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ORIGINAL RESEARCH PAPER

Assessing Environmental Performance in the Banking Industry: Moving Towards Green Banking

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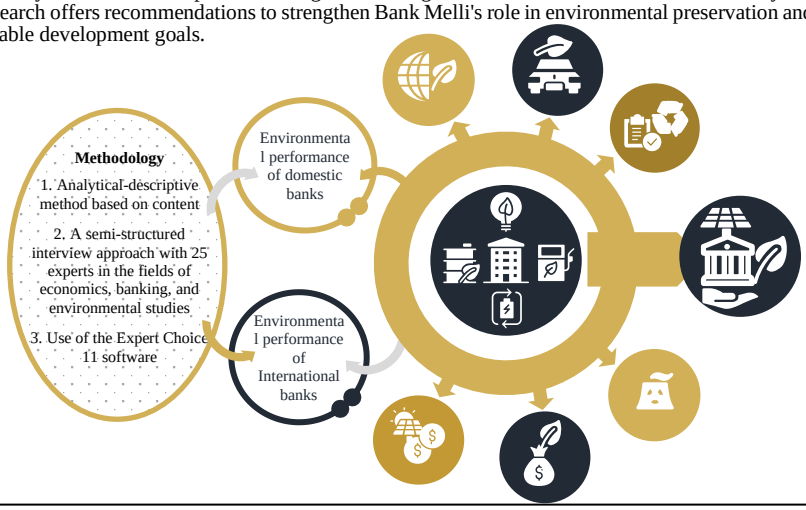
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A B S T R A C T

Global concerns about climate change have increasingly drawn the attention of the banking industry to environmental performance. In this context, the concept of Green Banking has emerged as a key strategy for mitigating negative environmental impacts and promoting investment in sustainable development projects. Given its central role in achieving environmental sustainability, green banking has become one of the main priorities in the policies of financial institutions. This study aims to evaluate the environmental performance of banks in the context of sustainable development. The research employs an analytical-descriptive method based on content analysis, combined with semi-structured interviews with 25 experts in the fields of economics, banking, and environmental science. Additionally, Expert Choice 11 software was used to support the analysis. The study focuses on both domestic banks (Parsian Bank, Tejarat Bank, Mellat Bank, Cooperatives Development Bank, and especially Bank Melli Iran) and international banks (Triodos Bank, NatWest, BNP Paribas, and GLS Bank). The findings indicate that by adopting green strategies and advancing sustainable financial services, Bank Melli can not only enhance its environmental performance but also attract new customers and boost its brand reputation. This requires the development of systems for assessing the risk of environmental project performance, allocating resources to green projects, and designing and offering green financial products. Furthermore, collaboration with other institutions and non-governmental organizations can significantly contribute to the promotion of green banking and foster innovation within the industry. Ultimately, this research offers recommendations to strengthen Bank Melli's role in environmental preservation and advance sustainable development goals.



1. Introduction

Environmental crises, such as the degradation and scarcity of natural resources, have intensified in recent years, turning pollution control and the sustainable use of resources into critical global challenges. Increased global attention to environmental issues has placed pressure on all industries, particularly the financial sector—especially banks—to move toward greening their operations. Since the banking sector is one of the main sources of financing for many industries and businesses, it is essential for it to incorporate the transition to green banking into its strategies, in order to protect the environment and promote sustainable and economic development [1–2].

Environmental Impact Assessment (EIA) is a systematic process that involves identifying, analyzing, and evaluating the positive and negative effects of projects and economic activities on the environment prior to their implementation. The goal of this process is to ensure that the environmental impacts of these activities are fully understood and taken into account in the final decision-making [3]. The general stages of an Environmental Impact Assessment include project identification, impact identification, impact evaluation, mitigation measures, and decision-making.

The project identification phase includes defining the scope, nature, and characteristics of the project. The impact identification phase involves

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examining and analyzing the potential effects of the project on environmental factors such as water, air, soil, biodiversity, and human communities. It then estimates the magnitude and significance of these positive and negative impacts. Based on this assessment, mitigation measures are proposed to reduce adverse effects. Finally, the Environmental Impact Assessment report is submitted to the relevant authorities, who make the decision to approve or reject the project [4, 5].

The banking industry, as part of the financial sector, has a relatively small but profound impact on the environment; therefore, banks can play a central role in determining the level of environmental sustainability in various industries and projects through their lending policies and investment decisions. These influences can either accelerate or slow down progress toward sustainability goals. This is why banks hold significant power in guiding economic and environmental development pathways [6, 7].

Since the development and dissemination of green technologies are essential for improving energy efficiency, achieving energy savings, reducing greenhouse gas emissions, and realizing sustainable economic and environmental development, businesses entering the field of green innovation not only help address environmental and social challenges, but also have a significant impact on achieving long-term sustainable economic growth. Therefore, if a bank finance polluting industries and businesses, it is certainly contributing to environmental degradation [8]. As such, banks must play an active role in this area and encourage investors to allocate capital toward environmentally friendly industries. These investments should be structured in a way that ensures the adoption of appropriate technologies and management systems for environmental protection [9].

Given its vital role in financing large-scale projects and the direct impact of these projects on the environment, the National Bank of Iran should take action to develop and implement an Environmental Impact Assessment (EIA) policy. Projects that are financed through bank loans can lead to habitat destruction, pollution of natural resources, and increased greenhouse gas emissions. By preparing an EIA document, the National Bank of Iran will be able to identify environmental impacts and propose appropriate mitigation measures before approving any project. This process will help the bank remain committed to global obligations regarding climate change reduction and biodiversity conservation. Moreover, adopting such an approach can enhance the bank's credibility as a responsible and forward-thinking institution in the field of sustainability, ensuring that its economic activities align with the goals of sustainable development.

Many business activities have a significant impact on environmental performance, and Table (1) addresses some of the most important environmental performance indicators. These include the use of eco-friendly products, reduction of pollution and carbon emissions, improvement of energy and resource efficiency, and the management of hazardous materials. Carbon and gas emission taxes can have a negative impact on the profitability and efficiency of organizations. The best criterion for measuring the environmental efficiency of businesses is the optimal use of resources. Environmental performance can be assessed at the national, corporate, and banking levels [3].

Table 1. Environmental performances.

Performance
Mitigation of greenhouse gas emissions
Waste management
Energy saving
Water resources management
Conservation of biodiversity and natural resources
Life cycle assessment
Environmental regulations
Reporting and transparency
Education and awareness

Source: See Ref. [2].

This performance includes the sustainable management of natural resources and training employees to reduce energy and carbon consumption, particularly in banking activities related to sustainable development.

The environmental performance of banks refers to their role and responsibilities in managing and mitigating negative environmental impacts. In recent years, sustainability and social responsibilities have received widespread attention in banking activities [1]. The environmental performance of banks can be categorized into several key areas, which are presented in Table (2).

Table 2. Main axes of environmental performance of banks.

Axes
Sustainable financing
Green financial products
Environmental management of the environment
Digital banking and reducing environmental impacts
Adoption of environmental criteria in investments
Clear environmental reporting
Participation in community - based projects

Source: See Ref. [1].

The banking industry affects environmental performance in two ways: internally and externally. Internal impacts include energy and water consumption, as well as waste generation, which are well recognized. On the other hand, external impacts, particularly through financing industries and projects, play a significant role in environmental outcomes [10]. Some of the key areas of environmental performance impacts are presented in Table (3).

Table 3. Main axes of impacts of environmental performance.

Axes
Energy consumption and carbon emissions reductions in banking operations
Participate in corporate social responsibility programmes
Publishing green bank bonds
Providing green loans
Green deposit accounts inaugurated
Investing in environmentally friendly projects
Environmental risk management

Source: See Ref. [3].

The successful implementation of environmental regulations and standards in the banking industry faces numerous challenges, particularly in developing countries. These challenges include limited customer awareness of environmental issues, inadequate technological infrastructure, and the need for stronger mechanisms to monitor and effectively enforce such regulations. Addressing these challenges requires a multi-dimensional approach, which entails active collaboration among regulatory authorities, financial institutions, and society at large [11]. Approximately 85% of Iran's financial system relies on banks [12]. In this context, regulatory bodies should continue to strengthen their policy-making and supervisory frameworks, while financial institutions should focus on enhancing their internal capacities and developing innovative solutions in the field of green financing [13].

The entry of global banks into the renewable energy sector represents a significant and strategic move that has notable impacts on the global economy and environment. This trend has emerged in response to global policy changes, economic shifts, and growing concerns about climate change and the depletion of fossil fuel resources. In recent years, global banks have played a key role as major investors in renewable energy projects.

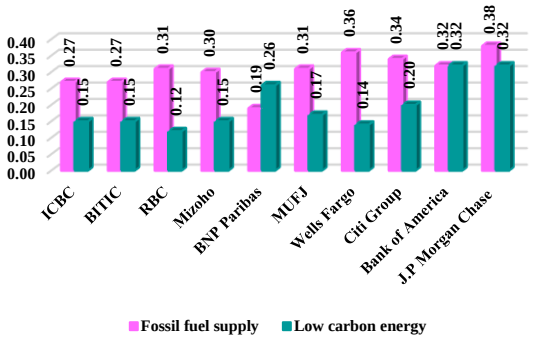


Figure 1. World bank entry experience of renewable energy.
Source: See Ref. [9].

As shown in Figure (1), in the fossil fuel energy financing sector, JPMorgan Chase Bank leads with $37.9 billion, while ICBC Bank has the lowest with $26.6 billion. In the low-carbon energy financing sector, Bank of America has the highest investment at $32.3 billion, and RBC Bank has the lowest entry [13].

This study has been conducted with the aim of evaluating the environmental impacts in the banking industry and proposing a framework for developing an environmental policy document for the National Bank of Iran. By reviewing and analyzing existing documents and studies related to environmental issues and their financial implications, the research seeks to provide a deeper and more comprehensive understanding of the subject. The proposed analytical framework enables a realistic assessment and facilitates the development of appropriate solutions for the future of the banking industry. Furthermore, examining previous studies in this field helps to accurately identify research gaps and establish the position of this paper within the relevant domain.

Liu et al. [8], in their paper titled "The Impact of Green Innovation on Firm Performance: An Analysis Based on Fundamental and Strategic Green Innovations," found that fundamental green innovation improves financial performance, while strategic green innovation reduces it. Both types of innovation enhance environmental performance, but strategic green innovation is more effective. These effects are weaker in state-owned firms and regions with higher environmental concerns.

Gulzar et al. [4], in their paper titled "Green Banking Practices and Environmental Performance: Guiding Banks Toward Sustainability," concluded that green banking—encompassing employee-related methods, operational procedures, customer interactions, and policy compliance—significantly contributes to promoting green financing and leads to substantial positive outcomes.

Haibo et al. [11], in their paper titled "The Impact of Banks' Financial Performance on Environmental Performance in Africa," using the Granger causality test method, found a bidirectional causal relationship between carbon emissions and bank credit, as well as between carbon emissions and bank deposits. Given that sustainability has become one of the fundamental challenges of the modern era, this study provides comprehensive policy recommendations to help African countries achieve a greener future.

Munjal & Malarvizhi [9], in their paper titled "The Impact of Environmental Performance on Financial Performance: Empirical Evidence from the Indian Banking Sector," found that there is no significant relationship between the environmental and financial performance of Indian banks. These findings can help financial statement users better understand banks' environmental activities and also assist policymakers in developing mandatory regulations for environmental reporting and improving non-financial disclosures in the Indian banking sector.

Miah et al. [7], in their paper titled "Factors Influencing Environmental Performance: Evidence from the Banking Sector in Bangladesh," using multiple regression analysis, found that a bank's credit rating score has a positive relationship with its environmental performance, while an increase in stock price and the bank's age have a negative relationship with its environmental performance.

The global community is facing various consequences of climate change. Concern about environmental issues is growing worldwide and has now also involved the banking system.

2. Method

2.1. Methodology

The current research, in terms of nature and methodology, falls into the descriptive-analytical category. From the perspective of purpose, it is applied in nature, and its findings can provide extensive support to economic and financial policymakers, as well as energy and environmental experts, in the greening of domestic banks. The main method of the research is to assess the impact of environmental performance on the banking industry using the Analytic Hierarchy Process (AHP). Within this framework, environmental actions and performances of domestic banks were first identified through a literature review and expert interviews. These actions and performances were then structured hierarchically, and pairwise comparisons were conducted using the Expert Choice 11 software to assign weights and rankings. Finally, the impact of these environmental actions and performances was compared and analyzed between domestic and foreign banks.

The data in the current research have been collected qualitatively in order to achieve a comprehensive and in-depth understanding of the subject under study. This approach includes the content analysis of official and international documents, conducting semi-structured interviews with 47 experts in the field—such as university professors, senior banking managers, macroeconomists, and environmental and energy specialists—and also examining the environmental performance actions and impacts of the banking industry at both national and international levels. This combination of qualitative methods has led to triangulation of the data, significantly enhancing the credibility and richness of the research findings. Table (4) also clearly presents the characteristics and selection criteria of 25 of these experts.

Table 4. Characteristics and selection citeria of 25 experts.

Criterion / Feature	Description
Number of Experts	25 individuals
Selection Method	Purposeful + Snowball Sampling (25 experts were selected from an initial list of 47 individuals)
Selection Criteria	- Minimum of 10 years of professional or academic experience in the relevant field - Management or executive experience in the banking, economic, and financial sectors - Scientific or practical experience in the fields of environment and energy
Expertise and Fields	- Economic-Financial: 15 individuals (University professors, Central Bank and Ministry of Economic Affairs and Finance consultants) - Environmental and Energy: 10 individuals (Experts and specialists in energy and environmental fields)
Group Representation	Simultaneous coverage of economic-financial, banking, and energy-environmental dimensions; preventing one-sided perspectives; institutional and professional diversity
Validation of Results	Use of expert feedback to finalize and confirm the environmental actions and performances of domestic and foreign banks, and to increase reliability
Purpose of Expert Composition	Achieving diverse data, triangulation, and enhancing the credibility of actions and performances

Source: See Ref. [8].

To enhance the credibility of the research, the methods presented in Table (5) have been utilized.

Table 5. Validity and reliability methods.

Method	Description
Content Validity	Selection of credible and international sources, analysis of official country positions, and use of reports from specialized institutions
Expert Review	Validation of environmental actions and performances through the opinions of economic, banking, and environmental experts
Logical Consistency and Acceptability	Each action and performance must be internally coherent, externally plausible, and analytically applicable

Source: See [2].

3. Results and Discussion

In this section of the current study, the environmental performance of domestic and international banks has been examined.

3.1. Environmental Performance of Domestic Banks

Table (6) shows that domestic banks have moved toward social and environmental responsibility by taking various actions, such as establishing green accounts, supporting renewable energy projects, and forming environmental partnerships. These initiatives not only demonstrate the commitment of domestic banks to the principles of sustainable development, but also play a significant role in promoting a green culture and reducing negative impacts on the environment.

Table 6. Weighting and ranking of environmental performance of domestic banks.

Bank	Action	Symbol	Weight	Rank
Bank Melli	- Support for green financing projects - Reduction of energy and resource consumption - Green National Accounts - Fulfillment of social responsibilities in the field of environmental preservation and clean energy - Launch of 100 5-kilowatt solar power units and a 250-kilowatt solar power plant in the central office premises - Compliance with green building principles and smart building management	D1	0.300	1
Bank Mellat	- Environmental policies, such as water and soil resource protection, respect for nature, desertification prevention, sustainable development, preservation of a clean environment, and participation in environmental exhibitions - Implementation of the national project "Environmental Guardians Training" in collaboration with UNESCO - Green Entrepreneurs Room - Environmental Risk Assessment - Establishment of specialized units in the field of the environment	D2	0.242	2
Bank Tejarat	- Support for environmental financial startups - Support for low-carbon projects - Collaboration with environmental organizations	D3	0.184	3
Bank Saderat-e Eghtesadi	- Support for small and medium projects - financing of green projects and startups - Development of green entrepreneurship - Issuance of green bonds	D4	0.138	4
Bank Parsian	- Support for sustainable and renewable energy projects - Provision of significant facilities to knowledge-based companies and green startups	D5	0.136	5
Overall Inconsistency			0.010	

Source: See Refs. [14–17].

According to Figure (2), Iran's Bank Melli has the highest rank (Rank 1) in the environmental performance of domestic banks with a weight of 0.300. This bank leads through actions such as supporting green financing projects, reducing energy consumption, and establishing 100 units of 5-kilowatt solar power plants and one 250-kilowatt solar power plant at its central offices. Bank Mellat ranks second with a weight of 0.242, and Bank Tejarat ranks third with a weight of 0.184. Bank Saderat-e Eghtesadi (weight 0.138) and Bank Parsian (weight 0.136) are in fourth and fifth places, respectively. The overall inconsistency is calculated at 0.010.

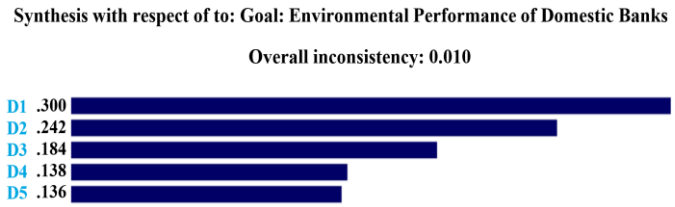


Figure 2. Weighting and ranking of environmental performance of domestic banks.
Source: Research Finding.

3.2. Environmental Performance of International Banks

Table (7) provides a comprehensive overview of the environmental performance of international banks, showing how these financial institutions move toward green development and reduce their negative impacts on the environment by adopting sustainable policies and responsible actions. These banks play a key role in promoting ecological financial culture by supporting low-carbon projects, investing in sustainable businesses, and issuing green bonds. Such approaches not only contribute to the preservation of natural resources but also serve as an effective model for other banks around the world [14–16].

According to Figure (3), Triodos Bank from the Netherlands has the best environmental performance among foreign banks with a weight of 0.362 and ranks first. This bank stands out in the field of sustainability through actions such as supporting green investments, providing loans to low-environmental-risk projects, supporting organic farming, and Ref.using to finance environmentally harmful projects. NatWest Bank from the UK ranks second (weight 0.275), actively engaging in green lending and investing in carbon reduction projects. BNP Paribas (weight 0.195) and GLS Bank (weight 0.169) are in third and fourth places, respectively. The overall inconsistency in this table is calculated at 0.010.

To provide appropriate practical and strategic recommendations for domestic banks, particularly Bank Melli Iran, it is essential to conduct a comparative analysis of the environmental performance of domestic and international banks.

With this in mind, Table (8) compares Bank Melli Iran and Bank Mellat, which are ranked first and second in Table (6), with Triodos Bank and NatWest, which are also ranked first and second in Table (7), respectively. This table clearly illustrates how domestic and international banks operate in the field of environmental performance from different perspectives. In general, international banks have higher weights and broader strategies, while domestic banks focus more on practical and applied projects.

Table 7. Weighting and ranking of environmental performance of international banks.

Bank	Country	Action	Symbol	Weight	Rank
Triodos	Netherlands	- Support for green investments - Implementation of strict strategies - Provision of facilities for low-environmental-risk projects - Support for organic farming - Lending for social enterprises - Transparent reporting of environmental activities and support to build customer trust - No loans for destructive or environmentally threatening projects	D6	0.362	1
NatWest	United Kingdom	- Granting green loans - Issuance of green bonds - Investment in green projects - Investment in high-efficiency sustainable businesses - Investment in carbon emission reduction projects - Collaboration with other institutions to promote green projects and improve environmental performance at a macro level	D7	0.275	2
BNP Paribas	France	- Decarbonization; reducing greenhouse gas emissions by 50% by 2025 - Issuance of green bonds - Development of risk assessment systems for environmental project performance - Investment in green projects - Avoiding investment in harmful projects	D8	0.195	3
GLS	Germany	- Support for green innovations - Financing construction projects using sustainable materials and eco-design techniques - Development of sustainable financial products - Independent auditing of environmental projects - Investment in green projects	D9	0.169	4
		Overall Inconsistency		0.010	

Source: Research Finding.

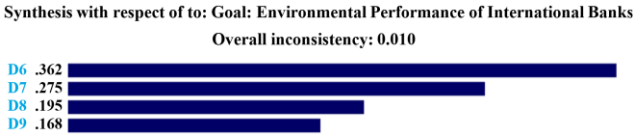


Figure 3. Weighting and ranking of environmental performance of international banks.
Source: Research Finding.

Table 8. Comparison of environmental performance of domestic and foreign banks.

Axis	Bank (Weight/Rank)	Main Priority	Key Actions	Assessment Methods	Partnerships	Financial Tools	Policies
Domestic Banks	Bank Melli (Weight: 0.300, Rank: 1) Bank Mellat (Weight: 0.242, Rank: 2) Bank Tejarat (Weight: 0.184, Rank: 3) Bank Saderat-e Eghtesadi (Weight: 0.138, Rank: 4) Bank Parsian (Weight: 0.136, Rank: 5)	Green initiatives within the bank and socio-environmental projects	- Support for green projects - Reduction of resource consumption - Establishment of solar power plants - Implementation of environmental training programs	- Environmental risk assessmen - Limited reporting	- Collaboration with domestic environmental organizations	- National-level environmental policies	- Green bonds - Financing for green startups
International Banks	Triodos Bank (Weight: 0.362, Rank: 1) NatWest (Weight: 0.275, BRank: 2) NP Paribas (Weight: 0.195, Rank: 3) GLS Bank (Weight: 0.169, Rank: 4)	Direct investment in green projects and reduction of environmental impact on a large scale	- Investment in low-carbon projects - Issuance of green bonds - Support for organic farming and social enterprises	- Transparent reporting - Independent and advanced assessment systems	- Collaboration with international institutions and NGOs	- Strict policies based on international standards	- Green loans - Investment in sustainable businesses

Source: Research Finding.

As can be seen in Table (8), Triodos Bank, with a weight of 0.362, demonstrates the best environmental performance among international banks. By implementing strict policies, supporting green investments, and Ref.using to provide loans for environmentally harmful projects, it serves as a model for other banks. On the other hand, Bank Melli Iran, with a weight of 0.300, ranks first among domestic banks and has effectively carried out practical initiatives such as establishing solar power plants and reducing energy and resource consumption. In general, international banks tend to focus more on long-term policy-making and sustainable investments, while domestic banks concentrate more on practical projects and the reduction of natural resource consumption.

4. Conclusions

Given the global environmental challenges, banks, as key players, can have a positive impact on the environment by adopting green approaches and investing in sustainable projects; theRef.ore, moving toward green banking in the current era is not only a necessity but also an imperative. In this regard, green banking can serve as a sustainable model in the banking industry, benefiting both the environment and the global economy. Achieving this requires assessing environmental performance within the banking sector; thus, this study, by analyzing the environmental performance of domestic banks (Parsian, Tejarat, Mellat, Saderat, and especially the Bank Mellat of Iran) and international banks (Triodos, NatWest, BNP Paribas, JLLS), has reached the conclusion that Bank Mellat of Iran can prioritize the environment in its financial resource allocation and provide more support to innovative projects and products related to environmental sustainability (such as renewable energy, cleaner production, biodiversity, etc.). Furthermore, implementing green lending and investment strategies can promote and enhance environmentally responsible projects. In this context, the proposed framework, based on the study of both domestic and international banks, aims to reduce negative environmental impacts and enhance sustainable development for Bank Mellat, as outlined in Table (8).

Strategic and operational recommendations for the future environmental development of banks, especially Bank Mellat of Iran, are presented in Table (9). These suggestions provide banks with practical solutions for preserving and promoting the environment.

Table 9. Key axes of environmental document.

Environmental Goals	Challenges	Opportunities
• Reducing negative impacts on the environment through the optimization of internal processes **• Supporting green and sustainable projects at the national and local levels** **• Increasing awareness and training employees on environmental issues**	• Lack of green technology infrastructure: Some branches of Bank Mellat lack the necessary infrastructure to implement environmental policies, and developing such systems is time-consuming and costly. • Limited environmental awareness and training: Low awareness among employees and customers makes the implementation of environmental projects difficult. • Compliance with regulations: Bank Mellat may face challenges and additional costs in aligning with new environmental regulations. • Initial costs for green projects: Although green financial products can attract environmentally conscious customers, the initial investment is often high. • Cultural and organizational resistance: Environmental changes require cultural shifts, and resistance within the organization can slow down the implementation of green programs.	• Enhancing the bank's public image • Reducing operational costs • Accessing green investment opportunities • Aligning with global regulations • Innovation in products and services • Increasing employee productivity

Source: Research Finding.

Strategic and operational recommendations for the future environmental development of banks, especially Bank Mellat of Iran, are presented in Table (10). These suggestions provide banks with practical solutions for preserving and promoting the environment.

Table 10. Strategic recommendations for the environmental future of banks.

Axis	Action
Policy-making and Legal Frameworks	- Development of green lending policies - Establishment of a green organizational culture - Development of risk assessment systems for environmental project performance
Financing Environmental Projects	- Renewable energy projects - Energy efficiency programs - Granting green loans - Issuance of green bonds - Providing facilities for low-environmental-risk projects - Investment in carbon emission reduction projects - Development and offering of green financial products - Lending for social enterprises
Awareness and Education	- Educating customers to invest in environmentally friendly projects - Collaboration with NGOs to develop environmental training programs
Transparency and Reporting	- Annual environmental reports - Independent auditing of environmental projects

Source: Research Finding.

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