

18. GREEN INSURANCE SUPPORTING ENVIRONMENTAL SUSTAINABILITY

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Abstract

Climate change, environmental degradation, biodiversity loss, pollution, and the increasing frequency of natural disasters have created significant environmental, social, and economic challenges across the globe. These risks threaten ecosystems, human health, agriculture, infrastructure, and business operations, highlighting the need for innovative financial solutions that support sustainable development. Green insurance has emerged as an important mechanism that integrates environmental sustainability into insurance products, risk management practices, and investment decisions. Unlike conventional insurance, which primarily provides financial compensation after losses occur, green insurance emphasizes risk prevention, climate resilience, and environmentally responsible behavior. Green insurance encourages individuals, businesses, and governments to adopt sustainable practices by offering financial incentives for pollution control, energy efficiency, renewable energy adoption, and compliance with environmental regulations. It covers a wide range of environmental risks through products such as environmental liability insurance, renewable energy insurance, crop insurance, climate-risk insurance, and property insurance for climate-resilient infrastructure. These insurance solutions help reduce financial losses while promoting long-term environmental protection and sustainable economic growth. In developing countries such as India, where climate-related disasters significantly affect agriculture, coastal regions, and urban infrastructure, green insurance serves as an essential financial safety net. It enhances disaster preparedness, supports faster recovery, and encourages investment in resilient infrastructure and clean energy projects. Technological advancements, including artificial intelligence, satellite imagery, Geographic Information Systems (GIS), drones, the Internet of Things (IoT), and big data analytics, have further strengthened green insurance by improving risk assessment, underwriting accuracy, disaster prediction, and claim settlement. Despite its growing importance, challenges such as limited public awareness, regulatory constraints, affordability, and inadequate climate-risk data continue to hinder its widespread adoption. Strengthening policy support, regulatory frameworks, technological innovation, and public-private partnerships is essential for expanding green insurance. Overall, green insurance plays a vital role in promoting environmental sustainability, reducing climate-related risks, supporting resilient communities, and contributing to the achievement of sustainable development goals in an increasingly climate-vulnerable world.

Key Words: *Green Insurance, Environmental Sustainability, Climate Change, Environmental Risk Management, Sustainable Development, Climate Resilience*

Introduction

Environmental sustainability has become one of the most important concerns of governments, businesses, policymakers, researchers, and society in recent decades. Rapid industrialization, urbanization, population growth, excessive consumption of natural resources, and increasing greenhouse gas emissions have placed unprecedented pressure on the Earth's ecosystems. Rising

global temperatures, changing rainfall patterns, melting glaciers, biodiversity loss, deforestation, water scarcity, air pollution, and frequent natural disasters have intensified environmental challenges across the world. These environmental changes are no longer viewed only as ecological issues but have become major economic and financial risks affecting every sector of society. Climate change is considered one of the greatest challenges facing humanity today. According to international scientific assessments, global temperatures continue to rise due to increased concentrations of greenhouse gases in the atmosphere, primarily resulting from human activities such as fossil fuel combustion, industrial production, transportation, and deforestation. The consequences of climate change include frequent floods, cyclones, droughts, heat waves, forest fires, sea-level rise, and unpredictable weather patterns. These disasters lead to enormous economic losses, displacement of communities, destruction of infrastructure, disruptions in agricultural production, and threats to public health. Environmental degradation also affects biodiversity and ecosystem services that support human life. Forests, wetlands, rivers, oceans, and agricultural lands provide food, clean water, climate regulation, and livelihoods for millions of people. However, pollution, habitat destruction, overexploitation of natural resources, and climate change have significantly weakened these ecosystems. Sustainable management of natural resources has therefore become essential for ensuring long-term economic development and social well-being. The financial consequences of environmental degradation are becoming increasingly severe. Governments spend billions of dollars each year on disaster relief, rehabilitation, and reconstruction activities. Businesses experience production losses, supply chain disruptions, property damage, and increased operational costs due to environmental risks. Farmers face crop failures caused by irregular rainfall, droughts, floods, and pest outbreaks. Insurance companies are also experiencing a significant rise in claims arising from climate-related disasters. As a result, environmental risk management has become a major priority for the global insurance industry. Traditionally, insurance has served as a financial mechanism for transferring risks from individuals and organizations to insurance companies. Conventional insurance mainly provides financial compensation after an insured event has occurred. Although this approach helps policyholders recover from losses, it often does not address the underlying environmental causes of increasing risks. Consequently, there has been a growing need for insurance products that not only provide financial protection but also encourage environmental responsibility and sustainable development. Green insurance has emerged as an innovative solution to address this need. Green insurance refers to insurance products and practices that incorporate environmental sustainability into underwriting, investment decisions, risk assessment, and claims management. It encourages policyholders to reduce environmental risks through sustainable practices while providing financial protection against climate-related and environmental hazards. Green insurance integrates Environmental, Social, and Governance (ESG) principles into insurance operations, thereby supporting the transition towards a low-carbon, climate-resilient, and environmentally sustainable economy. Green insurance also supports investments in renewable energy projects such as solar power, wind energy, hydroelectric power, biomass, and green hydrogen. These projects involve significant financial investments and operational risks. Specialized insurance products reduce investment uncertainty by protecting developers against equipment damage, operational interruptions, weather-related risks, and liability claims. This encourages greater private-sector participation in clean energy development.

Recent technological advancements have further strengthened the effectiveness of green insurance. Artificial Intelligence (AI), Machine Learning (ML), Geographic Information Systems (GIS), satellite imagery, drones, remote sensing technologies, the Internet of Things (IoT), blockchain, and big data analytics enable insurers to improve environmental risk assessment, disaster prediction, underwriting accuracy, fraud detection, and claim settlement efficiency. These digital technologies also facilitate the development of customized insurance products tailored to region-specific climate risks. The increasing global focus on Environmental, Social, and Governance (ESG) investing and the United Nations Sustainable Development Goals (SDGs) has further accelerated the importance of green insurance. It contributes directly to several SDGs, including Climate Action (SDG 13), Affordable and Clean Energy (SDG 7), Sustainable Cities and Communities (SDG 11), Responsible Consumption and Production (SDG 12), Life on Land (SDG 15), and Partnerships for the Goals (SDG 17). By promoting environmental responsibility alongside financial protection, green insurance serves as an essential instrument for sustainable economic development.

Statement of the Problem

Environmental sustainability has become one of the most significant global concerns due to the increasing impacts of climate change, environmental degradation, biodiversity loss, pollution, and natural disasters. Over the past few decades, rapid industrialization, urbanization, population growth, excessive exploitation of natural resources, and dependence on fossil fuels have accelerated environmental deterioration. The increasing frequency and intensity of floods, cyclones, droughts, heat waves, landslides, wildfires, and sea-level rise have resulted in enormous economic losses and have adversely affected human lives, ecosystems, agriculture, industries, and infrastructure. Climate-related disasters are no longer isolated environmental events but have evolved into major financial and economic risks that require immediate attention from governments, businesses, and financial institutions. Traditional insurance primarily focuses on compensating policyholders after losses occur. Although this approach provides financial relief following disasters, it does not adequately address the underlying environmental risks that contribute to such losses. As climate-related events become more frequent and severe, insurance companies are facing increasing claims, higher underwriting risks, and growing uncertainty in risk assessment. Consequently, there is a need for an innovative insurance system that moves beyond post-disaster compensation and actively promotes environmental risk reduction, climate resilience, and sustainable development. Green insurance has emerged as an important component of sustainable finance by integrating environmental considerations into insurance products, investment decisions, underwriting practices, and claims management. It encourages businesses and individuals to adopt environmentally responsible practices through financial incentives such as reduced premiums for energy-efficient buildings, renewable energy projects, pollution control measures, and sustainable agricultural practices. It also provides financial protection against environmental liabilities, climate risks, and natural disasters, thereby reducing the long-term economic impact of environmental degradation. Recent research also highlights that green insurance contributes to environmental quality by encouraging cleaner production and supporting green economic transformation. India is among the countries most vulnerable to climate change due to its extensive coastline, dependence on agriculture, diverse climatic conditions, rapidly growing urban population, and increasing industrial activities. Every year, the country experiences severe floods, cyclones, droughts, and

extreme weather events that result in substantial financial losses. Although the Government of India has introduced several environmental policies and climate adaptation programmes, the role of green insurance in supporting environmental sustainability has not yet received adequate academic attention or widespread implementation. The present study therefore seeks to examine how green insurance contributes to environmental sustainability by promoting climate resilience, environmental risk management, renewable energy development, sustainable agriculture, and green economic growth. The study also identifies the major challenges affecting the implementation of green insurance and proposes suitable policy recommendations for strengthening sustainable insurance practices in India and across the globe.

Objectives of the Study

- To understand the concept and significance of Green Insurance.
- To examine the role of Green Insurance in promoting environmental sustainability.
- To analyse the contribution of Green Insurance towards climate change adaptation and environmental risk management.
- To identify the major challenges affecting the implementation of Green Insurance.
- To suggest suitable measures for strengthening Green Insurance as an instrument for sustainable development.

Research Methodology

The present study is descriptive and analytical in nature. It is entirely based on secondary data collected from reliable national and international sources. The study aims to examine the role of green insurance in promoting environmental sustainability by analysing existing literature, policy documents, research reports, and industry publications. The data used in this study have been collected from various secondary sources including books, peer-reviewed journals, research articles, reports published by the Insurance Regulatory and Development Authority of India (IRDAI), United Nations Environment Programme (UNEP), Intergovernmental Panel on Climate Change (IPCC), World Bank, Organisation for Economic Co-operation and Development (OECD), Swiss Re Institute, International Energy Agency (IEA), government publications, conference proceedings, and official websites. Recent studies indicate that green insurance has become an integral component of green finance, supporting environmental protection, renewable energy investment, and climate resilience. The study adopts a conceptual and qualitative approach to understand the evolution of green insurance, its importance, applications, benefits, challenges, and future prospects. Relevant information from previous studies has been critically reviewed to identify research gaps and provide a comprehensive understanding of green insurance practices. Since the study is based exclusively on secondary information, its findings depend upon the availability and reliability of published data. Nevertheless, the study provides a comprehensive overview of the emerging role of green insurance in achieving environmental sustainability and sustainable economic development.

Review of Literature

Green insurance has attracted increasing attention from researchers, policymakers, insurance companies, and international organizations over the last decade. The growing severity of climate change, increasing disaster losses, and the global transition towards sustainable finance have accelerated research on the role of insurance in environmental protection. Recent literature

indicates that green insurance has evolved from a niche concept into an important pillar of sustainable finance and climate risk management.

Lee and Fung (2024) conducted a systematic review of the international green insurance market and examined the institutional challenges affecting its development. Their study found that the growth of green insurance depends on clear regulatory frameworks, standardized definitions, technological innovation, and increased public awareness. The authors concluded that strengthening institutional support would significantly improve the effectiveness and sustainability of green insurance markets

Liu (2024) reviewed domestic and international developments in green insurance and highlighted its role in promoting environmental protection, green industries, and technological innovation. The study emphasized that green insurance encourages efficient allocation of financial resources toward environmentally sustainable activities while supporting high-quality economic development. However, the author identified insufficient product innovation and limited professional expertise as major barriers to future expansion.

You, Wu, and Li (2024) examined the relationship between green insurance and regional environmental quality in China. Their empirical analysis demonstrated that green insurance positively influences environmental quality by encouraging pollution control, reducing industrial environmental risks, and supporting environmentally responsible investments. The researchers concluded that green insurance has become an important policy instrument for improving ecological sustainability and achieving long-term environmental objectives

Muhmad et al. (2024) conducted a systematic review of green finance and renewable energy development. Their findings revealed a strong positive relationship between green financial instruments and renewable energy investment. The study concluded that sustainable finance mechanisms, including green insurance, accelerate renewable energy adoption and contribute significantly to low-carbon economic development through effective risk-sharing arrangements

Khan et al. (2024) carried out a systematic review of green finance and environmental sustainability by analysing hundreds of research articles. Their review showed rapid growth in research on green finance, particularly in Asian countries, and concluded that financial instruments promoting environmental responsibility play an increasingly important role in achieving sustainable development and reducing environmental degradation.

Kumar et al. (2024) explored recent developments in green finance and environmental sustainability through bibliometric analysis. Their study identified climate finance, sustainable investment, ESG integration, renewable energy financing, and green insurance as emerging research themes. The authors suggested that stronger collaboration between governments, financial institutions, and insurance companies is essential for expanding sustainable finance initiatives.

Green Insurance and Environmental Sustainability

Environmental sustainability refers to the responsible use, conservation, and management of natural resources to meet present needs without compromising the ability of future generations to meet their own requirements. It emphasizes maintaining ecological balance, reducing environmental degradation, conserving biodiversity, minimizing pollution, and promoting the sustainable utilization of natural resources. In the twenty-first century, environmental sustainability has become a global priority due to the increasing impacts of climate change, rapid industrialization, urbanization, deforestation, biodiversity loss, pollution, and depletion of natural

resources. Governments, businesses, financial institutions, and international organizations are increasingly recognizing that environmental protection is not only an ecological necessity but also an economic imperative for ensuring long-term sustainable development. The insurance industry has traditionally been viewed as a mechanism for transferring financial risks from individuals and organizations to insurers. However, the increasing frequency and severity of environmental disasters have transformed the role of insurance from a purely compensatory mechanism to a proactive instrument for environmental risk management and sustainable development. Green insurance represents this transformation by integrating environmental sustainability into insurance operations, underwriting policies, investment decisions, claims management, and risk assessment. Rather than simply compensating policyholders after losses occur, green insurance actively encourages environmentally responsible behavior and investments that reduce environmental risks before disasters take place. Green insurance contributes significantly to environmental sustainability by promoting preventive risk management. Insurance companies assess environmental risks before issuing insurance policies, considering factors such as pollution levels, energy efficiency, waste management practices, greenhouse gas emissions, water conservation measures, and compliance with environmental regulations. Organizations demonstrating strong environmental performance often receive lower insurance premiums, broader coverage, or additional incentives. This pricing strategy encourages businesses to invest in cleaner technologies, renewable energy systems, pollution control equipment, and sustainable production methods. Consequently, insurance becomes an economic incentive for environmental responsibility rather than merely a financial compensation mechanism. One of the major contributions of green insurance to environmental sustainability is the promotion of environmentally friendly business practices. Manufacturing industries, construction companies, transportation firms, agricultural enterprises, and energy producers are increasingly encouraged to adopt sustainable technologies to reduce operational risks and insurance costs. Companies implementing environmental management systems, reducing carbon emissions, improving waste recycling, conserving water resources, and using renewable energy sources generally experience lower environmental liabilities. Insurance companies recognize these reduced risks by offering preferential insurance terms, thereby strengthening corporate commitment toward sustainable development. One of the major contributions of green insurance to environmental sustainability is the promotion of environmentally friendly business practices. Manufacturing industries, construction companies, transportation firms, agricultural enterprises, and energy producers are increasingly encouraged to adopt sustainable technologies to reduce operational risks and insurance costs. Companies implementing environmental management systems, reducing carbon emissions, improving waste recycling, conserving water resources, and using renewable energy sources generally experience lower environmental liabilities. Insurance companies recognize these reduced risks by offering preferential insurance terms, thereby strengthening corporate commitment toward sustainable development. Green insurance further promotes environmental sustainability by supporting renewable energy development. Transitioning from fossil fuels to renewable energy sources such as solar, wind, hydroelectric, biomass, and geothermal energy is essential for reducing greenhouse gas emissions and mitigating climate change. However, renewable energy projects involve considerable financial and operational risks, including equipment failure, weather uncertainties, technological failures, and construction delays. Specialized renewable energy insurance products

reduce these investment risks by providing comprehensive financial protection throughout project development and operation. Consequently, investors gain greater confidence in financing clean energy projects, thereby accelerating the global transition toward low-carbon economic development. Technological innovation has considerably enhanced the effectiveness of green insurance in promoting environmental sustainability. Artificial Intelligence (AI), Machine Learning, Geographic Information Systems (GIS), satellite remote sensing, drones, Internet of Things (IoT) devices, blockchain technology, and big data analytics enable insurers to conduct accurate environmental risk assessments, monitor environmental changes, predict natural disasters, detect fraudulent claims, and improve underwriting efficiency. These advanced technologies facilitate data-driven decision-making while enabling insurance companies to develop customized insurance products tailored to region-specific environmental risks. Improved technological capabilities enhance disaster preparedness, accelerate claim settlements, reduce operational costs, and strengthen environmental resilience. Green insurance also contributes directly to the achievement of the **United Nations Sustainable Development Goals (SDGs)**. It supports **SDG 7 (Affordable and Clean Energy)** by encouraging investments in renewable energy; **SDG 11 (Sustainable Cities and Communities)** through climate-resilient infrastructure; **SDG 12 (Responsible Consumption and Production)** by promoting resource-efficient business practices; **SDG 13 (Climate Action)** by enhancing climate adaptation and disaster resilience; **SDG 15 (Life on Land)** by supporting biodiversity conservation; and **SDG 17 (Partnerships for the Goals)** by fostering collaboration among governments, insurers, financial institutions, industries, and civil society organizations. Thus, green insurance serves as an important financial mechanism for integrating environmental sustainability into national and global development strategies. Despite its significant contributions, achieving widespread environmental sustainability through green insurance requires supportive regulatory frameworks, effective climate policies, improved public awareness, technological innovation, and collaboration among governments, insurance companies, financial institutions, industries, and local communities. Expanding green insurance coverage, strengthening ESG integration, improving climate-risk data, and encouraging sustainable investments will further enhance the capacity of insurance markets to contribute toward environmental protection and sustainable economic development.

Green Insurance and Climate Change

Climate change has emerged as one of the most critical global challenges of the twenty-first century, affecting economies, ecosystems, human health, agriculture, industries, and infrastructure. The increasing concentration of greenhouse gases (GHGs) in the atmosphere due to rapid industrialization, urbanization, deforestation, and excessive dependence on fossil fuels has resulted in rising global temperatures and significant climatic changes. These changes have intensified the occurrence of extreme weather events such as floods, cyclones, droughts, heat waves, wildfires, landslides, and sea-level rise. The economic and social consequences of these disasters have increased substantially, causing severe damage to livelihoods, property, public infrastructure, biodiversity, and national economies. In response to these growing risks, the insurance industry has recognized the need to shift from a reactive approach of compensating losses after disasters to a proactive strategy that promotes climate resilience and environmental sustainability. Green insurance has emerged as a vital financial instrument in supporting climate change mitigation and adaptation while reducing the financial burden associated with climate-related disasters. Green

insurance integrates climate-related risks into insurance products, underwriting practices, investment decisions, and claims management. Unlike conventional insurance, which primarily focuses on compensating policyholders after an insured event occurs, green insurance aims to reduce the likelihood and impact of climate-related losses by encouraging sustainable practices and improving resilience. It supports investments in renewable energy, climate-smart agriculture, energy-efficient buildings, sustainable transportation, and environmentally responsible industrial operations. Through these initiatives, green insurance contributes not only to financial protection but also to the long-term reduction of greenhouse gas emissions and climate risks. In the Indian context, climate change presents serious challenges due to the country's geographical diversity, long coastline, dependence on agriculture, and rapidly growing urban population. India frequently experiences cyclones along its eastern and western coasts, floods in river basins, droughts in semi-arid regions, landslides in mountainous areas, and heat waves across several states. These disasters result in significant economic losses every year. Green insurance has become increasingly important in supporting India's climate adaptation efforts by providing financial protection for farmers, industries, infrastructure projects, renewable energy investments, and vulnerable communities. Government initiatives such as the National Action Plan on Climate Change (NAPCC), renewable energy programmes, and disaster risk management policies further strengthen the role of sustainable insurance in achieving national climate goals. Green insurance also contributes to achieving international climate commitments. It supports the objectives of the Paris Agreement by encouraging investments in low-carbon technologies and reducing climate-related financial risks. It contributes directly to the United Nations Sustainable Development Goals (SDGs), particularly SDG 13 (Climate Action), SDG 7 (Affordable and Clean Energy), SDG 11 (Sustainable Cities and Communities), and SDG 12 (Responsible Consumption and Production). By integrating climate considerations into financial decision-making, green insurance serves as a bridge between environmental protection and sustainable economic development.

Green Insurance and ESG

Environmental, Social, and Governance (ESG) is a framework used to evaluate an organization's commitment to sustainable and responsible business practices. In the insurance sector, ESG principles have become increasingly important as insurers incorporate environmental protection, social responsibility, and ethical governance into their underwriting, investment, risk management, and operational decisions. Green insurance is closely aligned with ESG because it promotes environmentally sustainable projects, encourages responsible business practices, and strengthens long-term financial resilience. Overall, green insurance and ESG are closely interconnected. Green insurance serves as a practical tool for implementing ESG principles by promoting environmental protection, social well-being, and responsible corporate governance. As climate risks continue to increase, the integration of ESG into insurance practices will play a vital role in achieving sustainable development, supporting climate resilience, and facilitating the transition to a low-carbon and environmentally sustainable economy. Muhmad et al. (2024) conducted a systematic review of green finance and renewable energy development. Their findings revealed a strong positive relationship between green financial instruments and renewable energy investment. The study concluded that sustainable finance mechanisms, including green insurance, accelerate renewable energy adoption and contribute significantly to low-carbon economic development through effective risk-sharing arrangements.

Green Insurance in India

India is one of the world's fastest-growing economies, but it is also among the countries most vulnerable to climate change and environmental degradation. The country's diverse geographical features, long coastline of over 7,500 kilometers, dependence on agriculture, rapidly expanding urban centres, and increasing industrial activities expose it to a wide range of environmental risks. Floods, cyclones, droughts, heat waves, landslides, and erratic monsoon patterns have become more frequent and severe, resulting in significant economic losses and affecting millions of people every year. These challenges have increased the importance of integrating environmental sustainability into the financial sector, particularly the insurance industry. Green insurance has therefore emerged as an important tool for managing climate-related risks while promoting sustainable economic development. India's commitment to environmental sustainability has been strengthened through several national policies and international agreements. The Government of India has adopted various initiatives such as the National Action Plan on Climate Change (NAPCC), the National Green Hydrogen Mission, **the** National Solar Mission, the Pradhan Mantri Fasal Bima Yojana (PMFBY), and the Disaster Management Act, 2005. These programmes aim to reduce greenhouse gas emissions, promote renewable energy, strengthen disaster resilience, and support sustainable agriculture. Green insurance complements these initiatives by providing financial security for climate-resilient projects and encouraging investment in environmentally sustainable activities. India has also become one of the world's leading producers of renewable energy. Large-scale investments in solar parks, wind farms, hydropower projects, and green hydrogen initiatives require specialized insurance products to protect against operational, technological, and environmental risks. Insurance companies now provide coverage for solar photovoltaic plants, wind turbines, hydroelectric projects, and other renewable energy infrastructure. These insurance products reduce financial uncertainty, attract investors, and facilitate the transition toward clean energy.

Findings of the Study

- **Green insurance has emerged as an important component of sustainable finance.** It extends beyond traditional insurance by integrating environmental sustainability into underwriting, investment decisions, and risk management practices.
- **Green insurance supports environmental sustainability by encouraging eco-friendly practices.** Insurance companies provide financial incentives such as lower premiums and better coverage to organizations adopting renewable energy, pollution control measures, energy-efficient technologies, and sustainable resource management.
- **Climate change has increased the importance of green insurance.** The growing frequency of floods, cyclones, droughts, heat waves, and other climate-related disasters has highlighted the need for innovative insurance solutions that strengthen climate resilience and disaster preparedness.
- **Green insurance promotes renewable energy development.** Specialized insurance products for solar, wind, hydropower, and other renewable energy projects reduce investment risks, encourage private participation, and facilitate the transition toward a low-carbon economy.
- **The agricultural sector benefits significantly from green insurance.** Crop insurance schemes protect farmers against climate-related losses while promoting climate-smart agriculture, efficient water management, soil conservation, and sustainable farming practices.

Suggestions

- **Strengthen the regulatory framework for green insurance.** The Government of India and the Insurance Regulatory and Development Authority of India (IRDAI) should formulate comprehensive guidelines and policies that encourage insurers to develop and promote green insurance products.
- **Increase public awareness and financial literacy.** Awareness campaigns should be conducted through educational institutions, media, insurance companies, and government agencies to educate citizens, farmers, and businesses about the importance and benefits of green insurance.
- **Develop innovative green insurance products.** Insurance companies should introduce specialized policies covering renewable energy projects, electric vehicles, green buildings, carbon markets, biodiversity conservation, sustainable agriculture, and climate adaptation.
- **Promote premium incentives for environmentally responsible practices.** Businesses and individuals adopting energy-efficient technologies, pollution control systems, renewable energy, and sustainable production methods should be rewarded with lower insurance premiums and enhanced coverage.
- **Expand insurance coverage for renewable energy projects.** Comprehensive insurance solutions should be developed to support investments in solar, wind, hydroelectric, biomass, and green hydrogen projects, thereby encouraging clean energy development.

Conclusion

Green insurance has emerged as a transformative financial instrument that integrates environmental sustainability with risk management and insurance practices. Unlike conventional insurance, which primarily focuses on compensating financial losses after disasters occur, green insurance adopts a proactive approach by encouraging environmental protection, climate resilience, and sustainable development. It supports individuals, businesses, industries, farmers, and governments in managing environmental risks while promoting environmentally responsible behaviour. As climate change continues to intensify and natural disasters become more frequent, the importance of green insurance in building resilient economies and sustainable societies has increased significantly. The study reveals that environmental degradation, biodiversity loss, pollution, and climate-related disasters have created substantial financial and social challenges across the globe. Green insurance addresses these challenges by integrating environmental considerations into underwriting, investment decisions, risk assessment, and claims management. It encourages organizations to adopt cleaner technologies, renewable energy systems, pollution control measures, and sustainable production practices through financial incentives such as lower insurance premiums and improved policy coverage. Consequently, green insurance functions not only as a mechanism for financial compensation but also as a catalyst for environmental conservation and sustainable economic growth. One of the major contributions of green insurance is its role in climate change mitigation and adaptation. By supporting renewable energy projects, green infrastructure, climate-smart agriculture, and disaster-resilient construction, green insurance reduces climate-related financial risks and facilitates the transition toward a low-carbon economy. Specialized insurance products for solar, wind, hydropower, crop protection, environmental liability, and sustainable infrastructure encourage investments in environmentally friendly projects while strengthening resilience against extreme weather events. These initiatives directly contribute to reducing greenhouse gas emissions and achieving long-term environmental sustainability. The findings of this study demonstrate that

green insurance contributes significantly to renewable energy development, sustainable agriculture, environmental liability management, disaster risk reduction, climate adaptation, and green infrastructure development. It encourages environmentally responsible business practices while strengthening financial resilience against environmental risks. Furthermore, green insurance supports the achievement of several United Nations Sustainable Development Goals (SDGs), particularly SDG 7 (Affordable and Clean Energy), SDG 11 (Sustainable Cities and Communities), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), and SDG 15 (Life on Land). Thus, it serves as an effective policy instrument for integrating environmental sustainability into economic and financial systems.

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