American Journal of Technology Advancement 2997-9382, Vol 03, No. 08, 2026

Article

Environmental Justice and Natural Resource Exploitation in Developing Countries: Legal Challenges, Prospects for Sustainable Development

Motolani Fadahunsibanjo[1], Oyibo David[2]
[1]*Legal Department, National Space Research and Development Agency, Abuja, Nigeria,*
[2]*National Space Research and Development Agency, Abuja, Nigeria.*
Corresponding Author: davidoyibo08@gmail.com[2]

Abstract: Natural resources constitute an important foundation for economic development in many developing countries. However, the extraction and exploitation of minerals and other natural resources frequently generate significant environmental and social costs, which has made environmental justice an increasingly important concept in natural-resource governance. This review examines the relationship between environmental justice and natural-resource exploitation in developing countries, with particular attention to environmental law, human rights, community participation, resource governance, and sustainable development. The paper reviews the principles of distributive, procedural, recognition, and intergenerational justice and examines their application to mining and critical-mineral exploitation. The review finds that although international and national environmental laws increasingly recognize principles capable of supporting environmental justice, implementation remains constrained by weak institutions, inadequate enforcement, limited community participation, corruption, insufficient environmental monitoring, and unequal bargaining power. The paper recommends stronger environmental regulation, meaningful community participation, transparent resource governance, effective environmental liability mechanisms, equitable benefit sharing, independent monitoring, and improved institutional capacity. Achieving sustainable development requires natural-resource governance frameworks that integrate environmental protection, economic development, human rights, and social justice.

Keywords: Environmental justice; natural resources; environmental law developing countries; sustainable development

This is an open-access article under the CC-BY 4.0 license

1. Introduction

Natural resources play a fundamental role in the economic and social development of developing countries. Minerals, petroleum, natural gas, forests, freshwater, agricultural land, and other environmental resources provide raw materials, energy, employment, government revenue, and opportunities for economic growth. For many developing countries, natural-resource exploitation represents a major source of national income and foreign exchange, particularly in economies that remain dependent on primary commodities [1]; [2]. The World Bank has emphasized the importance of natural capital to long-term economic development, noting that natural resources

and ecosystem services constitute an important component of national wealth, particularly in resource-dependent economies. Similarly, the United Nations Environment Programme recognizes that sustainable management of natural resources is essential for achieving inclusive and environmentally sustainable development. Despite these economic benefits, natural-resource exploitation can generate substantial environmental and social consequences. Mining may result in land degradation, deforestation, soil erosion, groundwater contamination, acid mine drainage, heavy-metal pollution, and biodiversity loss [3]. Petroleum extraction can cause oil spills, gas flaring, habitat destruction, and contamination of surface and groundwater, with particularly serious consequences in areas where local communities depend directly on natural resources for their livelihoods [4]. Forestry activities may contribute to deforestation, habitat destruction, and ecosystem degradation, while excessive groundwater abstraction can reduce water availability, cause land subsidence, and adversely affect aquatic ecosystems [5]; [6]. These impacts demonstrate that the economic value generated by natural-resource exploitation must be assessed alongside its environmental costs. The environmental consequences of resource exploitation are not distributed equally. Communities located close to extraction sites frequently experience environmental degradation, loss of agricultural land, contamination of water resources, displacement, and disruption of traditional livelihoods, while the financial benefits generated by resource extraction may be distributed nationally or captured disproportionately by corporations, governments, and politically influential groups [7]; [8]. This imbalance represents one of the central concerns of environmental justice. Environmental justice broadly concerns the fair distribution of environmental benefits and burdens, meaningful participation in environmental decision-making, and recognition of the rights, cultures, and interests of affected communities [9]. Consequently, environmental justice extends beyond compensation for environmental damage to include questions of procedural fairness, participation, accountability, and recognition. Although the concept of environmental justice emerged prominently from environmental and social movements, it has increasingly become relevant to environmental law, human rights, and sustainable development. The United Nations Human Rights Council has recognized the human right to a clean, healthy, and sustainable environment, reinforcing the relationship between environmental protection, human rights, and social equity. The problem is particularly significant in developing countries, where environmental institutions may be constrained by inadequate funding, weak enforcement capacity, limited technical expertise, insufficient environmental information, and political interference [10]. These institutional weaknesses can reduce the effectiveness of environmental regulations and create conditions in which affected communities have limited opportunities to participate in decisions concerning resource extraction. The problem may be intensified where governments prioritize rapid economic development, employment generation, and foreign investment over effective environmental protection and community participation [11] .Africa illustrates these challenges particularly clearly. The continent possesses substantial deposits of petroleum, gold, lithium, cobalt, copper, uranium, iron ore, and other strategic resources. Natural resources have historically played an important role in the economies of many African countries, although resource dependence has also been associated with environmental degradation, economic vulnerability, governance challenges, and social conflict [12]. These circumstances raise important questions concerning who benefits from resource exploitation, who bears the environmental costs, and how affected communities participate in decisions concerning natural-resource development. The emergence of critical minerals creates a new dimension to these environmental justice concerns. Lithium, cobalt, nickel, copper, graphite, and rare-earth elements are increasingly important for batteries, electric vehicles, renewable-energy systems, electricity networks, and other technologies required for decarbonization [13]. The International Energy Agency has emphasized that clean-energy transitions are significantly increasing demand for several critical minerals and that future supply chains will require substantial expansion of mining and processing capacity. While these minerals are essential for achieving global climate objectives, their extraction can generate significant environmental and social impacts if poorly regulated. International principles such as the precautionary principle, the

polluter-pays principle, sustainable development, intergenerational equity, and the principle of common but differentiated responsibilities provide additional foundations for balancing economic development with environmental protection [14].

This review therefore examines the legal and governance dimensions of environmental justice in natural-resource exploitation in developing countries. It evaluates international environmental principles, national regulatory approaches, community rights, environmental impact assessment, corporate responsibility, and emerging challenges associated with critical minerals. Particular attention is given to the extent to which existing legal and institutional frameworks can ensure that the economic benefits of natural-resource exploitation are balanced against environmental protection and the rights of affected communities. The review argues that sustainable natural-resource governance requirees not only efficient resource development but also equitable distribution of benefits, effective protection against environmental harm, meaningful community participation, and accountability of both governmental and corporate actors.

2. Materials and Methods

This study adopts a doctrinal and qualitative legal research methodology to examine the legal and governance dimensions of environmental justice in natural-resource exploitation in developing countries. The research is primarily based on the systematic examination, interpretation, and analysis of existing legal instruments, international environmental principles, human-rights frameworks, judicial decisions, institutional reports, academic literature, and policy documents relevant to natural-resource governance and environmental protection. The doctrinal approach is appropriate because the study seeks to evaluate the adequacy, effectiveness, and limitations of existing legal and institutional frameworks in balancing economic development, environmental protection, and the rights of affected communities.

The study relies primarily on secondary and documentary sources. International legal instruments, including environmental treaties, declarations, principles, and human-rights instruments, are examined to identify the international legal standards applicable to natural-resource exploitation and environmental justice. Particular attention is given to principles such as sustainable development, the precautionary principle, the polluter-pays principle, public participation, access to information, intergenerational equity, and access to justice. Relevant international and regional instruments, including the Rio Declaration, Sustainable Development Goals, United Nations human-rights instruments, the African Charter on Human and Peoples' Rights, and the United Nations Guiding Principles on Business and Human Rights, are analyzed to determine their contribution to environmental protection and community rights.

The research also examines national legal and regulatory approaches in developing countries, with particular emphasis on environmental legislation, Environmental Impact Assessment (EIA) requirements, natural-resource laws, land and compensation frameworks, pollution-control regulations, community-participation mechanisms, corporate environmental obligations, and legal remedies. Comparative analysis is used to identify similarities and differences among regulatory approaches and to determine the extent to which national legal systems incorporate the principles of environmental justice. The analysis considers both the formal existence of legal rules and their practical effectiveness in addressing environmental degradation and protecting resource-dependent communities.

Conceptual Framework of Environmental Justice

Environmental justice broadly refers to the fair treatment and meaningful participation of all people in environmental decision-making, regardless of socioeconomic status, ethnicity, gender, location, or other social circumstances. The concept recognizes that environmental benefits and burdens are often distributed unequally and that affected communities should have meaningful opportunities to influence decisions that affect their environment and livelihoods. Schlosberg argues

that environmental justice extends beyond the equitable distribution of environmental benefits and burdens to include recognition, participation, and the capabilities required for individuals and communities to achieve a dignified and sustainable life. Similarly, Walker [15] emphasizes that environmental justice involves interconnected concerns relating to distribution, recognition, participation, and the social and institutional processes through which environmental inequalities are produced. In the context of natural-resource exploitation, four major dimensions are particularly important: distributive justice, procedural justice, recognition justice, and intergenerational justice

a. Distributive justice concerns the equitable distribution of environmental benefits and burdens among individuals, communities, regions, and generations. In natural-resource extraction, it addresses questions concerning who receives the economic benefits, who bears the environmental costs, how resource revenues are distributed, and whether affected communities receive adequate compensation for environmental damage and loss of livelihoods. Resource-producing communities may experience pollution, land degradation, displacement, loss of agricultural land, and reduced access to water while receiving only a limited proportion of the economic benefits generated from extraction. Such circumstances can constitute distributive injustice. The problem is particularly significant in developing countries where resource-dependent economies may experience substantial revenues from oil, gas and mineral extraction without corresponding improvements in the socioeconomic conditions of communities located near extraction sites. Fair distribution therefore requires not only financial compensation but also equitable access to employment, infrastructure, public services, environmental benefits, and development opportunities.

b. Procedural justice focuses on the right and ability of affected individuals and communities to participate meaningfully in environmental decision-making. It requires access to relevant environmental information, opportunities to participate in consultations and Environmental Impact Assessments (EIAs), the ability to express concerns before decisions are made, and access to administrative and judicial remedies when environmental rights are violated [16]. Meaningful participation is particularly important in resource-extraction projects because local communities may possess valuable traditional and ecological knowledge concerning land, water resources, biodiversity, and ecosystem changes. The exclusion of communities from decision-making processes can therefore produce environmental injustice even where formal environmental regulations are in place. Effective procedural justice requires that consultation should occur before major decisions are finalized, that information should be accessible and understandable, and that community concerns should have a genuine influence on project design and regulatory decisions.

c. Recognition justice requires governments, corporations, and other institutions to acknowledge the identities, cultures, livelihoods, values, and rights of affected communities. Recognition is particularly important for Indigenous peoples and traditional communities whose cultural practices, livelihoods, and social identities may be closely connected to forests, rivers, agricultural land, mineral resources, and other elements of the natural environment [17]. Failure to recognize these interests can result in environmental injustice even where compensation mechanisms exist. For example, monetary compensation may not adequately address the loss of culturally significant land, sacred sites, traditional livelihoods, or community relationships with ecosystems. Recognition justice therefore requires resource-governance institutions to consider cultural values, traditional knowledge, customary land rights, and the specific vulnerabilities of affected communities when approving and regulating extraction activities.

d. Intergenerational justice emphasizes the responsibility of the present generation to protect environmental resources and ecological systems for future generations. The principle is closely associated with sustainable development and the recognition that current development decisions can create environmental costs that extend far beyond the present generation [18]. This consideration is particularly relevant to non-renewable resource exploitation because mineral, petroleum, and natural-gas resources are finite, while their extraction may generate long-term environmental impacts such as soil degradation, groundwater contamination, biodiversity loss, waste accumulation, and ecosystem alteration. Short-term economic gains may therefore impose long-term

environmental and socioeconomic burdens on future generations. Intergenerational justice requires governments and corporations to consider the long-term consequences of resource extraction, invest resource revenues in sustainable development, rehabilitate degraded environments, and ensure that future generations retain access to essential environmental resources and ecosystem services. These four dimensions are interconnected rather than independent. A resource-extraction project may provide financial compensation to an affected community and therefore appear distributively fair while failing to provide meaningful participation or recognize customary land rights.

Natural Resource Exploitation in Developing Countries

Natural-resource exploitation refers to the extraction, processing, and utilization of environmental resources for economic and developmental purposes. Major sectors include mineral mining, oil and gas extraction, forestry, groundwater exploitation, quarrying, agricultural-resource use, and the extraction of critical minerals. These activities contribute substantially to employment, industrial development, energy supply, government revenue, and economic growth, particularly in resource-dependent developing countries. However, although natural-resource exploitation can generate significant economic benefits, it may also create substantial environmental and social impacts that raise important environmental justice concerns, particularly where the environmental costs are concentrated among communities located close to extraction activities. The environmental impacts of resource exploitation vary across sectors. Gold mining, particularly artisanal and small-scale mining, can cause mercury contamination, land degradation, deforestation, and surface- and groundwater pollution, potentially resulting in serious health risks, ecosystem damage, and livelihood disruption [19]. Lithium mining may involve substantial water consumption, land disturbance, chemical use, and waste generation, creating potential competition over water and land resources, especially in environmentally sensitive and water-scarce regions [20]. Similarly, cobalt mining can contribute to soil and water contamination and has raised concerns regarding occupational safety, labor conditions, human rights, and the displacement or disruption of local communities where mining expands rapidly [21]. Environmental degradation associated with petroleum production may also contribute to displacement, community grievances, and social conflict where affected populations perceive that they bear the environmental burdens of extraction without receiving a fair share of its economic benefits. Similarly, forestry and unsustainable land-use activities can lead to deforestation, habitat fragmentation, biodiversity loss, soil erosion, and ecosystem degradation, thereby threatening the livelihoods of communities that depend on forests for food, fuel, medicine, and income [22]. Coal mining can produce particulate air pollution, land degradation, acid mine drainage, and surface- and groundwater contamination, potentially creating long-term environmental and public-health risks for mining communities. The environmental consequences may persist after mining activities cease where effective mine closure, waste management, and land rehabilitation measures are absent. Excessive abstraction may consequently reduce water availability for domestic use, agriculture, and future generations, particularly in areas experiencing increasing water stress. Quarrying, meanwhile, may generate dust, noise, vibration, landscape degradation, habitat disturbance, and water pollution, with potentially significant consequences for communities living close to quarry sites. These impacts demonstrate the importance of integrating environmental justice principles into natural-resource management and governance. Effective resource governance should seek to ensure that environmental costs and economic benefits are distributed fairly, affected communities have meaningful opportunities to participate in environmental decision-making, and the rights, livelihoods, and cultural interests of vulnerable populations are adequately recognized and protected. Environmental impact assessments, access to environmental information, public participation, effective regulatory enforcement, environmental monitoring, corporate accountability, and access to remedies are therefore important mechanisms for preventing the disproportionate concentration of environmental burdens on resource-dependent communities. Integrating these principles into natural-resource governance is essential for promoting environmentally sustainable, socially equitable, and economically beneficial resource development.

Environmental Impacts of Resource Exploitation

Mining and other extractive activities can significantly modify landscapes through vegetation and topsoil removal, changes in drainage patterns, and increased soil erosion. Such degradation can have serious socioeconomic consequences in communities that depend on land for agriculture and other livelihoods. Water pollution is one of the major environmental consequences of poorly managed resource extraction. Mining activities may release heavy metals, acidic drainage, sediments, processing chemicals, and hydrocarbons into surface and groundwater. Similarly, petroleum extraction can contaminate water resources through spills and leakage. These impacts are particularly serious for communities that depend on local water for drinking, agriculture, and livestock. Air pollution may also result from mining, petroleum production, and mineral processing through the release of particulate matter, sulphur compounds, nitrogen oxides, and other pollutants. Gas flaring in oil-producing areas further contributes to air pollution and greenhouse-gas emissions. Biodiversity loss can occur through vegetation clearance, habitat fragmentation, and ecosystem disturbance. This is significant because ecosystems provide essential services, including water purification, carbon storage, soil formation, flood regulation, food production, and cultural benefits. Waste generation is another major concern, particularly in mining and mineral processing, which produce waste rock, tailings, and other materials. Poorly managed waste and tailings facilities can contaminate surrounding environments and pose significant risks to downstream communities and ecosystems.

Environmental Justice and Human Rights

Environmental justice is closely linked to human rights because environmental degradation can adversely affect fundamental rights, including the rights to life, health, water, food, housing, property, livelihood, culture, and participation in decision-making. The 2022 recognition by the United Nations General Assembly of the human right to a clean, healthy, and sustainable environment represents an important development, providing a stronger normative basis for environmental protection and emphasizing the connection between environmental quality and human well-being [23]. In Africa, the African Charter on Human and Peoples' Rights provides an important legal foundation for environmental protection. Article 24 recognizes the right of peoples to a generally satisfactory environment favorable to their development. This provision establishes an important link between human rights, environmental protection, and sustainable natural-resource governance, particularly in communities affected by extractive activities.

International Environmental Law and Natural-Resource Exploitation

Several principles of international environmental law are important for promoting environmental justice in natural-resource exploitation. Sustainable development requires economic activities to be pursued while protecting environmental integrity and considering the needs of future generations. Reflected in the Rio Declaration and the Sustainable Development Goals, the principle requires natural-resource governance to balance economic development, environmental protection, and social welfare. The precautionary principle provides that the absence of complete scientific certainty should not justify delaying measures to prevent serious or irreversible environmental harm. It is particularly relevant to mining and industrial activities where potential environmental risks may be significant or difficult to reverse. The polluter-pays principle requires those responsible for environmental pollution to bear the costs of preventing, controlling, and remedying environmental damage. Its effective application can strengthen environmental accountability and help prevent affected communities and governments from bearing the costs of private resource-extraction activities. Africa possesses significant natural resources but has historically faced difficulties in converting resource wealth into broad-based sustainable development. Resource-rich regions can experience a phenomenon sometimes described as the resource curse, where dependence on natural resources is associated with governance problems, inequality, conflict, or weak economic diversification. The global transition toward renewable energy and electric transportation is increasing demand for critical minerals like lithium, cobalt, nickel, graphite, copper,

and rare-earth elements, which are important components of many low-carbon technologies. This development creates an environmental justice dilemma. On the one hand, critical minerals are necessary for reducing greenhouse gas emissions. Consequently, the transition from fossil fuels to renewable energy should not simply transfer environmental burdens from one group of communities to another.

Environmental Impact Assessment

Environmental Impact Assessment (EIA) is an important legal and policy mechanism for identifying, evaluating, and managing potential environmental risks before development projects are undertaken. The International Court of Justice has recognized EIA as an important requirement where activities may cause significant transboundary environmental harm. Effective EIA systems should therefore go beyond ecological impacts to consider community livelihoods, public health, cultural heritage, displacement, cumulative effects, and long-term environmental risks. Integrating these social and environmental considerations into project assessment can strengthen environmental protection, public participation, and environmental justice in natural-resource exploitation..

Governance Challenges and Sustainable Development

Several governance challenges contribute to environmental injustice in developing countries. Weak regulatory institutions often result from inadequate funding, equipment, technical expertise, personnel, and institutional independence. Poor enforcement further limits the effectiveness of environmental laws when violations are not properly investigated or sanctioned. Corruption can undermine licensing, inspection, monitoring, and regulatory processes, while limited community participation may prevent affected communities from meaningfully influencing decisions because of inadequate access to technical information and legal expertise. In addition, information asymmetry gives resource companies significant technical and financial advantages over local communities, while weak environmental monitoring makes it difficult to determine pollution levels, identify responsible actors, and establish appropriate compensation. Environmental justice is closely connected to the Sustainable Development Goals (SDGs), particularly SDG 6 on clean water and sanitation, SDG 7 on affordable and clean energy, SDG 10 on reduced inequalities, SDG 12 on responsible consumption and production, SDG 13 on climate action, SDG 15 on life on land, and SDG 16 on peace, justice, and strong institutions. Sustainable development cannot be achieved when economic growth is accompanied by persistent environmental degradation and social inequality. Therefore, natural-resource governance should integrate environmental justice as an explicit policy objective to ensure that environmental benefits and burdens are distributed fairly and that affected communities participate meaningfully in resource-management decisions.

Environmental Justice Challenges and Legal Responses

Environmental-resource exploitation presents several environmental justice challenges that require effective legal, institutional, and governance responses. One major challenge is weak enforcement of Environmental Impact Assessment (EIA) requirements. Although EIAs are widely recognized as important tools for identifying and mitigating the potential environmental and social consequences of development projects, inadequate implementation, monitoring, and enforcement can allow significant environmental damage to occur [24]. Strengthening EIA legislation, regulatory oversight, compliance monitoring, and post-project environmental audits is therefore essential to ensure that environmental assessment becomes an effective decision-making instrument rather than merely a procedural requirement.

a. Inadequate community participation may also result in the exclusion of affected populations from decisions concerning resource-development projects. Communities located near mining, petroleum, forestry, and other extraction activities should have meaningful opportunities to obtain information, participate in consultations, express concerns, and influence decisions that affect their livelihoods and environment. Mandatory and meaningful consultation, accessible environmental information, and appropriate mechanisms for community participation can strengthen procedural justice and improve the legitimacy of resource-governance decisions.

b. Poor compensation mechanisms can further intensify environmental injustice where resource exploitation results in land acquisition, displacement, loss of agricultural production, or disruption of traditional livelihoods. Compensation systems may be inadequate where they fail to account for the full economic, social, cultural, and environmental value of affected resources. Transparent and equitable compensation frameworks should therefore consider not only physical property but also livelihood losses, ecosystem services, cultural resources, and restoration requirements [25]. Compensation should also be accompanied, where appropriate, by livelihood restoration and community-development measures rather than being treated as a substitute for environmental protection.

c. Weak pollution controls represent another significant environmental justice challenge. Mining, petroleum extraction, quarrying, industrial processing, and other resource activities can release pollutants into air, soil, and water, potentially exposing nearby communities to environmental and health risks. Effective regulatory standards, pollution-prevention requirements, continuous compliance monitoring, and appropriate penalties are therefore necessary to prevent and control contamination. The polluter-pays principle provides an important basis for requiring operators responsible for environmental damage to bear the costs associated with pollution prevention, control, and remediation [26].

d. Poor environmental monitoring may allow environmental damage to remain undetected or inadequately addressed for extended periods. Effective monitoring is necessary to determine whether resource-extraction activities comply with environmental standards and whether mitigation measures identified through EIAs are actually implemented. Independent environmental monitoring involving regulatory agencies, scientific institutions, local communities, and, where appropriate, civil-society organizations can improve transparency and accountability. Public disclosure of monitoring results can further strengthen community oversight and enable affected populations to identify and challenge environmental violations.

e. Weak corporate accountability can contribute to persistent pollution, environmental degradation, and inadequate remediation. Resource-extraction companies should be subject to clear environmental obligations, liability regimes, financial assurance requirements, and effective penalties for violations. Corporate responsibility should extend throughout the life cycle of resource projects, including exploration, extraction, processing, closure, and post-closure rehabilitation. The United Nations Guiding Principles on Business and Human Rights emphasize that businesses have a responsibility to respect human rights and should establish or participate in mechanisms through which affected individuals and communities can seek remedies for adverse impacts [27]. Overall, these challenges demonstrate that environmental justice in natural-resource exploitation cannot be achieved solely through the existence of environmental legislation. Effective justice requires implementation, institutional capacity, regulatory independence, transparency, community participation, corporate accountability, and accessible legal remedies. Strengthening these governance mechanisms can help ensure that natural-resource development generates economic benefits without disproportionately imposing environmental and socioeconomic costs on vulnerable communities. A comprehensive approach should therefore integrate EIA enforcement, meaningful public participation, equitable compensation, pollution control, independent monitoring, corporate liability, and recognition of community and customary land rights within a broader framework of sustainable and socially just resource governance.

Prospects for Improving Environmental Justice

Improving environmental justice requires stronger legal, institutional, and participatory frameworks for natural-resource governance. Environmental legislation in developing countries should be regularly reviewed and updated to address emerging forms of resource exploitation, particularly the rapidly increasing demand for critical minerals associated with renewable energy technologies, electric vehicles, and energy-storage systems. Regulatory frameworks should incorporate clear environmental standards, cumulative-impact assessment, rehabilitation

requirements, community safeguards, and mechanisms for addressing the social and environmental risks associated with new extraction technologies. Stronger legislation is particularly important because the expansion of critical-mineral production could reproduce existing environmental inequalities if environmental and social safeguards are inadequate [28]. Environmental regulatory agencies should also have adequate technical capacity, financial resources, personnel, scientific information, and institutional independence to effectively monitor resource-extraction activities and enforce environmental standards. Regulatory effectiveness depends not only on the existence of legislation but also on the capacity of institutions to implement and enforce it consistently. Strengthening regulatory agencies may therefore require investment in environmental monitoring technologies, laboratory facilities, geographic information systems, remote sensing, technical training, data management, and independent inspection systems. Communities should have opportunities to influence project design and mitigation measures from the beginning. Such an approach can improve transparency, accountability, procedural fairness, and public acceptance of resource-development projects [29]. Environmental restoration and rehabilitation should also form an integral component of resource governance. Companies involved in mining, petroleum extraction, quarrying, forestry, and other resource activities should be required to establish adequate financial provisions for rehabilitation before significant environmental damage occurs. Closure plans, reclamation obligations, environmental bonds, and post-closure monitoring can reduce the likelihood that communities and governments will be left with the financial responsibility for restoring degraded environments . Overall, strengthening environmental justice requires an integrated governance approach in which environmental protection, economic development, community rights, and equitable benefit-sharing are addressed simultaneously. Regularly updated legislation, adequately resourced and independent regulatory institutions, meaningful community participation, transparent benefit-sharing, effective environmental restoration, and strong corporate accountability can help reduce inequalities associated with natural-resource exploitation. These measures can ensure that resource development contributes not only to national economic growth but also to sustainable, inclusive, and socially equitable development for resource-producing communities and future generations.

Access to Justice

Access to justice is a fundamental component of environmental justice because affected communities must have effective, affordable, timely, and accessible mechanisms for challenging environmentally harmful activities and obtaining appropriate remedies. Principle 10 of the Rio Declaration recognizes the importance of access to judicial and administrative proceedings, including redress and remedy, particularly for environmental matters. Similarly, the Aarhus Convention establishes important procedural rights relating to access to environmental information, public participation in decision-making, and access to justice in environmental matters. Effective access to justice requires clear legal procedures, affordable litigation mechanisms, access to legal representation, timely judicial or administrative review, and appropriate remedies where environmental harm occurs. Environmental legislation should provide communities with the right to obtain relevant environmental information, participate in regulatory processes, submit complaints, challenge permits or environmentally harmful decisions, and seek judicial or administrative remedies [30]. In natural-resource governance, alternative dispute-resolution mechanisms, environmental tribunals, community grievance procedures, and public-interest litigation can provide less costly and more accessible avenues for resolving environmental disputes. Such mechanisms can be particularly valuable where conventional court proceedings are expensive, technically complex, or geographically inaccessible to rural and resource-dependent communities. The United Nations Guiding Principles on Business and Human Rights emphasize the importance of both judicial and non-judicial grievance mechanisms in providing effective remedies for individuals and communities affected by business-related human-rights and environmental impacts. Access to justice also requires effective enforcement of judicial decisions, regulatory orders, compensation awards, and environmental restoration obligations. A legal right to a remedy has

limited practical value if judgments cannot be enforced or responsible actors are not required to comply with restoration and compensation orders. Remedies should therefore extend beyond financial compensation where appropriate and may include pollution control, restoration of degraded ecosystems, rehabilitation of affected communities, replacement or restoration of lost resources, corrective measures, and prevention of future environmental harm. The principle that environmental damage should be remedied at its source is also consistent with broader environmental-law principles, including the polluter-pays principle. Access to justice is particularly important in developing countries where institutional weaknesses, limited regulatory capacity, poverty, geographical isolation, and unequal bargaining power between corporations and local communities may restrict effective legal protection. Strengthening environmental institutions and ensuring independence, transparency, and accountability in environmental decision-making are therefore essential components of environmental justice. Effective access to justice can consequently improve corporate accountability, deter environmental violations, empower affected communities, and promote transparency and fairness in natural-resource governance.

3. Results and Discussion

The review demonstrates that environmental justice in natural-resource exploitation is influenced by the interaction between environmental protection, economic development, human rights, institutional capacity, and community participation. The findings indicate that the existence of environmental legislation alone does not necessarily guarantee equitable outcomes. In many developing countries, significant gaps remain between formal legal requirements and their practical implementation. These gaps are particularly evident in resource-producing communities where environmental degradation may occur while local populations receive limited economic benefits from extraction activities. The analysis therefore shows that environmental justice should be assessed not only in terms of environmental outcomes but also through distributive, procedural, recognition, and intergenerational dimensions.

Unequal Distribution of Environmental Benefits and Burdens:

A major finding of the review is that natural-resource exploitation frequently produces an unequal distribution of economic benefits and environmental burdens. Mining, petroleum extraction, forestry, quarrying, and other extractive activities can generate government revenues, employment, exports, and infrastructure, but the immediate environmental costs are often concentrated in communities located close to extraction sites. These communities may experience loss of agricultural land, water contamination, air pollution, displacement, biodiversity loss, and disruption of traditional livelihoods. Consequently, national economic benefits may coexist with localized environmental and socioeconomic disadvantages.

The findings indicate that compensation alone is insufficient to achieve distributive justice. Financial payments may compensate for certain forms of property loss but cannot necessarily replace ecosystem services, cultural resources, traditional livelihoods, or long-term environmental quality. A more equitable approach requires transparent revenue-sharing mechanisms, local employment opportunities, infrastructure development, livelihood restoration, environmental rehabilitation, and equitable access to public services. Resource-producing communities should therefore be regarded as stakeholders and beneficiaries of resource development rather than merely as recipients of compensation after environmental harm has occurred.

The review further indicates that procedural justice is a critical determinant of environmental justice outcomes in natural-resource governance. Although many developing countries have formal provisions for Environmental Impact Assessment (EIA), public consultation, access to information, and administrative or judicial review, the effectiveness of these mechanisms depends largely on their practical implementation. Communities located near extraction sites may have limited technical knowledge, financial resources, or access to environmental information, which can place them at a

significant disadvantage when engaging with government agencies and resource-extraction companies. Meaningful participation should therefore extend beyond formal consultation meetings and should provide communities with accessible information, adequate time to evaluate proposed projects, and genuine opportunities to influence project design and mitigation measures. The findings suggest that stronger procedural safeguards can improve transparency, accountability, and public confidence in resource-development decisions.

The analysis also demonstrates that the effectiveness of Environmental Impact Assessment depends not merely on the existence of legal requirements but on continuous monitoring and enforcement throughout the project life cycle. An EIA conducted before the commencement of a project may identify potential environmental and social risks, but its effectiveness can be reduced if mitigation measures are not subsequently implemented or monitored. Resource-extraction projects may also generate cumulative and long-term impacts that are not fully captured by project-specific assessments. Consequently, environmental governance should incorporate post-approval monitoring, periodic environmental audits, cumulative-impact assessment, and transparent disclosure of monitoring results. Such measures can help regulatory authorities determine whether companies are complying with environmental obligations and whether previously identified risks are being adequately controlled.

Another important finding concerns the role of recognition justice in addressing environmental inequalities. The impacts of resource exploitation cannot always be adequately addressed through monetary compensation because communities may have cultural, social, and livelihood relationships with land and natural resources that possess values beyond their market price. Agricultural land, forests, rivers, grazing areas, and other environmental resources may support traditional livelihoods and community identities. Where these interests are not adequately recognized during resource-development decisions, compensation may fail to address the full consequences of displacement or environmental degradation. Environmental justice therefore requires legal and institutional mechanisms that recognize customary land interests, traditional knowledge, cultural values, and the particular vulnerabilities of resource-dependent communities.

Taken together, the findings indicate that environmental justice in developing countries is fundamentally a governance issue rather than solely an environmental-protection issue. The existence of environmental legislation provides an important foundation, but equitable outcomes require effective institutions, transparent decision-making, meaningful participation, reliable monitoring, corporate accountability, and accessible remedies. The analysis suggests that environmental justice is strongest when distributive, procedural, recognition, and intergenerational dimensions are addressed simultaneously. A resource-development model that focuses primarily on extraction and economic growth may generate national benefits while leaving local environmental costs unresolved. In contrast, an integrated governance approach can improve the likelihood that natural-resource development contributes to economic progress while protecting environmental quality, community rights, and the interests of future generations.

4. Conclusion

Natural-resource exploitation remains essential to the economic development of many developing countries, but its environmental and social consequences raise significant environmental-justice concerns. Mining and other resource activities can generate employment, government revenue, and infrastructure while simultaneously producing pollution, land degradation, biodiversity loss, displacement, and livelihood disruption. The central environmental-justice problem arises when the benefits of resource exploitation are distributed widely or concentrated among powerful actors while environmental costs are disproportionately experienced by local and vulnerable communities. International environmental law provides important principles for addressing this imbalance, including sustainable development, precaution, the

polluter-pays principle, public participation, and environmental impact assessment. Human rights frameworks have further strengthened recognition of the relationship between environmental quality and human well-being. Nevertheless, substantial gaps remainin the Integration of satellite remote sensing and environmental law enforcement. Weak institutional capacity, inadequate enforcement, corruption, insufficient community participation, poor environmental monitoring, and unequal bargaining power can undermine otherwise robust legal frameworks. For developing countries, environmental justice should therefore become a central principle of natural-resource governance rather than an afterthought. Stronger legislation, effective enforcement, transparent institutions, meaningful community participation, corporate accountability, environmental restoration, and technological monitoring can contribute to more equitable resource governance. Ultimately, sustainable development will depend not merely on how much natural wealth developing countries extract, but on how fairly, responsibly, and sustainably those resources are govern 1. Environmental laws should be regularly reviewed to address contemporary resource-extraction activities and emerging environmental risks. Communities should participate in environmental decision-making from project planning through operation and closure. Polluters should be required to pay for environmental damage, remediation and restoration. Legal frameworks should recognize legitimate traditional and community interests in land and natural resources. Governments should expand the use of Earth observation, GIS and other geospatial technologies to monitor resource exploitation. Affected communities should have affordable access to courts, administrative tribunals and alternative dispute-resolution mechanisms.

REFERENCES

[1] World Bank, *The Changing Wealth of Nations 2021: Managing Assets for the Future*, 2021.

[2] United Nations Environment Programme (UNEP), *Global Resources Outlook 2019: Natural Resources for the Future We Want*. International Resource Panel, UNEP, 2019.

[3] S. H. Ali, D. Giurco, N. Arndt, E. Nickless, G. Brown, A. Demetriades, R. Durrheim, M. A. Enriquez, J. Kinnaird, A. Littleboy, L. D. Meinert, R. Oberhänsli, J. Salem, R. Schodde, G. Schneider, O. Vidal, and N. Yakovleva, "Mineral supply for sustainable development requires resource governance," *Nature*, vol. 543, pp. 367–372, 2017.

[4] United Nations Environment Programme (UNEP), *Environmental Assessment of Ogoniland*. United Nations Environment Programme, 2011.

[5] UN-Water, *The United Nations World Water Development Report 2022: Groundwater—Making the Invisible Visible*. UNESCO, 2022.

[6] Food and Agriculture Organization of the United Nations (FAO), *The State of the World's Forests 2022: Forest Pathways for Green Recovery and Building Inclusive, Resilient and Sustainable Economies*. FAO, 2022.

[7] D. Schlosberg, *Defining Environmental Justice: Theories, Movements, and Nature*. Oxford University Press, 2007.

[8] J. Martínez-Alier, *The Environmentalism of the Poor: A Study of Ecological Conflicts and Valuation*. Edward Elgar, 2002.

[9] United Nations Human Rights Council, *The Human Right to a Clean, Healthy and Sustainable Environment*. United Nations, 2021.

[10] World Bank, *Environmental and Social Framework*. World Bank, 2017.

[11] OECD, *OECD Due Diligence Guidance for Responsible Business Conduct*. Organisation for Economic Co-operation and Development, 2018.

[12] African Development Bank, *African Natural Resources Center: Catalyzing Growth and Development through Effective Natural Resource Management*. African Development Bank, 2016.

[13] International Energy Agency (IEA), *Global Critical Minerals Outlook 2024*. Paris, France: IEA, 2024.

[14] United Nations, *Rio Declaration on Environment and Development*. Rio de Janeiro, Brazil, 1992.

[15] G. Walker, *Environmental Justice: Concepts, Evidence and Politics*. Routledge, 2012.

[16] United Nations Economic Commission for Europe (UNECE), *Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention)*. United Nations, 1998.

[17] N. Fraser, "Rethinking recognition," *New Left Review*, no. 3, pp. 107–120, 2000.

[18] E. B. Weiss, "In fairness to future generations and sustainable development," *American University International Law Review*, vol. 4, no. 1, pp. 19–34, 1989.

[19] United Nations Environment Programme (UNEP), *Global Mercury Assessment 2023*. UNEP, 2023.

[20] V. Flexer, C. F. Baspineiro, and C. I. Galli, "Lithium recovery from brines: A vital raw material for green energies with a potential environmental impact in its mining and processing," *Science of the Total Environment*, vol. 639, pp. 1188–1204, 2018.

[21] Amnesty International, *This Is What We Die For: Human Rights Abuses in the Democratic Republic of the Congo Power the Global Trade in Cobalt*. Amnesty International, 2016.

[22] Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), *Global Assessment Report on Biodiversity and Ecosystem Services*. IPBES, 2019.

[23] United Nations General Assembly, *The Human Right to a Clean, Healthy and Sustainable Environment*, Resolution A/RES/76/300, 2022.

[24] S. Jay, C. Jones, P. Slinn, and C. Wood, "Environmental impact assessment: Retrospect and prospect," *Environmental Impact Assessment Review*, vol. 27, no. 4, pp. 287–300, 2007.

[25] United Nations, *United Nations Declaration on the Rights of Indigenous Peoples*. United Nations General Assembly, 2007.

[26] OECD, *Recommendation of the Council on Guiding Principles Concerning International Economic Aspects of Environmental Policies*. Organisation for Economic Co-operation and Development, 1972.

[27] United Nations, *Guiding Principles on Business and Human Rights: Implementing the United Nations "Protect, Respect and Remedy" Framework*. New York, NY, USA: United Nations, 2011.

[28] B. K. Sovacool, S. H. Ali, M. Bazilian, B. Radley, B. Nemery, J. Okatz, and D. Mulvaney, "Sustainable minerals and metals for a low-carbon future," *Science*, vol. 367, no. 6473, pp. 30–33, 2020.

[29] G. Pring and S. Y. Noé, "The emerging international law of public participation affecting global mining, energy, and resources development," in *Human Rights in Natural Resource Development: Public Participation in the Sustainable Development of Mining and Energy Resources*, D. Zillman, A. Lucas, and G. Pring, Eds. Oxford, U.K.: Oxford University Press, 2002, pp. 11–76.

[30] D. R. Boyd, *The Environmental Rights Revolution: A Global Study of Constitutions, Human Rights, and the Environment*. UBC Press, 2012.