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The Impact of Climate Change on Property Rights and Civil Liability

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The present study aimed to explain and analyze the legal consequences and transformations arising from climate change for two fundamental institutions of private law, namely "property rights" and "civil liability." It sought to answer the central question of how multicausal, gradual, and transboundary climate phenomena have challenged traditional and individualistic legal conceptions and what revisions they necessitate within legislative and judicial systems. This study employed a qualitative approach based on descriptive–analytical methodology, drawing on library research, overarching legal instruments, and an examination of judicial practice. The findings demonstrated that climate-related risks, particularly in the context of crises such as land subsidence, structural drought, and coastal erosion, have shifted the concept of property from one based on exclusive and unlimited dominion (the principle of taslit, or proprietary dominion) toward "function-oriented and ecological property," while simultaneously giving rise to a new challenge known as "regulatory taking." This refers to a situation in which protective regulations, without formally transferring title, completely eliminate the substance and economic benefits of property, thereby making it necessary to apply a three-pronged legitimacy test—comprising legal basis, proportionality, and severity of impact—together with compensatory mechanisms such as Transfer of Development Rights (TDR). From the perspective of civil liability, the classical model of direct causation and the traditional requirement of proving fault have also lost much of their effectiveness in attributing harm because of multicausality, temporal and spatial gaps, and the cumulative release of pollutants. Accordingly, the present study established the necessity of transitioning toward "statistical attribution science," recognizing the doctrine of "proportionate liability," accepting claims for certain future harm, and employing judicial presumptions to alleviate the burden of proof imposed on claimants vis-à-vis polluters and public authorities. Finally, based on an analysis of the normative capacities of the Constitution, particularly Articles 40, 45, and 50, as well as Islamic jurisprudential principles such as la darar (the no-harm principle) and tasbib (indirect causation), it was concluded that the Iranian legal system requires fundamental reforms. These include incorporating an ecological resilience limitation into Article 30 of the Civil Code, recognizing liability arising from increased risk through the introduction of Article 14 bis into the Civil Liability Act, and establishing complementary institutions such as a National Climate Damage Compensation Fund and a progressive universal insurance scheme in order to advance distributive and intergenerational justice.

Keywords: *climate change, property rights, function-oriented property, regulatory taking, civil liability, causation, proportionate liability, environmental damage.*

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1. Introduction

Climate change, as one of the greatest global challenges of the twenty-first century, has profound and wide-ranging effects on property rights and civil liability (Tàbara et al., 2019). This issue concerns the ways in which climate change affects the property rights of individuals and communities, as well as the legal liabilities arising from such changes (Moradi & Ali-Mohammadi, 2021). Given that climate change can give rise to serious economic, social, and environmental crises (Ramezani Ghavamabadi & Mirian, 2023), a deeper understanding of its effects on property rights and civil liability is of particular importance (Seekamp & Jo, 2020). In this regard, the central issue is how climate change may affect property rights and civil liabilities and what consequences it may entail for individuals, communities, and governments. Climate-related phenomena, including rising temperatures, severe storms, floods, and droughts, directly affect human life and the environment (Hemmati Golsafid et al., 2024). These changes can cause substantial financial and social losses, including the destruction of infrastructure, loss of agricultural land, and population displacement. For example, in coastal areas, sea-level rise may result in the loss of residential and commercial land (Khadivi Sohrabi et al., 2020). Accordingly, identifying these effects can contribute to the development of strategies for managing and mitigating the resulting damage. On the other hand, many existing laws and regulations governing property rights and civil liability are not adequately equipped to address the challenges arising from climate change. For example, property law does not specifically address transformations affecting coastal lands or natural resources (Haji Ghasemi Ardabili & Milani, 2019). This lack of legal adaptation can lead to legal conflicts and dissatisfaction, particularly where individuals or communities are affected by climate change and are unable to exercise their rights effectively. Vulnerable communities, including minorities, women, and local communities, are particularly affected by climate change (Jabrani & Morid, 2018). Such communities generally possess fewer resources with which to cope with climate impacts, and their rights may consequently be overlooked. For example, in many regions, climate change may reduce access to water and food, thereby exacerbating social and economic inequalities. Climate change is a global issue whose effects extend beyond national borders. For instance, pollution caused by industrial activities in one country may affect air and water quality in neighboring countries (Amini et al., 2018). Many studies have also pointed to a shortage of empirical data and scientific evidence concerning the actual impacts of climate change. For example, precise information regarding losses caused by floods or storms and their effects on property rights and civil liability is not always available; consequently, such information gaps may impair accurate impact assessment and the formulation of effective policies (Ehsani Korsikola et al., 2022). The development of predictive models can likewise assist in simulating the future effects of climate change on property rights and civil liability. For example, predictive models can demonstrate how rising temperatures or changing precipitation patterns may lead to alterations in land ownership or legal liabilities (Farahmand, 2022). Moreover, the cultural and social effects of climate change on property rights and civil liability have not been sufficiently examined. Climate change may affect the cultural identity of local communities, particularly those that are highly dependent on natural resources (Azizi, 2013).

Climate change, including rising temperatures, changes in precipitation patterns, and the occurrence of extreme weather events, can result in damage to property, land, and natural resources. For example, severe storms and floods can destroy infrastructure and property and thereby affect individuals' property rights (Farahmand, 2022). Such circumstances may give rise to legal disputes concerning property rights, particularly where climate-related losses impair the exercise or enjoyment of ownership rights. Civil liability arising from such losses may likewise generate legal and ethical challenges because determining liability becomes complex when climate change is regarded as a contributing factor. More specifically, the question arises as to whether persons whose activities contribute to climate change should bear responsibility for compensating the losses resulting from those changes.

Climate change can give rise to legal disputes in various ways, thereby creating serious challenges in the fields of property rights and civil liability (Ehsani Korsikola et al., 2022). One of the most significant dimensions of these changes concerns their effects on land ownership. For example, sea-level rise and flooding may result in the loss

of coastal and agricultural lands (Khadivi Sohrabi et al., 2020). Under such circumstances, owners may encounter difficulties in asserting their rights over their land, which may in turn lead to litigation between owners and the government or other institutions (Ramezani Ghavamabadi & Mirian, 2023). In addition, climate change can contribute to severe natural events, such as storms and wildfires, that cause substantial loss of life and property (Farahmand, 2022). In such cases, civil liability may arise for persons who have in some manner contributed to the occurrence of these events (Azizi, 2013). For example, if an industrial company causes an environmental disaster through pollution, affected persons may seek compensation from that company, potentially resulting in legal disputes (Kazemi Darabad, 2017).

Climate change may also lead to changes in laws and regulations governing property rights and civil liability (Moeinian et al., 2020). Such changes may themselves generate legal disputes, particularly where individuals or institutions are unable to adapt to new legal requirements (Moradi & Ali-Mohammadi, 2021). For example, if a new law permits landowners to relinquish certain rights because of climate-related circumstances, disputes may arise regarding the interpretation of that law and the rights of owners (Mirian, 2019). Furthermore, the effects of climate change on commercial contracts and agreements may also result in legal disputes (Hemmati Golsafid et al., 2024). If, for example, a contract for the supply of raw materials is disrupted because of climate change, the parties may seek compensation or modification of contractual terms, which may lead to litigation between them (Ashrafi, 1914).

The role of governments and public institutions is also significant in this context (Amini et al., 2018). Governments may adopt measures to address climate change, such as establishing protected areas or restricting the use of natural resources (Haji Ghasemi Ardabili & Milani, 2019). Such measures may give rise to legal disputes between the government and private owners, particularly where owners believe that their rights have been disregarded (Jabrani & Morid, 2018). Climate change can also lead to violations of human rights, particularly in vulnerable communities (Kazemi Darabad, 2017). If a government is unable to meet basic needs such as water and food because of climate change, the resulting situation may generate legal disputes and even international claims (Azizi, 2013).

The unknown and ambiguous aspects of this research encompass several key dimensions. One such dimension concerns the precise effects of climate change on property rights. For example, how might climate change specifically affect different forms of property rights, including private, public, and common ownership? (Ramezani Ghavamabadi & Mirian, 2023). The criteria for determining civil liability under conditions of climate change must also be examined (Farahmand, 2022). Are existing laws sufficient to determine liability, and are legislative reforms required? Regional differences in the effects of climate change on property rights and civil liability should likewise be considered (Mirian, 2019). Do the effects of climate change on property rights and civil liability differ across geographical regions, and how can such differences be identified? The social and economic effects arising from climate change must also be examined (Hemmati Golsafid et al., 2024). For instance, how can climate change contribute to social and economic inequalities, and what implications does this have for property rights and civil liability?

The key variables in this research include climate change, property rights, civil liability, and climate-related damage. These variables constitute the principal analytical axes of the study, and their detailed examination can contribute to a better understanding of the complex relationships among climate change, property rights, and civil liability (Kazemi Darabad, 2017). More specifically, this research examines various dimensions of the effects of climate change on property rights and civil liability. These dimensions include legal, economic, social, and environmental aspects (Moeinian et al., 2020).

In this study, the independent variable of climate change includes rising temperature as a key parameter, referring to changes in global and local average temperatures that may affect the quality of agricultural products, water resources, and public health (Moradi & Ali-Mohammadi, 2021). The study should examine which ownership rights have been impaired by temperature changes occurring over recent years and what legal challenges these changes have created in Iran. Put differently, it should assess the extent to which existing laws have been able to address such climatic changes and whether they have provided effective mechanisms for

landowners and citizens to reduce their losses (Mirian, 2019).

The parameter of irregular and intense precipitation, including heavy rainfall and drought, may likewise cause financial losses to properties and agricultural lands and affect rights of use and possession (Ehsani Korsikola et al., 2022). As can be observed, for example, drought in many parts of the country has caused citizens to migrate, while earthquakes and floods occurring in recent years have deprived many people of their property rights. In some instances, an entire family has died and no first-degree heir remains, while in other cases these climatic changes have caused forced migration among households (Khadivi Sohrabi et al., 2020). Accordingly, this research seeks to examine the property rights of such persons following natural events throughout the country and to assess the extent to which the law has been capable of improving the situation (Ramezani Ghavamabadi & Mirian, 2023). Moreover, sea-level rise caused by melting ice and the thermal expansion of water may lead to the destruction of coastlines and land situated near the sea and thereby threaten property rights in these areas (Farahmand, 2022). Such lands have often been used for agriculture or construction over many years. Like droughts and floods, sea-level rise can cause widespread and irreparable losses to the population, and the government, as the public authority responsible for protecting society, should work with the legislature to introduce the necessary legal reforms so that the law may respond to changing climatic conditions and provide effective assistance to affected persons (Azizi, 2013).

Natural events such as storms and earthquakes may also, as their frequency and intensity increase, expand the civil liability of owners and companies for resulting damage (Kazemi Darabad, 2017). Changes in ecosystems, including alterations in biodiversity, may affect property rights over natural resources and the manner in which those resources are used (Moeinian et al., 2020). Accordingly, property owners, factory owners, and large enterprises that suffer irreparable losses should benefit from updated laws capable of reducing the burden of such losses on members of society. This objective cannot be achieved without governmental support and the enactment of laws aligned with contemporary climatic changes at the national level (Mirian, 2019).

Furthermore, changes in agricultural patterns resulting from climate change may affect the right to use and exploit agricultural lands and may give rise to litigation among farmers (Hemmati Golsafid et al., 2024). Migration and population displacement resulting from climate change also create new challenges for property rights and civil liability (Ashrafi, 1914). Finally, changes in environmental laws and regulations adopted to address climate change may affect property rights and civil liabilities and create a need for compliance with new legal requirements (Amini et al., 2018).

By examining these dimensions, the research seeks to answer key questions concerning the effects of climate change on property rights and civil liability and to identify approaches for managing these challenges (Ramezani Ghavamabadi & Mirian, 2023). This research can assist policymakers, legal scholars, and researchers in legal and environmental fields in developing a better understanding of the effects of climate change on property rights and civil liability and in proposing effective solutions to address these challenges. Ultimately, the study seeks to enhance public awareness and establish a basis for legal and social discourse concerning climate change and its effects on property rights and civil liability. From the legal perspective, laws and regulations relating to property rights and civil liability in the context of climate change are examined (Khadivi Sohrabi et al., 2020). This examination includes analyzing existing laws and identifying their strengths and weaknesses in responding to climate-related challenges. From the economic perspective, the economic effects of climate change on real estate markets and property rights are analyzed (Moradi & Ali-Mohammadi, 2021). For example, how might climate change reduce property values or increase repair and maintenance costs? From the social perspective, the social effects of climate change on communities and the inequalities arising therefrom are examined (Mirian, 2019). Particular attention is paid to how vulnerable communities are disproportionately affected by climate change and what consequences this has for their property rights. From the environmental perspective, the effects of climate change on the environment and natural resources and their relationship with property rights are analyzed (Kazemi Darabad, 2017). For example, how does the degradation of natural resources

impair property rights, and what consequences does this have for local communities?

2. Definition and Indicators of Climate Change

In recent decades, climate change has become one of the most significant global challenges, with consequences observable across environmental, economic, social, and legal dimensions. In scientific and legal literature, climate change refers to long-term transformations in the Earth's climatic patterns that may result from natural processes or human activities. Contemporary scientific consensus, however, indicates that current climate change is primarily driven by increased greenhouse-gas emissions resulting from human activities such as fossil-fuel consumption, land-use change, and deforestation (Intergovernmental Panel on Climate, 2023).

Within the framework of international environmental law, climate change is also defined as a global phenomenon whose consequences transcend national boundaries and therefore require international cooperation. Accordingly, Article 1 of the United Nations Framework Convention on Climate Change (1992) defines climate change as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods." This definition, which continues to serve as a foundation for many legal analyses and climate-policy frameworks, distinguishes natural climatic variability from climate change attributable to human activity.

From a legal perspective, climate-change indicators play an important role in the formulation of policies and international obligations. For example, Article 2 of the Paris Agreement (2015) identifies its principal objective as holding the increase in the global average temperature to well below 2°C above pre-industrial levels while pursuing efforts to limit the temperature increase to 1.5°C. Achieving this objective requires continuous monitoring of climate indicators and substantial reductions in greenhouse-gas emissions. In addition, Article 7 of the Paris Agreement emphasizes the need to strengthen countries' adaptive capacities in response to the effects of climate change, which likewise requires the use of accurate indicators for assessing climate vulnerability and risk.

At the national level, many countries have established legal and policy frameworks for monitoring climate-change indicators. In Iran, various laws and policy documents concerning the environment and climate change also exist, including the Environmental Protection and Enhancement Act of 1974 and the General Environmental Policies promulgated in 2015, both of which emphasize the necessity of sustainable natural-resource management and action against climate change. In recent years, national climate-change adaptation plans have also emerged as policy instruments intended to reduce the vulnerability of different economic and social sectors to the effects of climate change.

3. Legal, Social, and Economic Consequences of Climate Change

In recent decades, climate change has become one of the most significant global challenges, and its effects are not confined to the environmental sphere but encompass extensive economic, social, and legal dimensions. Rising global temperatures, changing precipitation patterns, sea-level rise, and an increasing incidence of extreme weather events have exposed infrastructure, property, and land in many parts of the world to growing risks. These developments not only cause direct economic losses but also entail significant legal consequences because traditional frameworks of property law, urban planning, and civil liability were often not designed to address climate-related risks. Accordingly, legal scholarship and public policymaking have increasingly focused on examining the effects of climate change on infrastructure and land-tenure systems (Arzanin, 2025).

One of the most important effects of climate change in this field is the increasing vulnerability of critical infrastructure to natural hazards. Infrastructure such as transport networks, energy facilities, water-supply systems, and urban infrastructure plays a fundamental role in the economic and social functioning of societies. However, much of this infrastructure was designed and constructed during periods when contemporary climate risks could not be anticipated. Consequently, increases in the intensity and frequency of phenomena such as floods, storms, and heat waves can cause extensive damage to these systems. Recent reports indicate that climate change may substantially increase the costs of infrastructure maintenance and reconstruction and, in

some cases, may even lead to complete infrastructure failure (Hallegatte et al., 2021).

In addition to public infrastructure, climate change has a significant effect on private property and its economic value. In many coastal regions worldwide, sea-level rise and coastal erosion have exposed properties to the risk of inundation or destruction. Such conditions may reduce the market value of these properties and, in some cases, may even result in the complete loss of their practical utility as property. Economic studies in the United States and certain European countries have shown that properties located in areas vulnerable to flooding or sea-level rise have gradually experienced declining values because prospective purchasers incorporate long-term climate risks into their decision-making (Hino et al., 2021). This trend indicates that climate change may also affect real estate markets and produce substantial economic consequences.

From a legal perspective, these developments raise important questions regarding governmental responsibility for managing climate risks and protecting citizens' property. In many legal systems, governments are responsible for land-use planning and ensuring the safety of infrastructure. As climate risks increase, governments are expected to adopt necessary measures to reduce the vulnerability of exposed areas. Such measures may include restricting construction in high-risk zones, developing flood-resilient infrastructure, and adopting new building standards. At the European level, for example, flood-risk management rules require Member States to prepare flood-risk maps and develop risk-management plans for vulnerable areas (Hallegatte et al., 2021). Such measures demonstrate the increasing attention legal systems are giving to climate-risk management.

The effect of climate change on agricultural land is another major issue in this area. Changes in rainfall patterns, rising temperatures, and prolonged droughts can reduce agricultural productivity and may render some lands unusable. This situation can have significant economic and social consequences for rural communities. In some parts of the world, farmers have been compelled to abandon their land and migrate elsewhere because climatic conditions no longer permit agricultural production (Intergovernmental Panel on Climate, 2023). Such developments affect not only food security but may also transform land-tenure structures and patterns of land use.

Within international environmental law, the protection of land and infrastructure against the consequences of climate change has likewise attracted substantial attention. The Paris Agreement (2015), adopted within the framework of the United Nations Framework Convention on Climate Change, requires states to take measures to enhance their adaptive capacity in response to the effects of climate change. Article 7 of the Agreement specifically emphasizes the importance of strengthening the resilience of infrastructure and economic systems against climate risks. These obligations demonstrate that the international community is gradually developing legal frameworks to address the effects of climate change on infrastructure and economic assets.

From the perspective of urban planning, climate change has increased the importance of the concept of "resilient cities" in urban policymaking. Many major cities worldwide are revising their urban development plans to incorporate climate risks into infrastructure design and land-use planning. For example, some cities have imposed restrictions on construction in coastal or flood-prone areas while increasing investment in green infrastructure, including urban open spaces and stormwater-management systems (Seto et al., 2021). Such measures can help reduce urban vulnerability to climate change.

4. Implications of Climate Change for Property Law, Contract Law, and Civil Liability

In addition to its environmental and economic effects, climate change has profound implications for legal systems. One area directly affected by this phenomenon is private law, particularly property rights, contractual relations, and the rules governing civil liability. The increasing frequency and intensity of natural disasters such as floods, storms, droughts, and large-scale wildfires have confronted many traditional legal concepts with new challenges. Legal systems developed under relatively stable climatic conditions must now respond to circumstances in which natural hazards have significantly intensified and their consequences for property, contracts, and personal liability have become increasingly complex. Accordingly, legal literature in recent years has devoted considerable attention to

examining the effects of climate change on private-law rules (Bakhshandeh, 2019).

In the field of property rights, one of the most significant challenges concerns the decline in security of tenure in areas vulnerable to climate change. For example, sea-level rise in many coastal regions worldwide has caused coastal erosion and the gradual disappearance of coastal land. Under such circumstances, the question arises as to the legal status of ownership where a property is physically destroyed or rendered unusable because of climate change. In some legal systems, traditional real-property rules provide only limited guidance for such circumstances and have primarily addressed gradual natural processes such as accretion or natural erosion. However, the speed and intensity of climate-related transformations may place these rules under significant strain. For example, some countries have considered implementing policies of "managed retreat" from high-risk areas, under which governments may purchase or acquire properties in coastal zones and relocate residents to safer areas (Siders, 2021). Such policies directly engage private property rights and require a balance between the public interest and the individual rights of owners.

Climate change has also created new challenges in contract law. Many commercial and construction contracts have been drafted on the basis of relatively stable climatic conditions, while the increasing frequency of natural disasters may disrupt contractual performance. In such circumstances, contracting parties may invoke doctrines such as "force majeure" or "impossibility of performance." An important question, however, is whether climate-related events can properly be characterized as force majeure. In some cases, courts may reason that because certain climate-related effects are foreseeable, the parties should have accounted for those risks at the time of contracting. Accordingly, many companies and economic institutions have begun revising their contracts to include specific provisions for managing climate risks (Burger & Wentz, 2021).

Climate change has also generated new debates in the field of civil liability. One of the principal issues concerns the liability of governments and corporations for climate-related damage. In recent years, numerous claims have been brought before national and international courts in which plaintiffs have sought to hold governments or major energy companies liable for losses associated with climate change on the basis of their contribution to greenhouse-gas emissions. These proceedings, commonly referred to in legal literature as "climate litigation," are rapidly expanding and may significantly influence the development of civil-liability rules (Peel & Osofsky, 2022).

One important example is *Urgenda Foundation v. State of the Netherlands*, in which the Supreme Court of the Netherlands required the government to adopt more effective measures to reduce greenhouse-gas emissions. The Court reasoned that, under its human-rights obligations, the State was required to protect citizens against risks associated with climate change. The judgment is widely regarded as one of the most significant examples of climate litigation and has had a substantial influence on the expansion of similar proceedings in other jurisdictions (Setzer & Higham, 2022).

In addition to governments, private corporations have increasingly become subject to climate-related litigation. Some such claims are based on the argument that fossil-fuel companies continued to emit large quantities of greenhouse gases despite knowing the environmental consequences of their activities and should therefore bear responsibility for climate-related damage. Although establishing causation between the activities of a particular company and climate-related harm is highly complex, advances in climate modeling have gradually made it possible to examine these relationships with greater precision (Burger et al., 2020).

At the theoretical level, climate change has also raised new questions concerning the scope and foundations of civil liability. In traditional legal systems, civil liability is generally determined on the basis of a direct causal relationship between harmful conduct and the resulting damage. Climate-related harm, however, is usually the cumulative result of activities undertaken by numerous actors over time. This characteristic has led some legal scholars to propose that civil-liability rules should be developed in a manner capable of addressing such complex and widespread harm. For example, approaches such as collective liability or liability based on a party's contribution to the creation of risk have been proposed for use in climate litigation (Gerrard & Wannier, 2021).

5. Legal and Judicial Foundations for Governmental Intervention in Land and Natural Resources

Alongside the principles of Islamic jurisprudence that provide the theoretical framework for restricting property rights within the Iranian legal system, principles of public law and statutory law also play an important role in explaining the legitimacy of governmental intervention in property. Although private property is protected under Iranian law, the government may, where required by the public interest, interfere with this right pursuant to specific laws and regulations. Such interventions generally take the form of economic regulation, urban planning, natural-resource protection, and, in particular circumstances, expropriation for the implementation of public projects. The foundations for such interventions can be found in the Constitution of the Islamic Republic of Iran, ordinary legislation, and general principles of public law (Elahai Sahar, 2025).

One of the most important legal foundations for governmental intervention in property under Iranian law is Article 40 of the Constitution. Under this provision, "No one may exercise his or her own right as a means of causing harm to others or encroaching upon the public interest." This principle represents the legal reflection of the Islamic jurisprudential rule of *la darar* (the no-harm principle) within the Iranian legal system and establishes that the exercise of individual rights, including property rights, must occur within the limits of the public interest and without causing harm to others.

Alongside Article 40, Article 47 of the Constitution directly addresses property. It recognizes the inviolability of personal property acquired through legitimate means and provides that "Private ownership, legitimately acquired, shall be respected. The relevant rules shall be determined by law." Thus, while emphasizing respect for private property, the Constitution also permits its regulation and restriction within a statutory framework. This demonstrates that the constitutional legislature sought to establish a balance between the protection of individual proprietary rights and the necessity of safeguarding the public interest.

Article 44 of the Constitution also plays an important role in defining the framework of property within the Iranian economy. It structures the national economy around three sectors: public, cooperative, and private, and distributes economic activities among these sectors.

Another important constitutional provision serving as a basis for governmental intervention in property is Article 45. This provision concerns *anfal* and public wealth and stipulates that resources such as mines, seas, rivers, forests, rangelands, and other forms of public wealth are placed at the disposal of the Islamic government to be administered in accordance with the public interest. The significance of this provision lies in the fact that it removes certain natural resources from the sphere of private ownership altogether and entrusts their management to the government. The purpose of this approach is to ensure that vital national resources serve the public interest and are protected from exclusive exploitation by private individuals.

In addition to the Constitution, ordinary legislation provides numerous instruments for governmental intervention in property. One of the most important is the 1979 Law on the Manner of Purchase and Acquisition of Land and Property for the Implementation of Public, Development, and Military Programs of the Government. Under Article 1 of this law, where executive agencies require land, buildings, or installations for the implementation of public, development, or military programs, they may purchase or acquire such property in accordance with statutory procedures. Article 3 further provides that the price of the property must be determined by an official expert and paid to the owner. This mechanism, which also exists in many legal systems worldwide, is commonly referred to as expropriation for a public purpose.

6. Reconstructing "Causation" in Civil Liability Arising from Climate Change

In climate-related harm, the central difficulty lies in establishing causation: how can a legally reliable relationship be demonstrated between the conduct of greenhouse-gas emitters or policymakers and a specific injury, such as flooding, heat waves, land subsidence, wildfires, or agricultural losses? A structural feature of climate-related harm is that both the creation of risk and the materialization of damage occur on a scale far beyond the classical model of one act, one injury, and one injured party. Consequently, if the traditional standard of direct and certain causation—understood as exclusive and immediate attribution—is applied without modification, many climate claims will fail at the stage of

establishing causation or attribution (Mohammadi, 2026).

First, climate-related damage is generally multicausal and arises through a lengthy causal chain. Harm is typically the product of accumulated contributions: historical and current emissions from various countries; emissions from numerous enterprises in the energy, industrial, and transport sectors; and governmental decisions such as licensing, subsidies, or failures to regulate. Furthermore, the process through which these emissions increase atmospheric greenhouse-gas concentrations, alter the climate system, increase the probability or severity of an extreme event, and ultimately translate that event into actual damage through such factors as resilience, infrastructure quality, and land use constitutes a multi-stage causal chain (Jahandideh, 2022).

The United Nations Framework Convention on Climate Change (1992) expressly emphasizes the cumulative role of greenhouse gases and the responsibility of states to protect the climate system for present and future generations; Article 3(1) further articulates the principle of common but differentiated responsibilities and respective capabilities. This legal logic itself demonstrates that the problem has from the outset been understood in terms of multiple and cumulative contributions rather than a single causal agent. The Paris Agreement (2015), through the architecture of nationally determined contributions established in Article 4, similarly acknowledges in practice that the reduction of climate risk is the result of aggregated commitments and actions. Consequently, in litigation, the challenge is to move beyond the search for a single cause and instead determine whether a party made a meaningful contribution to the creation of risk or to an increase in the probability or severity of the harm. Otherwise, the classical requirement of an exclusive cause is incompatible with the realities of climate change.

Second, climate-related harm generally involves spatial and temporal separation. Many emissions occur at a particular time and place, whereas their effects on the climate system, subsequent extreme events, and ultimate consequences for individuals' property or health may emerge years or decades later and in a different part of the world. This separation complicates the establishment of foreseeability and proximity, which are used in many systems of civil liability to delimit the scope of responsibility. International environmental law, however, has long been sensitive to transboundary risks. Principle 2 of the 1992 Rio Declaration, consistent with Principle 21 of the 1972 Stockholm Declaration, provides that states have the sovereign right to exploit their own resources but also bear responsibility for ensuring that activities within their jurisdiction or control do not cause environmental damage to other states or areas beyond national jurisdiction. This framework was specifically designed for circumstances in which the source of harm and the location where damage materializes are geographically separated. Similarly, the precautionary principle embodied in Principle 15 of the Rio Declaration establishes that a lack of full scientific certainty should not be used as a reason for postponing preventive measures. In climate litigation, this logic is invoked against excessively stringent demands for absolute causal certainty, although it does not replace the requirement of legal proof.

Third, competing interventions and the involvement of other natural or human factors are almost invariably present. These include natural climate variability, such as El Niño or La Niña; land-use change; deforestation; inadequate watershed management; construction in floodplains; weak building standards; and even actions by injured parties or local governments that reduce or increase vulnerability. Such factors may contribute both to the occurrence of an event and to the conversion of that event into actual damage. Thus, even where the role of anthropogenic climate change in increasing the probability or severity of an event can be demonstrated, a significant legal question remains concerning how much of the loss should be attributed to the defendant or defendants and how much should be assigned to other factors (Davoudi, 2022). At the international level, Article 4(1)(f) of the UNFCCC emphasizes the integration of climate-change considerations into social and economic policies and measures for minimizing adverse effects, thereby recognizing the relationship between climate risk and vulnerability resulting from developmental choices. The issue of loss and damage was also addressed under the UNFCCC through the Warsaw International Mechanism in 2013 and subsequently in Article 8 of the Paris Agreement. Although these instruments do not necessarily establish a direct rule of private civil liability, they demonstrate that the

international community itself understands climate-related loss as a multicausal phenomenon requiring specialized compensatory or managerial approaches. Importantly, Article 8 of the Paris Agreement does not expressly create a basis of liability or compensation for states; this limitation was also emphasized in the decision accompanying the adoption of the Agreement.

The conclusion is that if courts or adjudicatory bodies require causation to be established solely in the traditional sense of direct, proximate, and certain causation—that is, proof that the particular defendant alone, without intermediate causal links, produced the specific harm—causation will fail in many climate cases, particularly actions seeking compensation. This is not necessarily because no genuine causal relationship exists, but because scientific reality and the structure of climate risk do not fit the narrow framework of single-cause and immediate causation. Legal responses developed in scholarship and various judicial approaches generally move toward criteria such as a substantial contribution to risk creation, a meaningful increase in the probability of occurrence, and a distinction between causation of the event and causation of the extent of damage. The precise design of such standards, however, depends on the relevant jurisdiction and the nature of the claim.

7. Analysis of Iranian Domestic Judicial Practice in Disputes Concerning Climate-Related Hazards and Immovable Property

Rapid climate-related transformations across the Iranian Plateau—including recurring flash floods, expansion of land-subsidence zones, collapse of groundwater aquifers, desiccation of wetlands, and changes in coastal zones—have compelled legislative and executive authorities to adopt restrictive regulations governing immovable property. Nevertheless, the Iranian legal system does not formally recognize a classical category of action entitled a "climate-damage claim." Rather, fundamental conflicts between "the regulatory authority of the government to control environmental risks" and "the fundamental proprietary rights of individuals" are litigated either as contentious claims before general civil courts or as applications for the annulment of regulations before the Administrative Justice Court. A close examination of judicial decisions issued by courts of first instance, appellate courts, the Supreme Court, and the General Assembly of the Administrative Justice Court indicates that Iranian judicial practice is developing a form of judicial balancing at the fragile intersection between Article 50 of the Constitution, concerning environmental protection, and Articles 22 and 47, concerning the inviolability and security of legitimate property. The following discussion examines existing judgments and judicial approaches across four principal areas.

The central point of friction between governmental climate-related regulatory measures and immovable property concerns the implementation of the notes to Articles 1 and 2 of the Fair Water Distribution Act of 1982 and its implementing regulations governing the beds and protective boundaries of rivers, waterways, flood channels, and wetlands. Pursuant to Article 45 of the Constitution and Article 2 of the Fair Water Distribution Act, the beds of natural streams and rivers are regarded as belonging to the Islamic government. The principal legal dispute, however, concerns protective boundaries and adjacent lands that, because of changing hydrological regimes and intensified flooding, become subject to new red-line designations by the Ministry of Energy.

In one of its most significant decisions, namely Judgments Nos. 537, 538, 539, and 540 dated October 22, 2006, the General Assembly of the Administrative Justice Court considered complaints submitted by individuals and the General Inspection Organization. In that case, through the Regulation on the Beds and Protective Boundaries of Rivers, Streams, Flood Channels, and Irrigation and Drainage Networks, adopted in 2000 and amended in 2003, the Council of Ministers had extended the administrative authority of the Ministry of Energy beyond natural beds and boundaries to traditional and constructed canals and irrigation networks, thereby restricting the property rights of adjoining owners.

The General Assembly of the Administrative Justice Court, emphasizing the principle of proprietary dominion and the statutory limits on governmental powers, held: "Given that, pursuant to Note 1 of Article 2 of the Fair Water Distribution Act of 1982, the legislature has entrusted the Ministry of Energy with determining the width of the beds and protective boundaries of rivers, natural streams, flood channels, marshes, and natural ponds at each location on the basis of hydrological data and high-water marks … extending this authority to

canals, constructed and traditional waterways, and irrigation and drainage networks exceeds the powers of the executive branch and is contrary to law."

Through this decision, the Court constrained the regulatory boundary and demonstrated that flood-risk mitigation and water-resource regulation cannot serve as a pretext for administrative interference with private rights beyond the express limits established by the legislature.

One of the richest bodies of judicial practice concerning the relationship between water-resource boundaries and private ownership is reflected in Judgment No. 58 dated April 5, 2022, issued by the General Assembly of the Administrative Justice Court concerning the determination of the bed and protective boundary of the Anzali International Wetland. In that case, a notice issued by the Regional Water Company designated a broad area of land possessed by individuals and covered by registered title deeds as part of the wetland's protective boundary, thereby preventing the registration of transactions and acts of possession concerning those lands.

Relying on Article 139 of the Civil Code—"A protective boundary is deemed to be part of the property of the holder of the protected property, and no other person may undertake within it any act detrimental to that boundary …"—and traditional principles of property law, the judicial approach emphasized that classifying land as a "qualitative or quantitative protective boundary of a river or wetland" does not extinguish ownership of the underlying property. In other words, the protective boundary constitutes a public easement intended to protect water resources and prevent flood damage. Accordingly, an executive authority may not treat the protective boundary as if it were the riverbed itself, take possession of land covered by official title deeds without complying with expropriation procedures and paying fair compensation, or deprive the owner of all permissible uses that are compatible with the flow of water.

In response to phenomena such as severe air pollution, urban heat-island effects in major cities, and the need to establish green buffers for climate moderation, administrative authorities—including the Supreme Council for Urban Planning and Architecture and the Article 5 Commissions established under the Law on the Establishment of the Supreme Council for Urban Planning and Architecture—have repeatedly sought to pursue climate-related objectives by redesignating land and gardens as "protective green space" or requiring owners to transfer substantial portions of their property without compensation.

The General Assembly of the Administrative Justice Court has decisively opposed this form of "confiscatory regulation." In Judgment No. 1211 dated February 13, 2018, and subsequently in Judgment No. 14023139000533194 dated May 23, 2023, the General Assembly annulled resolutions of the Supreme Council for Urban Planning and Architecture concerning amendments to Annex III of the Tehran Comprehensive Plan.

The relevant regulation required garden owners who sought to use or construct upon their property to transfer 70% of the garden area to the municipality, free of charge and without consideration, for conversion into public green space.

Relying on Article 22 of the Constitution, which protects property against interference; Articles 30, 31, and 303 of the Civil Code, which prohibit unauthorized interference with another person's property; and the principle that environmental measures intended to preserve urban green zones cannot be conflated with uncompensated deprivation of ownership, the General Assembly annulled the regulation. The clear message of this judicial practice is that where the government or municipal authorities seek to implement environmental-adaptation projects, they must pay the fair current market value of the land, as determined by expert appraisal, pursuant to the 1979 Law on the Manner of Purchase and Acquisition of Land and Property for the Implementation of Public, Development, and Military Programs of the Government. The mere appearance of regulatory action cannot extinguish the right to compensation.

The climate-related crisis of prolonged drought, critical land subsidence in provinces such as Isfahan, Fars, and Khorasan, and the depletion of groundwater aquifers has compelled the Ministry of Energy to exercise its powers under Articles 4, 12, and 26 of the Fair Water Distribution Act by designating "prohibited plains" and reducing authorized extraction rates or rendering agricultural wells economically unusable. These measures have generated substantial contentious litigation before specialized branches of the general civil

courts and the Administrative Justice Court. In the appellate courts of the provinces—particularly branches hearing disputes arising from decisions of the commissions responsible for groundwater matters within regional water authorities under the 2010 Law on Determining the Status of Unlicensed Water Wells—there is an evident tension between environmental law and the rights of water users.

8. Conclusion

Climate change, as a macro-scale ecological phenomenon, has fundamentally challenged the foundations of classical private-law concepts and has compelled the legal order to redefine, both conceptually and normatively, two of its fundamental pillars: the theory of property rights and the legal regime of civil liability. In the sphere of property law, climate change has disrupted the principle of autonomy of will and the exclusive and unlimited character traditionally associated with private ownership. On the one hand, climate-related transformations expose the very object of property rights to destruction, erosion, sea-level encroachment, unpredictable river flooding, and land subsidence; on the other hand, the imperatives of ecosystem survival compel governments to impose recurring and extensive regulatory interventions on the manner in which owners may use and possess their property. Property rights are therefore shifting from a model in which the owner's will was regarded as governing virtually every form of use toward a function-oriented model accompanied by inherent duties of ecosystem preservation and subordinated to the public interest. At the same time, within the sphere of public property and environmental resources, climate change has generated unresolved tensions between the short-term economic exploitation needs of local communities and the long-term intergenerational imperative of preserving public wealth, fundamentally reshaping the physical and normative boundaries of *anfal* and public property.

In the field of civil liability, climate change has rendered the traditional binary and mechanical model of fault and immediate causal connection increasingly inadequate. The classical structure of non-contractual liability, based on attributing a single harmful act to an identifiable actor and a loss confined to a specific time and place, breaks down when confronted with the decentralized, cumulative, gradual, and transboundary nature of greenhouse-gas emissions. This fundamental transformation has led courts and legal scholarship, in pursuit of corrective justice and the prevention of uncompensated harm to climate victims, toward recognition of emerging concepts such as probabilistic causation, liability based on increased risk, and proportionate allocation of liability grounded in statistical attribution science. Within this framework, civil liability is evolving from a mechanism concerned solely with post-injury reparation into a preventive, deterrent, and mandatory instrument directed at major industrial corporations and governments, requiring them to comply with environmental duties of care and to refrain from conduct that creates catastrophic climate risks.

At the individual level, the concrete consequences of these paradigmatic transformations appear as continuing threats to the right to housing security, depreciation of the market value of property, and severe livelihood pressures resulting from the destruction of assets in the absence of coherent judicial and insurance mechanisms. Citizens and small property owners may suddenly face events such as structural deterioration of housing caused by land subsidence or the inundation of agricultural land, while simultaneously encountering evidentiary barriers when attempting to prove the fault of major polluters or public institutions responsible for land and water management. This remedial gap renders individual rights highly vulnerable and prevents injured persons from restoring their pre-damage position. At the human-rights level, climate-related harm can also violate fundamental rights to life, health, and a healthy and sustainable environment, thereby making civil litigation an essential channel for safeguarding fundamental rights and freedoms.

At the community level, the consequences of climate change are directly connected to the reproduction of structural inequalities and the erosion of bonds of civic solidarity. Local communities—particularly inhabitants of peripheral and rural areas and those engaged in agriculture whose livelihoods depend directly on land and natural resources—are among the first victims of declining soil quality and severe shortages of hydrological resources. By undermining the economic capacity of these groups, this process contributes to waves of forced internal migration and the abandonment

of indigenous settlements, which in turn generate informal urban settlement, erosion of social capital, and ultimately serious social tensions and conflicts between communities of origin and destination over limited water and land resources. Moreover, when human communities lose their traditional lands, they also lose cultural identity and longstanding historical connections with territory. Such losses can never be adequately remedied through purely monetary compensation and further demonstrate the need for collective and intergenerational forms of legal solidarity.

At the level of government and public authority, the climate crisis has profoundly transformed the meaning of functional legitimacy and the scope of regulatory powers. Governments are, on the one hand, subject to growing international pressure and domestic constitutional obligations to reduce greenhouse-gas emissions and implement adaptation and resilience policies; on the other hand, they are compelled to impose extensive land-use prohibitions, revoke permits, and mandate retreat from high-risk areas, measures that frequently encounter strong political and legal resistance from private owners. This structural dilemma places governments on a narrow boundary between the legitimate exercise of public-law authority and state torts arising from maladministration. Where governments remain inactive or delay preventive measures, or where they ineffectively implement flood-control measures or aquifer management, public institutions may become subject to administrative-liability claims. Furthermore, the enormous costs of reconstructing damaged infrastructure place substantial pressure on public budgets and compel governments to develop innovative mechanisms for risk redistribution, sovereign reinsurance funds, and reconstructed normative frameworks of property adapted to conditions of climate emergency.

It is proposed that, in order to resolve the apparent conflict between the principle of proprietary dominion and the requirements of environmental protection, a note be added to Article 30 of the Civil Code providing that the exercise of property rights must not result in persistent disruption of ecological cycles, irreversible depletion of aquifers, or aggravation of climate risks in adjacent areas. The proposed provision could state: "The exercise of the right of ownership shall not exceed the ecological resilience capacity of the property or the area in which it is situated, nor shall it cause persistent harm to natural resources, the public interest, or the rights of future generations; otherwise, such conduct shall constitute an abuse of right and shall not enjoy legal protection." This reform would not negate the general scope of Article 30 but, relying on Article 40 of the Constitution and the *la darar* principle, would exclude destructive and unreasonable uses from the protection afforded by property rights. Private ownership would thus remain protected, while an owner could not invoke proprietary dominion as a basis for irreversibly destroying natural capital and the environmental rights of future generations.

It is proposed that an additional provision be inserted into the 1979 Law on the Manner of Purchase and Acquisition of Land and Property for the Implementation of Public, Development, and Military Programs of the Government in order to distinguish between ordinary and legitimate restrictions resulting from climate regulation and circumstances in which regulation effectively empties ownership of its economic substance. Accordingly, where the designation of an ecological buffer zone, a permanent prohibition on construction, a compulsory change of land use, or a restriction imposed through spatial-planning and climate-adaptation instruments permanently eliminates all or the predominant portion of the property's reasonable economic benefits, the situation should be treated as an indirect expropriation, and the relevant public authority should be required to provide fair current market compensation, substitute land, or equivalent financial benefits. This approach is consistent with Articles 22, 40, and 47 of the Constitution and with the reasoning underlying Judgment No. 1211 of the General Assembly of the Administrative Justice Court, and it would prevent the costs of public climate-protection policies from being imposed disproportionately on an individual private owner.

It is further proposed that the Law on the Organization and Procedure of the Administrative Justice Court be amended to require complaints against regulations restricting proprietary rights on environmental or climate-related grounds to be assessed under a three-stage test. At the first stage, the regulatory authority should be required to demonstrate the existence of a real, concrete, and scientifically documented risk. At the second stage, the necessity and proportionality of the

measure, as well as the absence of a less harmful alternative—such as a conditional permit, a technical compliance requirement, or guided land-use conversion—should be established. At the third stage, the intensity of the interference should be assessed in terms of its effects on the value, utility, durability of the right, and the owner's legitimate expectations. Where a restriction effectively deprives ownership of its substantive content, the measure should contain a compensatory mechanism, a transitional period, or an equivalent benefit. This proposal would, on the one hand, prevent arbitrary and opaque regulation by executive authorities and, on the other hand, legitimize interventions necessary to prevent serious climate risks within the framework of the rule of law.

Authors' Contributions

Authors contributed equally to this article.

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In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

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