelated to direct environmental harm.

The extent of compensation is ultimately determined by the competent court, within its jurisdiction and under relevant legal frameworks.

RECOMMENDATIONS

The study recommends aligning compensation amounts with the nature, extent, and diversity of the harm suffered by the victim. It also advocates expanding the scope of compensable nuclear damages, allowing such determinations to be based on scientific, medical, and evidentiary reports.

This ensures that victims are not unjustly denied their right to compensation for nuclear-related harm.

FINDINGS

The findings of the study on economic and environmental damages eligible for compensation under civil liability in the nuclear field are as follows:

1. Economic and environmental damages resulting from the use of nuclear energy constitute a significant aspect of the risks associated with this form of energy.
2. Nuclear environmental damage encompasses any harm originating from a nuclear facility that adversely affects the environment or any of its components, due to the hazardous properties of nuclear fuel, radioactive materials, or nuclear waste.
3. Preventive measures are compensable if undertaken in response to a serious and imminent threat of damage, without requiring the actual occurrence of the damage.
4. The Saudi Civil Liability Law for Nuclear Damage does not specify the competent authority or legal standing in cases of purely environmental damage.
5. The court with jurisdiction over the case involving nuclear economic or environmental damage has discretionary authority to assess damages in accordance with relevant nuclear laws and applicable international conventions.

RECOMMENDATIONS

Based on the results of the study on economic and environmental damages eligible for compensation under civil liability in the nuclear field, the following recommendations are proposed:

1. It is essential to expand the scope of compensation for nuclear damages and avoid limiting or restricting them. Such determinations should be guided by scientific, medical, and evidentiary reports to ensure that affected individuals are not denied their rightful compensation for nuclear-related harm.
2. Environmental reinstatement to the pre-incident state should be subject to the principle of reasonableness, as full restoration may be impossible in certain cases from scientific or practical perspectives.
3. When adjudicating compensation claims, consideration must be given to the nature of the damages suffered by the claimant, as well as the extent and variety of these damages.
4. The study recommends assigning the authority and legal standing in cases of purely environmental damage to the Ministry of Environment, Water, and Agriculture, or to one of the national environmental sector centers.

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