GREEN MANAGEMENT VS BLACK SWAN EVENTS

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ABSTRACT: *The growing threat of catastrophic disasters, so-called Black Swan Events, highlights the need for effective and resilient Green Management strategies. First of all, we should understand the nature of Black Swan Events and the area they affect. To do this, we have drawn a general classification of Black Swan Events, each element of which corresponds to the efforts and specific tools of Green Management. The main goal of our work is to classify and observe the most common Black Swan Events and give general solutions to prevent, combat, and overcome each of them, engaging Green management strategies.*

KEY WORDS: *disasters, strategy, sustainable development, green management, Black Swan Events.*

JEL CLASSIFICATIONS: *Q01, L10, H12.*

1. INTRODUCTION

All kind of hazards, known as Black Swan events, such as hurricanes, fires, floods, droughts, wars, terrorism and cybercrime, are increasing exponentially around the world. These events disrupt our lives and businesses, causing reputational, financial and other losses. Catastrophes also affect economic, social, cultural and biological systems. They also affect economic, social, cultural and biological systems. Pandemic, terrorist, industrial action, financial crisis, logistics and supply chain failures, and unexpected scarcity of key production resources are all likely to have a serious impact on the growth and productivity of most businesses and their supply chain (Moyo, et al., 2023). Also, the energy crisis, the COVID-19 pandemic, and more recently, migrant inflow to Europe and Israel – Sector Gaza have created unprecedented crises (Sengupta, et al., 2023).

In recent times, the International Monetary Fund (IMF) surveillance has had to deal with a once-in-a-century pandemic crisis, increasing geopolitical tensions, new conflicts, geo-economic fragmentation, and a significant rise in inflation and interest

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rates. This has also led to a slower outlook for medium-term growth, particularly for emerging markets and developing economies.

These challenges have had a devastating impact on lives and livelihoods, particularly in the most vulnerable countries and among their people. However, most emerging market economies have shown greater resilience to these recent crises compared to the global financial crisis. This resilience can be attributed to sound macroeconomic and financial policies, as well as strong institutions, which align with IMF policy advice (https://www.imf.org/en/Publications/fandd/issues/2024/06/New-Surveillance-Tests-Ceyla-Pazarbasioglu?utm_medium=email&utm_source= govdelivery).

Our planet's natural resources are finite and must be used rationally and responsibly to ensure a sustainable economy. New sources of consumption or new ways of reducing the impact of consumption on the environment can be found through modern innovation and technology. Changing external environment and unbelievably disruptive international events are having major effects on consumers' behavior (Petrariu, et al., 2023).

Pane Haden, Oyler, and Humphreys gave the following definition of Green Management as "the organization-wide process of applying innovation to achieve sustainability, waste reduction, social responsibility, and competitive advantage via continuous learning and development and by embracing environmental goals and strategies that are fully integrated with the goals and strategies of the organization" (Pane Haden, et al., 2009). The issue of Green Management has been raised already in 1995 (Porter &Van der Linde, 1995).

Green management can be implemented by predicting the occurrence of these black swan events (Higgins, 2014). These Green Management reforms "can allow emerging market and developing economies, especially low-income countries, to balance their short-term development needs with their climate mitigation commitments" (Budina, et al., 2023).

Scientists' opinions on the impact of green management are ambiguous. For example, preventive measures in terms of environmental conservation are associated with increased investment in renewable energy sources. Modernisation of the gas and electricity sectors may probably be irrational for increasing the share of renewable energy sources.

We could not find in current literature how to prevent the main kinds of black swan events by Green Management practice. Our idea is to use Green Management tools/elements against (vs) each type of Black Swan Events. In our topic instead of the word "against" we use "versus" which is a Latin word meaning "against". It is often reduced to vs or v.

The main goal of our work – is to classify and observe the most common Black Swan Events and give general solutions to prevent and combat/overcome each of them by employing Green Management Strategy.

2. METHOD

To obtain data for this work, we explored the resources of digital libraries as Proquest and Dimensions and other electronic sources of US Library of Congress on the topics of "Black Swan Events" and " Green Management", using the authors' accumulated practical and scientific experience. The data obtained from searching and informing were studied and analyzed. During the study, we used methods of comparison, synthesis and analysis, etc. The methodology of research can be devided on seven stages that are shown on Figure 1.

Idea of current study	Surfing and selection of appropriate publications	Studying of the most appropriate publications and building the background of research	Classification of Black Swan Events and Green Management elements	Drawing corresponding scheme between Black Swan Events and Green Management elements	Visualisation and representation of Green Management strategy	Conclusion
1	2	3	4	5	6	7

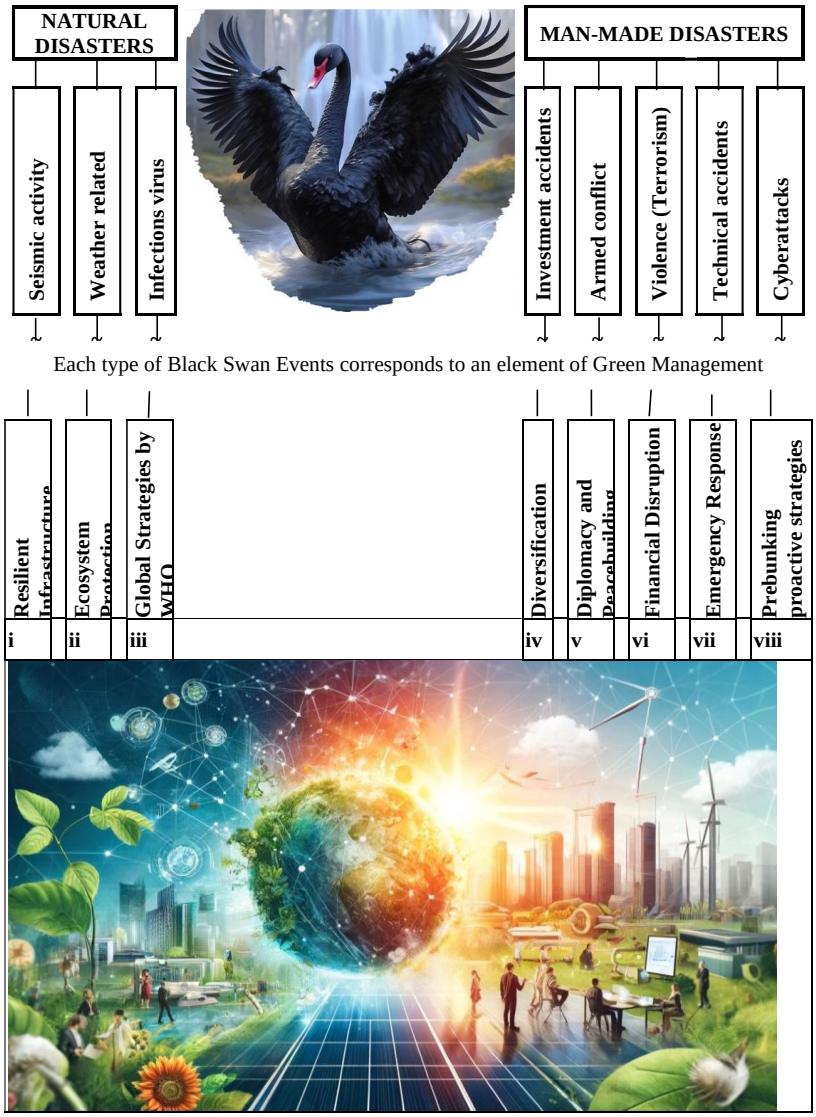
Figure 1. Stages of current study

3. BLACK SWAN EVENTS AND GREEN MANAGEMENT ELEMENTS' CLASSIFICATION

Taleb (2009) wrote that the term "black swan events" describes unexpected, "random events that form part of our lives. These events have the following three key attributes/signs: (1) outlier, being outside the realm of regular expectations; (2) carrying an extreme impact; and (3) explanations for the occurrence are concocted after the fact, making it explainable and predictable. In identifying the attributes, the classification of a Black Swan Events appears to depend on individual interpretation" (Antipova, 2021a). A classic example of a Black Swan Events is the current COVID-19 pandemic, which meets all these criteria. It emerged suddenly, causing global devastation and economic turmoil (https://corporatefinanceinstitute.com/resources/economics/examples-of-black-swan-events/). Using mathematical modeling it was predicted that the time duration of the COVID-19 pandemic will be approximately 27 months (around two years) (Antipova, 2021b). So, we have experience in predicting the approximate duration of one of the Black Swan Events.

According to Higgins (2014) we can divide all kinds of Black Swan Events into two categories: Natural (Seismic activity; Weather related disasters; Infections virus) and Man-Made Disasters (Investment accidents; Armed conflict; Violence (Terrorism); Technical catastrophes; Cyberattacks) - Figure 2.

As depicted in Figure 2, eight Green Management elements are: Resilient Infrastructure; Ecosystem Protection; Global Strategies by WHO; Diversification; Diplomacy and Peacebuilding; Financial Disruption; Emergency Response; Prebunking proactive strategies.



Source: Authors' compilation based on Higgins (2014) and https://shedevrum.ai

Figure 2. Green Management elements vs the main type of Black Swan Events

Our main idea is to correspond each element of Green management against each type of Black Swan Events (Figure 2).

i. Resilient Infrastructure vs ***Seismic activity***

Although humanity is not able to get rid of seismic activity, we can significantly reduce its consequences thanks to various events:

- Sustainable infrastructure: the design of new buildings and infrastructure for the confrontation of seismic forces is crucial. For example, thicker beams, pillars

and walls can help buildings with a better earthquake (https://www.unesco.org/en/ipred/knowledge).

- Modernization of existing buildings: strengthening existing buildings based on knowledge about the strength and destructiveness of earthquakes can minimize damage. This implies the strengthening of existing vulnerable structures in order to increase resistance before seismic forces.
- Avoiding high-risk areas: do not build structures in zones prone to earthquake (https://www.studynlearn.com/blog/disaster-mitigation-strategies/).
- Education and readiness: training of communities on the risks of earthquakes and increasing the degree of readiness for them can save life. This includes the presence of reliable shelters (https://www.unesco.org/en/ipred/knowledge).
- Early warning systems: the development and implementation of systems that provide a preliminary notification of earthquakes can help people take protective measures.
- Protection and restoration of water -beating lands: preservation of water -beating land can soften floods and reduce the risk of landslides during earthquakes (https://www.unesco.org/en/ipred/knowledge).

Above listed activities can prevent and reduce Seismic activity consequensec and save our lives.

ii. Ecosystem Protection vs Weather related disasters

Preventing weather-related disasters involves a multifaceted approach (https://www.undrr.org/news/how-reduce-risk-extreme-weather-events), i.e.:

- Early warning systems: the introduction of effective special systems of early warning to warn the communities about impending extreme weather phenomena, such as floods, tides, and thermal waves.
- Ecosystem Protection: Protect ecosystems such as forests, water -toe lands and coral reefs. Application of legislation on the prevention of deforestation.
- Planning of land use: Avoid the construction of housing and infrastructure in dangerous zones (for example, flood zones, unstable hills). Proper land use planning reduces risk.
- Integrated flood control: combine information on the onset of floods with natural and artificial protective structures (dams) to minimize losses during dangerous events.

iii. Global Strategies by WHO vs Infections virus

To manage global infectious diseases, several efforts are essential (https://www.who.int/activities/preparing-and-preventing-epidemics-and-pandemics):

- Global Strategies: Organizations like the World Health Organization (WHO) develop strategies to prevent and control epidemic-prone diseases. These include the Eliminate Yellow Fever Epidemics strategy, Ending Cholera: a Global Roadmap to 2030, and the Global Strategy for Influenza 2018-2030 (https://www.who.int/activities/preparing-and-preventing-epidemics-and-pandemics).
- Emergency Stockpiles: WHO coordinates emergency vaccine supplies and antibiotics during major outbreaks through the International Coordinating Group on Vaccine Providing.

- Infection Prevention and Monitoring: This encompasses hand hygiene, surgical site infection prevention, injection safety, and antimicrobial resistance management in healthcare settings.
- Individual Measures: Protect yourself by maintaining physical distance, wearing masks, practicing good hand hygiene, and following local vaccination guidelines (https://www.who.int/health-topics/coronavirus#tab=tab_1).

A collective effort is crucial to managing global infections effectively because consequences of these are significant (Antipova, 2021a).

iv. Diversification vs Investment accidents

The main rule of diversification: "do not put all eggs in one basket". Diversification refers to investments in different countries, sectors and classes of assets. This helps to reduce the influence of localized disasters on the user portfolio.

The understanding of specific risks associated with each region, taking into account geopolitical stability, dangers associated with climate and economic factors, is associated with risk assessment.

Insurance and risk management means the study of disaster insurance products and risk management. They can provide financial protection in case of disasters (https://ourworldindata.org/the-world-has-become-more-resilient-to-disasters-but-investment-is-needed-to-save-more-lives).

The long-term investment prospect allows you to withstand short-term market fluctuations caused by disasters.

Investing in the company or sector that contributes to the reduction of the consequences of natural disasters, such as the development of infrastructure, renewable energy and technology for early warnings also reduces risks.

No investments are completely immune to global risks, but thoughtful planning and diversification can help control the influence of disasters.

v. Diplomacy and Peacebuilding vs Armed conflict

Armed conflicts represent a significant risk to civilians, and humanitarian organizations play a decisive role in providing protection:

- Diplomacy and peacekeeping: diplomatic efforts and initiatives on peacekeeping, such as mediation in an armed conflict, can help resolve disputes and build a long peace.
- Understanding conflicts and protection: to analyze the dynamics of conflicts and their influence on the injured people. Factors such as gender, age and vulnerability are considered. For this, interaction with the armed forces and authorities is necessary to limit harm to the civilian population (https://emergency.unhcr.org/protection/protection-mechanisms/protection-armed-conflict).
- Risk management: carefully evaluate the risks. Strategies, alliances and operations should set priorities in the safety of the forcible displaced population, stateless persons and humanitarian workers. Adhere to the principle of "do non-Harm" (https://emergency.unhcr.org/protection/protection-mechanisms/protection-armed-conflict).
- IHL principles: international humanitarian law (IHL) establishes the principles of armed conflicts: to distinguish between civilians and military; take precautions for the protection of civilians and civilians; Avoid excessive damage

compared to a military advantage (https://emergency.unhcr.org/protection/protection-mechanisms/protection-armed-conflict).

- Cooperation and interaction: work with relevant actors, including UN missions, peacekeepers and local communities (https://emergency.unhcr.org/protection/protection-mechanisms/protection-armed-conflict).

Respect for humanitarian principles is important.

vi. Financial Disruption vs Violence (Terrorism)

For an effective fight against terrorism, an integrated approach is needed:

- Intelligence: to understand terrorist motivations, leadership and tactics. Prevent financial transactions that contribute to the provision of terrorist structures. Intelligence strategies are crucial for prevention (https://www.brookings.edu/articles/how-to-defeat-terrorism-intelligence-integration-and-development/).
- Integration: social integration is vital. To promote dialogue, understanding and cooperation between different communities. Consider complaints and prevent radicalization by stimulating inclusiveness and tolerance.
- Development: Economic development plays a role in reducing terrorism. Address poverty, unemployment and inequality. When people have hope and opportunities, they are less likely to turn to violence (Riurean & Antipova, 2024).
- Protection at the community level: attracting members of the community in efforts to protect children and families can increase stability and contribute to peace and safety even in the midst of violence.

vii. Emergency Response vs Technical catastrophes

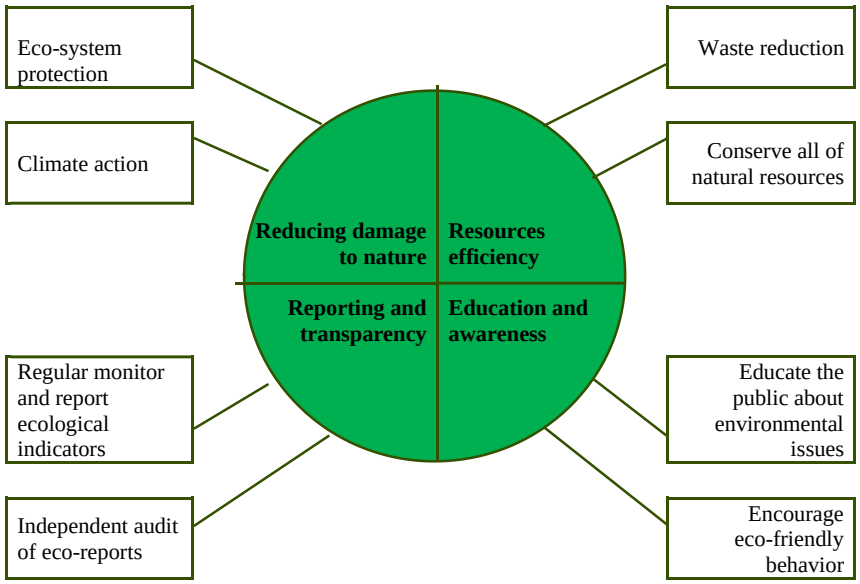
Technical disasters, such as nuclear tests, explosions or chemical spills, require a coordinated answer, which includes several interested parties and disciplines.

- Emergency answer: quickly and effectively respond to an immediate crisis, such as people's evacuation is crucial for minimizing the impact of the disaster.
- Cleaning: Cleaning hazardous materials is important to prevent further damage and protection of health and safety of the public.
- Monitoring of public health: monitoring the health and well -being of people affected by the disaster, including those who could be exposed to dangerous radiation, can help identify and treat potential health problems.
- Investigation and reporting: the study of the causes of the disaster and reporting on the studied lessons can help prevent similar disasters in the future.
- Rehabilitation and recovery: Recovering affected areas and supporting the recovery of affected communities and ecosystems can help reduce the long-term effects of disasters.
- Regulation and supervision: strengthening the rules and supervision of high -risk industries can help prevent similar disasters in the future.

viii. Prebunking proactive strategies vs Cyberattacks considered in the authors' previous work (Riurean & Antipova, 2024) and can be use against cyberattacks either.

4. GREEN MANAGEMENT STRATEGY

The Green Management strategy covers various practices and initiatives aimed at increasing environmental stability, as well as achieving businesses. There are several key elements that should be taken into account (Figure 3).



Source: Authors' elaboration

Figure 3. Green Management Strategy

4.1. Waste Reduction

The implementing of recycling and composting programs, using eco-friendly packaging, and adopting a zero-waste approach are important to reduce waste. Reducing emissions, effluents or waste or turning them into valuable resources during production. Implement strategies to reduce waste generated during operations.

4.2. Conserve all of natural resources

To realize energy practices and technologies, such as LED lighting, intellectual lanes and solar panels. Protect natural habitats, wildlife and bio -eating. Install and maintain protected areas and wildlife corridors. Introduce sustainable practice:

- Forestry: the introduction of stable methods of jurisdiction of the magazine to prevent deelity.
- Fishing: Promoting responsible fishing methods to prevent the move.
- Agriculture: the adoption of organic agriculture, crop rotation and agricultural production in order to minimize soil degradation and chemical pollution.

4.3. Educate the public about environmental issues

Public training on environmental problems is crucial for increasing awareness and increasing positive changes as a result of public campaigns and programs for increasing awareness, media and social networks of local initiatives and integrating school programs.

- State campaigns and awareness programs

- organize campaigns, seminars and seminars in order to inform people about climate change, pollution, deforestation and other critical issues;
- cooperate with schools, universities and public centers in order to cover a wider audience;
- Training for employers and employees with the installation of green goals.

- Media and social networks

- use television, radio, newspapers and online platforms for the exchange of information;
- create attractive content, infographics and video to increase awareness.

- Local initiatives

- encourage local communities to participate in the cleaning of discs, planting trees and conservation efforts;
- highlight success stories and a positive impact to inspire others.

- Integration of the school curriculum

- include environmental education in school curricula;
- teach students about stability, biodiversity and environmentally friendly practices.

4.4. Encourage eco-friendly behavior

Green Management practices consider green behavior in performance appraisal, rewarding, compensating, and promoting to motivate employees to engage in green activities (Mustafa, et al., 2023). Use green building design principles, such as green roofs, low-flow plumbing, and sustainable materials, to minimize the environmental impact of construction and renovation projects.

4.5. Eco-system protection

Preserve and protect natural ecosystems by establishing protected areas, such as national parks, wildlife refuges, and marine reserves. This helps to maintain biodiversity and prevent habitat destruction.

4.6. Climate Action

Mitigate climate change by reducing greenhouse gas emissions, switching to clean energy sources, and sequestering carbon through reforestation and afforestation programs.

- Reduce Emissions: Transition to clean energy sources and reduce greenhouse gas emissions.
- Reforestation: Plant trees to absorb carbon dioxide and restore ecosystems.
- Furthermore, the Natural-Resource-Based view considers the ability to prevent pollution from the environment.

4.7. Regular monitor and report ecological indicators

Monitor and report on the environmental performance of the organization, including greenhouse gas emissions, water usage, and waste generation. This transparency can help improve accountability and encourage continuous improvement.

4.8. Independent Audit of eco-reports

Independent audits of eco-reports is an important tool for ensuring the accuracy and reliability of environmental performance data. Here are some steps involved in conducting an independent audit of eco-reports:

- Scope and Methodology: The auditor will define the scope of the audit, including the specific environmental indicators and reporting periods to be assessed. They will also determine the appropriate audit methodology, which may include document reviews, interviews, and on-site inspections.
- Assessment of Data Collection and Management: The auditor will assess the organization's processes for collecting, managing, and reporting environmental data, including any gaps or inconsistencies in the data collection process.
- Identification of Non-conformities: The auditor will identify any non-conformities or discrepancies between the reported environmental performance and actual practices, as well as any areas where improvements can be made.

5. CONCLUSIONS

In conclusion, Green Management practices can play a vital role in mitigating the impact of Black Swan Events and fostering resilience in the face of uncertainty. By adopting sustainable and proactive strategies, companies can not only protect themselves from the risks posed by natural disasters and other unforeseen events but also promote to a more comfortable future for all.

Companies must recognize the potential impact of Black Swan Events and develop comprehensive strategies to manage risk, reduce environmental impact, and promote long-term sustainability. Definitely, the output should be to create a business environment that is both profitable and responsible, protecting both the planet and the human life. While Green Management focuses on proactive environmental practices, Black Swan Events reminds us of the need for resilience and adaptability in an unpredictable world.

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