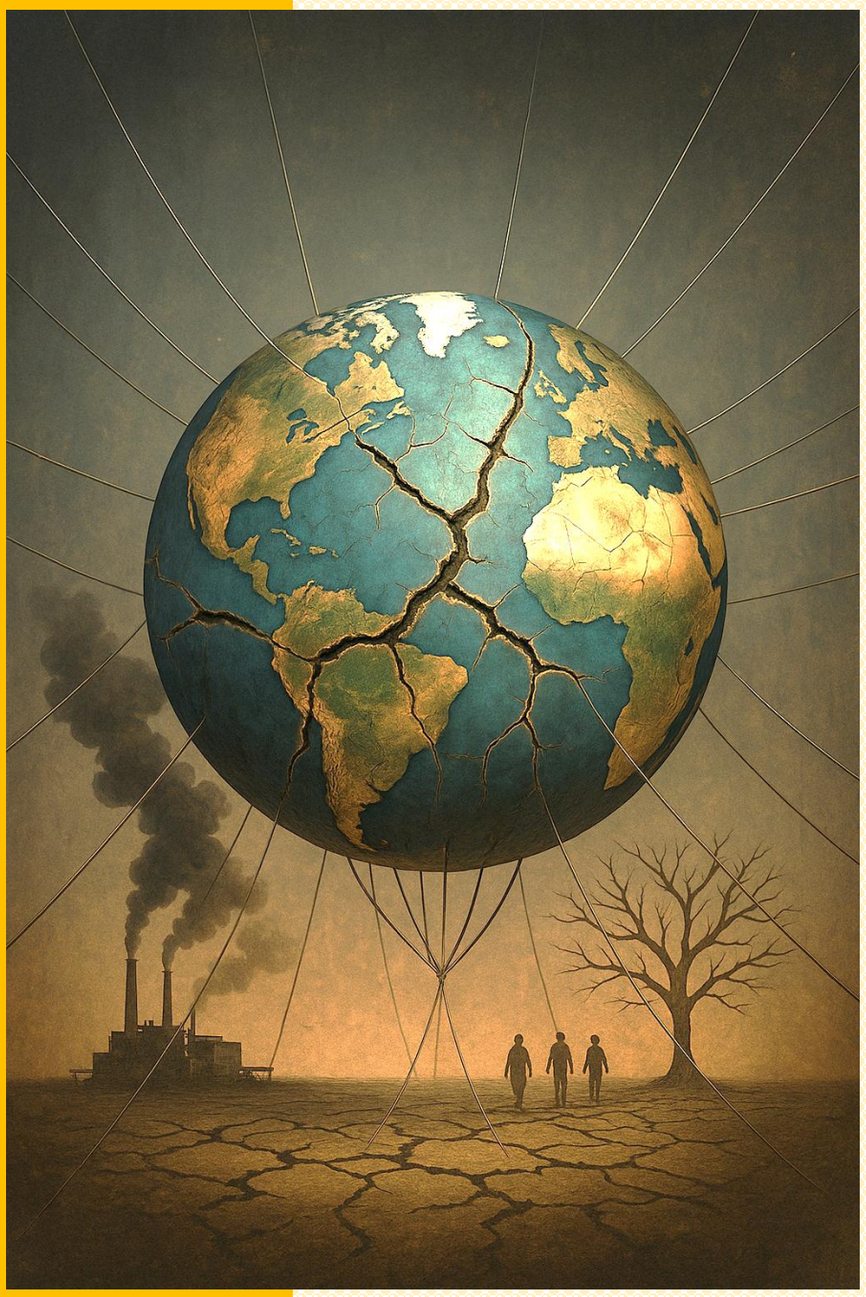
COMPROMISED ESG:

For How Long?



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Executive Summary

India has been experiencing severe climate-related events for several years, including floods, landslides, and erratic rainfall. Recently, in October 2025, Darjeeling and surrounding areas suffered devastating landslides after heavy rainfall, causing extensive infrastructure damage, road blockages, and disruption to local communities. Earlier, in August 2025, Uttarakhand faced flash floods and landslides triggered by cloudbursts, damaging homes, roads, and essential services, with many areas cut off and relief operations challenged.

These recent events are part of a broader pattern across the country. In Punjab, record monsoon rains and sudden dam releases have flooded thousands of villages and submerged vast areas of farmland, while Maharashtra's Marathwada region, historically drought-prone, has faced "wet drought" conditions, where erratic rains destroyed crops and caused severe soil erosion. Over the years, similar events have repeatedly struck different states, indicating a **growing frequency and severity of climate shocks**.

The cascading impacts of these events extend far beyond immediate physical damage. Agriculture, infrastructure, transport, energy systems, and public services are all affected, creating supply chain disruptions, inflationary pressures, and fiscal stress. Insurance firms face surging claims, governments must allocate increasing resources for emergency relief and rebuilding, and vulnerable populations bear the heaviest burden in terms of livelihoods, income, and food security.

Globally, extreme climate events show the same pattern of increasing intensity and frequency. In the United States, floods and hurricanes continue to disrupt transport, energy, and logistics. Europe has experienced record-breaking heatwaves affecting energy supply and agriculture. Japan has faced repeated heavy rainfall and landslides, disrupting urban infrastructure and services. These examples illustrate that climate shocks now impact every sector- agriculture, infrastructure, transport, energy, services, and trade worldwide.

This trend underscores deeper climate disruption, shifting monsoon patterns, heavier storms, and irregular precipitation which is intensifying over time. Environmental, Social, and Governance (ESG) considerations are no longer optional; they provide the essential framework to manage systemic risk, allocate responsibility, and ensure societal and economic resilience. Ignoring ESG is not only financially imprudent but strategically and morally untenable.

Dudhia iron bridge collapsed due to heavy rain in Darjeeling *Source: ANI*

Rain paralyses north India *Source: India Today*

Flood like situation in Marathwada *Source: ABP News*

Damage brought by hurricane Milton *Source: science.org*

1.

EXPANDING IMPACT & REACH

For years, ESG was seen primarily as a reporting framework, a compliance exercise that investors and companies used to benchmark sustainability and governance practices. That perception no longer holds. ESG today is not merely an accounting tool; it has become a lens through which we measure societal resilience. It captures the interconnectedness of natural systems, communities, and governance structures, making it central to how societies anticipate, absorb, and act to recover from crises.

The implications of ESG extend far beyond corporate reporting. Environmental degradation, social stress, and governance failures interact to create cascading risks that affect livelihoods, infrastructure, public services, and the economy at large. Understanding the individual pillars - Environmental (E), Social (S), and Governance (G) - and how they function in tandem provides insight into the mechanisms through which climate shocks, societal pressures, and policy gaps amplify each other. This framework allows us to examine not only global patterns but also the specific ways in which India is experiencing and responding to these challenges.

1. Environmental (E): Nature's Disruptions

The environmental pillar has shifted from abstract "climate risk" to tangible and immediate disruption. According to the United Nations Office for Disaster Risk Reduction (UNDRR), nearly **90% of all major disasters between 1990 and 2022 were weather-related** - floods, storms, heatwaves, and droughts.[1] The pattern is intensifying: in **2022 alone, the global economy suffered $313 billion in losses** from climate disasters.[2] Sea levels are rising at an average of **3.7 mm per year**,[3] amplifying flood risks in coastal megacities like Mumbai, Shanghai, and New York.

How India Stands Today: Nearly **60% of India's landmass** remains vulnerable to droughts, floods, cyclones, or landslides.[4] Recent events such as the **2025 Darjeeling landslides, Uttarakhand floods**, and recurring monsoon floods in Punjab and Maharashtra illustrate the increasing frequency of extreme events. Urban centers like Mumbai, Chennai, and Kolkata face compounding risks due to **sea-level rise and inadequate drainage**, underscoring the urgent need for climate-resilient infrastructure and planning.

2. Social (S): Communities Under Stress

Every climate shock translates into social stress. In South Asia, nearly **40 million people were displaced by climate-related events between 2008 and 2022.[5]** Global agricultural productivity has declined by **21% since 1961** due to climate change,[6] threatening livelihoods and food security. Healthcare systems, already burdened by pandemics, face rising cases of **heat stress and vector-borne diseases.[7]** Migration, both internal and cross-border, has become a structural feature of climate disruption.

How India Stands Today: Climate events continue to **displace millions** across India's flood- and drought-prone regions. Monsoon floods in Punjab and Maharashtra, landslides in Darjeeling, and urban heatwaves in Delhi disproportionately affect vulnerable populations. Erratic rainfall and soil degradation cause yield volatility, while healthcare systems in states like Maharashtra, West Bengal, and Odisha face growing stress from **climate-related illnesses.[8]**

[1]United Nations Office for Disaster Risk Reduction (UNDRR). *Human Cost of Disasters 2000–2019: Overview of Data and Trends.* Geneva: UNDRR, 2020. (link here)
[2]Swiss Re Institute. *Natural Catastrophes in 2022: Global Economic and Insured Losses.* Zurich, 2023. (link here)
[3]Intergovernmental Panel on Climate Change (IPCC). *Sixth Assessment Report (AR6): The Physical Science Basis.* 2021. (link here)
[4] National Disaster Management Authority (NDMA), India. *India's Vulnerability Atlas.* Government of India, 2023. (link here)
[5]World Bank. *Groundswell: Preparing for Internal Climate Migration (Part II).* Washington, DC: World Bank, 2021. (link here)
[6]Food and Agriculture Organization of the United Nations (FAO). *The State of Food and Agriculture 2022: Climate Change, Agriculture, and Food Security.* Rome: FAO, 2022. (link here)
[7]World Health Organization (WHO). *Climate Change and Health Factsheet.* 2023. (link here)
[8]NITI Aayog. *Health Impacts of Climate Change in India.* Government of India, 2024. (link here)

3. Governance (G): The Decisive Factor

__90%__ of major disasters (1990–2022) were weather-related.

__$313 billion__ global economic losses from climate disasters in 2022.

__60%__ of India's landmass is exposed to multi-hazard climate risks.

__18%__ of global GDP could be lost by 2050 without decisive climate action.

__Gaps remain:__ enforcement, urban planning, and ESG integration in public finance and infrastructure.

ESG should be treated as a __Globally resilience protocol__.

Ignoring ESG is not just an image or compliance issue; it is a __direct threat to food security, public health, social stability, economic survival, and planetary resilience.__

"ESG is no longer about what we report, it's about how we survive"

Governance acts as the **multiplier of ESG impact**. Policy failures amplify risks, while proactive governance mitigates them. **Bangladesh's early warning systems** have reduced cyclone-related fatalities by over **90%** in the past three decades,[9] demonstrating the power of timely action. Conversely, weak governance or poor enforcement of safety standards leads to catastrophic losses.

How India Stands Today: India's governance response has strengthened through institutions like the **National Disaster Management Authority (NDMA)** and schemes such as the **Pradhan Mantri Fasal Bima Yojana (PMFBY)**.[10] Early warning systems have improved, and climate finance initiatives under the **National Action Plan on Climate Change (NAPCC)** support adaptation. However, **gaps in urban planning, enforcement, and ESG integration** persist, leaving many communities exposed to recurring climate risks.

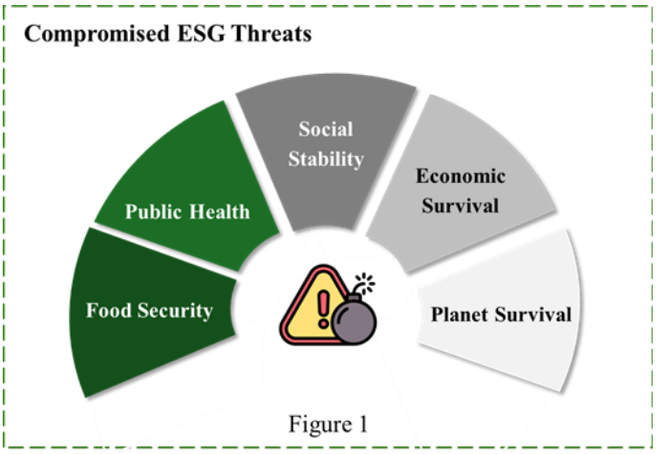

Figure 1

ESG factors are deeply interconnected; failures in one dimension magnify vulnerabilities across all others. Climate shocks, social fragility, and governance lapses interact to disrupt food systems, public health, and economic stability, triggering cascading consequences that transcend sectors and borders. ESG must therefore be understood not as a compliance framework, but as an **integrated system** for anticipating, absorbing, and mitigating systemic risks. Ignoring ESG today is no longer a reputational or financial oversight, it is a **direct threat to food security, public health, social stability, economic survival, and planet survival.**

[9]United Nations Office for Disaster Risk Reduction (UNDRR). *Bangladesh Case Study: Cyclone Preparedness Programme.* 2022. (link here)
[10]Environment, Forest and Climate Change (MoEFCC). *National Action Plan on Climate Change (NAPCC).* Government of India, 2023. (link here)

2.

THE DOMINO EFFECT

While climate change is widely recognized as a critical global challenge, its domino effect across society, the economy, and governance is often underestimated. Each climate event sets off a sequence of interlinked disruptions, one triggering the next until the entire system feels the strain. Stakeholders often focus on the most visible outcomes- agricultural losses, trade disruptions, or governance challenges without seeing the deeper, systemic chain reaction beneath.

The reality is that climate impacts do not occur in isolation. The domino effect unfolds through a series of reinforcing shocks, environmental disasters, sectoral damage, public-health crises, and macro-financial pressures, that together reshape economies and societies. Each collapse in one area amplifies vulnerabilities in another, creating a feedback loop that grows harder to contain, as illustrated in Figure 2. Yet what is often overlooked is the actual evolving domino Effect of climate risk pattern shown in Figure 3. This hidden chain is intensified by compromised ESG practices: gaps in environmental management, weak social preparedness, and governance inefficiencies that accelerate every stage of systemic breakdown. Stakeholders tend to focus on the immediate and visible disruptions while ignoring the underlying structural fragilities that constitute the real and escalating threat.

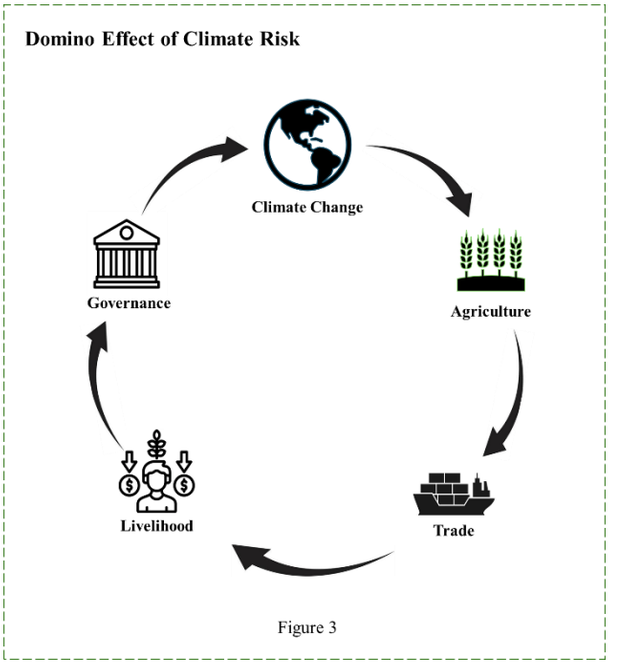

Figure 3

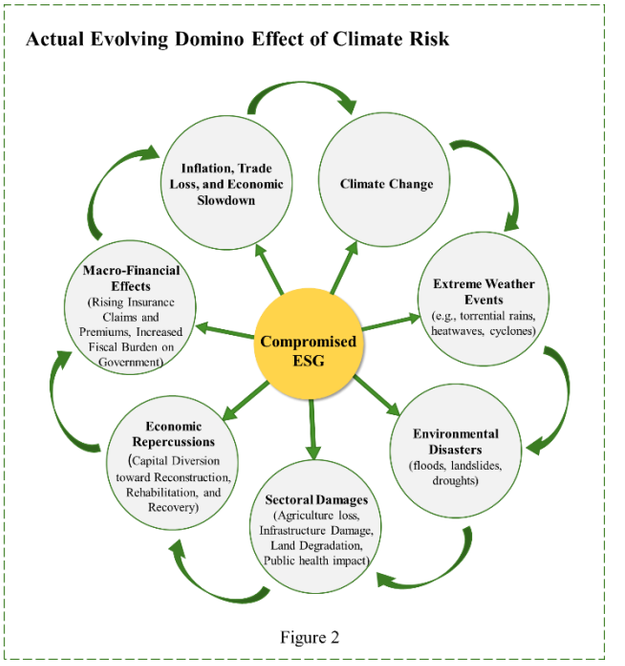

Figure 2

1. Climate Change: The Catalyst of Disruption

Climate change acts as the first domino, setting the rest in motion. Rising global temperatures, shifting precipitation patterns, and increasing greenhouse gas concentrations are intensifying natural variability. These shifts directly alter weather systems, making extreme events more frequent, severe, and unpredictable.

India has already experienced erratic monsoons, extreme heatwaves, and unusual rainfall patterns, contributing to floods in Punjab, heatwaves in Delhi, and “wet droughts” in Marathwada, each one toppling the next layer of societal and economic stability.[11]

2. Extreme Weather: Nature’s Warning Signals

Extreme weather events - torrential rains, cyclones, and heatwaves - represent the next domino in the chain. They are not random shocks but predictable signals of deeper systemic instability.

[11] Intergovernmental Panel on Climate Change (IPCC). *Sixth Assessment Report (AR6): Synthesis Report.* 2023. (link here)

The 2025 Darjeeling landslides and Uttarakhand flash floods are recent reminders in India, while the 2025 Missouri floods and record-breaking European heatwaves illustrate the global scale of this accelerating pattern.[12] [13]

3. Environmental Disasters: When Weather Strikes

When extreme weather escalates into full-blown environmental disasters, the domino effect deepens. Floods, landslides, and droughts cause immediate and tangible destruction, washing away farmland, disrupting transport corridors, and damaging water systems.

The 2025 floods in Punjab submerged over 2.5 lakh acres of farmland, while landslides in Darjeeling destroyed vital road networks.[14] Each disaster triggers the next fall, livelihood loss, displacement, and financial strain.

4. Sectoral Impacts: Ripple Effects Across Sector and Society

Once environmental disasters strike, the dominoes begin to multiply, hitting every sector in turn:

- **Agriculture:** Crop failure, soil erosion, and yield losses threaten food security, as seen in Punjab and Marathwada.[15]
- **Infrastructure:** Damage to roads, utilities, and ports disrupts trade and mobility.
- **Land & Displacement:** Loss of arable land forces migration, increasing pressure on urban centers.[16]
- **Public Health:** Disease outbreaks and heat stress reduce workforce productivity, as observed during Delhi's and Maharashtra's heatwaves.[17]

These sectoral shocks interact and compound each other, amplifying systemic fragility and social inequities.

5. Economic Repercussions: The Price of Recovery

As the dominoes continue to fall, economic strain becomes inevitable. Disasters divert resources from development to recovery, repairing infrastructure, compensating losses, and restoring essential services. Relief and reconstruction efforts in Punjab and Uttarakhand illustrate how governments bear mounting fiscal pressure, while private investment slows amid uncertainty.[18]

6. Macro-Financial Shockwaves: Strain on Systems

Economic disruptions soon spill into the financial domain. Rising insurance claims, reduced investor confidence, and escalating public debt create macro-financial shockwaves. Each financial strain triggers another, insurance premiums rise, fiscal deficits widen, and social protection budgets shrink.

Natural disasters caused **$118 billion** in insured losses globally in 2023, one of the highest on record.[19] The IMF warns that climate shocks could reduce GDP in vulnerable economies by up to **1-2% annually** if adaptation measures are not scaled.[20] The result is a slow-motion collapse of fiscal resilience, leaving nations more exposed to the next wave of climate events.

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[12] National Disaster Management Authority (NDMA). *Situation Report: Darjeeling Landslides, 2025.* Government of India, 2025. (link here)
[13] World Meteorological Organization (WMO). *State of the Global Climate 2024.* Geneva: WMO, 2025. (link here)
[14] Punjab State Disaster Management Authority (SDMA). *Post-Flood Damage Assessment Report.* 2025. (link here)
[15] Food and Agriculture Organization (FAO). *The State of Food and Agriculture 2023.* Rome: FAO, 2023. (link here)
[16] World Bank. *Groundswell: Preparing for Internal Climate Migration (Part II).* Washington, DC: World Bank, 2021. (link here)
[17] World Health Organization (WHO). *Climate Change and Health Factsheet.* Geneva: WHO, 2023. (link here)
[18] Ministry of Finance, Government of India. *Economic Survey 2024–25: Climate Impact and Public Finance.* 2025. (link here)
[19] Swiss Re Institute. *Natural Catastrophes in 2023: Global Economic and Insured Losses.* Zurich, 2024. (link here)
[20] International Monetary Fund (IMF). *Climate Change and Macroeconomic Policy Challenges.* 2024. (link here)

*Climate change does not act in isolation, it triggers a **domino chain of reinforcing shocks**.*

*Each stage of disruption amplifies vulnerabilities in the next, creating a **self-reinforcing feedback loop**.*

*Compromised ESG practices accelerate this breakdown, turning local disasters into **systemic collapses**.*

*The domino chain exposes the **interdependence of all systems**.*

*The **real threat** lies in the unseen, evolving domino pattern (Figure 3).*

*ESG integration can act as the **stabilizer** that prevents collapse, by addressing risk upstream instead of paying for loss downstream.*

"Every domino that falls is a missed opportunity for prevention, ESG is the brace that keeps the system standing."

7. Inflation and Slowdown: The Broader Economic Fallout

The final domino manifests as inflationary pressures and economic slowdown. Food price volatility, disrupted supply chains, and emergency expenditures push costs upward while growth decelerates. In India, recurring floods and droughts have contributed to rising living costs, while globally, extreme weather has intensified inflationary cycles and market instability.[21]

Over time, this economic fallout feeds back into environmental stress. High recovery costs and reduced fiscal space delay investment in green infrastructure and renewable energy, while reconstruction often increases emissions and resource consumption.[22] This closes the climate domino loop, a self-reinforcing cycle where every fall accelerates the next.

*The domino effect of climate risk underscores a critical truth: **no sector, economy, or community exists in isolation.** The fall of one inevitably pushes the others. Breaking this cycle demands early intervention, strengthened ESG practices, and collective accountability. The earlier we reinforce the first domino, through environmental resilience, social preparedness, and effective governance, the fewer will fall, and the stronger our shared foundation for a sustainable future will be.*

[21] World Bank. *Commodity Markets Outlook: Climate Shocks and Price Volatility.* Washington, DC: World Bank, 2024. (link here)
[22] International Energy Agency (IEA). *Global Energy Review 2024: Post-Disaster Recovery Emissions Trends.* Paris: IEA, 2024. (link here)

3.

ANALYZING THE SPREAD

Climate change is no longer a distant or abstract concern; it has become a pervasive force shaping every aspect of society. Its impacts extend beyond immediate environmental consequences, cascading through infrastructure, finance, agriculture, trade, public health, and economic systems.

This section provides a detailed analysis of how climate risk manifests across key sectors, illustrating interconnected vulnerabilities and highlighting the necessity of integrated strategies to enhance resilience. Recent incidents, both domestic and global, demonstrate the tangible consequences of inaction and underscore the urgency of strengthening ESG practices to mitigate systemic disruption.

1. Infrastructure: Loss of People, Property, and Projects

Physical infrastructure is one of the most visible victims of climate variability. Floods, cyclones, and extreme heat events damage not only homes but also vital networks of roads, ports, airports, and power systems. The World Bank estimates that climate-related disruptions to transport infrastructure could cost low- and middle-income countries up to **$60 billion annually by 2030.**[23]

In India, sudden monsoon shifts frequently damage highways and railways, while coastal ports face increasing downtime due to storm surges and rising sea levels. These damages extend beyond immediate costs, they delay trade, disrupt supply chains, and weaken investor confidence. In August 2025, landslides in Darjeeling disrupted regional road networks, isolating several towns and delaying essential supplies. Similarly, coastal flooding in Mumbai and Chennai has repeatedly affected port operations. Globally, **Hurricane Ian (2022)** caused massive infrastructure damage in Florida, highlighting the scale of potential disruption.[24]

2. Insurance: Rising Premiums, Shrinking Protection

The insurance sector has emerged as a critical indicator of climate stress. In **2023**, insurers paid out **$120 billion** in natural disaster-related claims, making it one of the costliest years on record.[25]Such recurring payouts shrink profitability, force premium hikes, and even threaten the viability of coverage in high-risk zones. This “insurance retreat” leaves households and businesses unprotected, amplifying vulnerability. Moreover, sovereign credit ratings can be directly impacted when insurers withdraw from markets, raising the cost of borrowing for governments.

The **Insurance Regulatory and Development Authority of India (IRDAI)** has introduced updated guidelines requiring insurers to integrate climate risk assessment and catastrophe modeling in underwriting.[26] Globally, insurers in flood-prone areas of the U.S. and Europe have scaled back coverage, reflecting mounting systemic pressures.

3. Food & Agriculture: From Crop Failure to Food Inflation

Agriculture, the backbone of food security and rural livelihoods, faces chronic risks from shifting rainfall, droughts, and unexpected floods. According to the **FAO**, climate change could reduce global crop productivity by **10–25% by 2050**, with cereals like wheat and rice particularly vulnerable.[27] In South Asia, untimely rains have repeatedly destroyed standing crops, leading to both farmer distress and food inflation. Reduced yields not only compromise domestic consumption but also impact agricultural trade, where countries face both export shortfalls and import dependencies.

The **2025 floods in Punjab** submerged over 2.5 lakh acres of farmland, destroying paddy and maize crops, and leading to local food price spikes.[28]

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[23] World Bank. *Lifelines: The Resilient Infrastructure Opportunity.* Washington, DC: World Bank, 2019. (link here)
[24] National Oceanic and Atmospheric Administration (NOAA). *Hurricane Ian Event Summary.* 2022. (link here)
[25] Munich Re. *NatCat Report 2023: Natural Disasters and Insurance Losses.* Munich, 2024. (link here)
[26] Insurance Regulatory and Development Authority of India (IRDAI). *Guidelines on Climate Risk Assessment and Reporting.* Hyderabad, 2024. (link here)
[27] Food and Agriculture Organization of the United Nations (FAO). *The State of Food and Agriculture 2023.* Rome: FAO, 2023. (link here)
[28] Punjab State Disaster Management Authority (SDMA). *Post-Flood Assessment Report.* 2025. (link here)

In Maharashtra, "wet drought" conditions caused waterlogging that ruined wheat and soybean fields. These incidents highlight how agricultural losses have cascading economic and social effects.

4. Trade & Supply Chains: Global Flows in Flux

The disruption of global shipping and supply chains is another critical dimension. Climate-induced events such as droughts in the **Panama Canal** or storms in the **Indian Ocean** directly delay shipments, restrict vessel capacity, and inflate logistics costs.[29] Ports are especially vulnerable: closures due to extreme weather ripple across global trade, affecting energy supplies, manufacturing inputs, and consumer goods. This growing uncertainty makes global commerce more fragile, feeding into inflation and higher transaction costs.

The **Suez Canal blockage (2021)** demonstrated the global repercussions of trade disruption, while water shortages at the **Panama Canal (2025)** delayed shipments worldwide.[30] In India, monsoon-related flooding at **Mumbai and Kandla ports** caused temporary cargo suspension, affecting import-export schedules.

5. Health: Human Costs and Systemic Strain

The human toll of climate stress is profound. The **WHO** projects **250,000 additional deaths annually between 2030 and 2050** from climate-linked causes such as malnutrition, malaria, diarrhea, and heat stress.[31] Heatwaves are already pushing mortality rates higher in regions unaccustomed to extreme temperatures. In **Europe's 2022 heatwave**, more than **61,000 deaths** were attributed to extreme heat.[32] Beyond mortality, public health systems bear rising costs of treatment, while healthcare infrastructure, often underfunded, struggles to manage sudden surges in patients.

Extreme heat events in **Delhi and Maharashtra** have increased hospitalizations and mortality. Floods and landslides in **Uttarakhand and Darjeeling (2025)** disrupted medical services, delaying treatment and amplifying health risks, highlighting the vulnerability of healthcare systems to climate shocks.[33]

6. Economy & Finance: Pressures Across the System

Together, these pressures feed into broader economic volatility. Food inflation, rising insurance costs, and supply chain disruptions contribute to price instability, eroding purchasing power. Investment confidence is also undermined: multinational firms increasingly evaluate climate risks before allocating capital. Sovereign risks are climbing, as rating agencies factor climate vulnerability into debt assessments. According to the **IMF**, climate shocks could reduce GDP in vulnerable countries by **1–2% annually** if adaptation measures are not scaled up.[34] Post-flood relief in **Punjab** and reconstruction in **Uttarakhand** required significant government expenditure, diverting funds from development programs and slowing economic growth. Globally, the **2022 European heatwave** and **U.S. hurricane damages** have also stressed national budgets and financial systems.[35]

Climate risk is no longer confined to isolated events; it is a **systemic disruptor** that affects every sector, amplifying vulnerabilities and reshaping economic and social landscapes. Recent incidents across sectors highlight the pervasive nature of these threats. Recognizing sectoral linkages is not just about risk management; it is about safeguarding resilience, equity, and long-term stability. Strengthened ESG practices are central to mitigating these cascading impacts, enabling societies and economies to **absorb shocks, recover effectively, and prevent future systemic disruptions.**

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[29] World Bank. *Climate Risk and Shipping: Navigating a Changing Environment.* Washington, DC, 2023. (link here)
[30] BBC News. *Panama Canal: Drought Delays Global Shipping.* August 2025. (link here)
[31] World Health Organization (WHO). *Climate Change and Health Factsheet.* Geneva: WHO, 2023. (click here)
[32] *Nature Medicine. The 2022 European Heatwave: Mortality Impact Study.* 2023. (click here)
[33] NITI Aayog. *Health Impacts of Climate Change in India.* Government of India, 2024. (click here)
[34] International Monetary Fund (IMF). *Climate Change and Macroeconomic Policy Challenges.* Washington, DC: IMF, 2024. (click here)
[35] Swiss Re Institute. *Economic Losses and Global Climate Resilience Outlook.* Zurich, 2024. (click here)

*Climate change has transitioned from an environmental issue to a **systemic disruptor**.*

*Sectoral damages are **interlinked**.*

***ESG alignment** is not optional; it's a prerequisite for preventing systemic collapse.*

*Resilience requires **multi-level collaboration**.*

*Strengthening ESG integration across supply chains, public finance, and community systems is the **only sustainable defense**.*

"Sectoral damage is no longer isolated, it's systemic. ESG isn't a checkbox; it's the connective tissue that holds resilience together."

*The effectiveness of climate action depends on **collective engagement**. Each stakeholder's decisions, whether in policy-making, investment, operational practices, or lifestyle choices, influence the resilience of the broader system. The true **onus of responsibility** emerges when all actors recognize their interdependencies and align their actions to strengthen societal, economic, and environmental stability.*

4.

THE ONUS OF RESPONSIBILITY

As seen in *The Domino Effect of Climate Risk*, no impact of climate change occurs in isolation. A single disruption sets off a chain reaction, environmental shocks lead to sectoral losses, economic strain, and social instability. The question that follows is not merely what went wrong, but who bears the responsibility to make it right.

This interlinked reality demands a rethinking of accountability. The climate crisis cannot be addressed through fragmented or symbolic actions; it requires **collective responsibility**, where every stakeholder- governments, corporations, insurers, investors, and citizens- recognizes their role in shaping outcomes. Within this intricate web of dependencies, the true onus of responsibility emerges: not just to act, but to act in coherence, ensuring that inaction in one sphere does not cascade into failure across all.

1. Government: The Architect of Preparedness

Governments stand as the first responders when disasters strike, responsible for emergency relief, reconstruction, and maintaining social stability. Yet their greater responsibility lies beyond crisis management, it is about **building systemic preparedness**. This entails instituting **carbon pricing**, incentivizing renewable energy, enforcing **resilient building codes**, and designing robust disaster management systems. The IMF estimates that countries with proactive climate policies could reduce disaster-related fiscal losses by **up to 60%** over two decades.[36]

Every delay in governance multiplies fiscal burdens through payouts, subsidies, and debt, while proactive policymaking reduces vulnerability and fosters long-term stability. In India, national frameworks like the **National Action Plan on Climate Change (NAPCC)** and **State Action Plans on Climate Change (SAPCC)** are vital examples of policy-led climate preparedness.[37]

2. Corporates: Anchors of the Transition

Corporations occupy the center of the sustainability transition. They shape production, energy use, supply chains, and consumption patterns across the globe. Their dual responsibility lies in decarbonizing operations and building **climate-resilient ecosystems**. According to MSCI, companies with high ESG ratings demonstrate **10–15% better risk-adjusted returns** and face fewer disruptions during climate-related shocks.[38] Treating ESG as a compliance formality is no longer viable - markets, regulators, and consumers are demanding accountability.

In India, the **Business Responsibility and Sustainability Reporting (BRSR)** framework, introduced by SEBI, mandates sustainability disclosure for the top 1,000 listed companies, signaling a shift toward mainstream ESG integration.[39]

3. Insurance Companies: Risk Custodians in a Changing Climate

Insurers shoulder the financial shock of every disaster. Their task now extends beyond payouts, they must **redefine how climate risk is quantified, priced, and mitigated**. Innovative instruments like **parametric insurance**, **green catastrophe bonds**, and **climate-linked coverage** are being adopted to promote resilience. The **OECD** estimates that the global protection gap (uninsured climate losses) now exceeds **$1.8 trillion annually**, underlining the scale of exposure.[40]

In India, the **IRDAI's 2024 Climate Risk Assessment Framework** encourages the integration of climate analytics and catastrophe modeling into underwriting practices, ensuring that insurers evolve into proactive risk managers rather than reactive compensators.[41]

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[36] International Monetary Fund (IMF). *Climate Policy and Fiscal Stability: Reducing Systemic Vulnerability.* Washington, DC: IMF, 2024. (click here)
[37] Ministry of Environment, Forest and Climate Change (MoEFCC). *National Action Plan on Climate Change (NAPCC).* Government of India, 2023. (click here)
[38] MSCI Inc. *The MSCI ESG Research Report 2024: Risk, Return, and Resilience.* New York: MSCI, 2024. (click here)
[39] Securities and Exchange Board of India (SEBI). *Business Responsibility and Sustainability Reporting (BRSR) Framework.* Mumbai: SEBI, 2023. (click here)
[40] Organisation for Economic Co-operation and Development (OECD). *Climate Risk and Insurance: Bridging the Protection Gap.* Paris: OECD, 2023. (click here)
[41] Insurance Regulatory and Development Authority of India (IRDAI). *Guidelines on Climate Risk Assessment and Reporting.* Hyderabad, 2024. (click here)

*The **"onus of responsibility"** lies in **collective coherence**.*

***ESG integration** across all sectors ensures that no single failure cascades across the system.*

*The **private sector's role** is expanding from compliance to co-governance, while citizens shape market transitions through awareness and consumption.*

***Governments** must embed climate resilience into fiscal, regulatory, and urban planning frameworks.*

***Corporates** should integrate ESG metrics into strategic decision-making and innovation cycles.*

***Investors** need to redefine fiduciary responsibility through climate-aligned capital flows.*

***Citizens** must see sustainability not as sacrifice, but as empowerment through informed participation.*

"Responsibility is no longer vertical, it is networked. ESG is the design language of shared survival."

4. Investors: Catalysts of Capital Transition

Investment choices define the direction of progress. By redirecting capital toward **green bonds, low-carbon industries, and climate-resilient infrastructure**, investors can accelerate transition. In 2023, global ESG-focused assets reached **$40 trillion**, projected to surpass **$53 trillion by 2030**, accounting for one-third of total global assets under management.[42] However, continued investment in fossil-intensive sectors reinforces systemic risk.

Investors' **fiduciary duty** is evolving, no longer limited to maximizing financial returns but also safeguarding planetary and macroeconomic stability through **ESG-integrated decision-making**. The Reserve Bank of India's recent discussion paper on **Climate Risk and Sustainable Finance (2023)** encourages financial institutions to embed ESG frameworks into credit risk assessment and portfolio management.[43]

5. Citizens: Agents of Everyday Change

Citizens may seem peripheral to systemic shifts, yet they are the foundation upon which sustainable societies rest. Consumer choices, ranging from **energy-efficient consumption** to **sustainable mobility**, collectively shape market behavior. The **UN Environment Programme (UNEP)** reports that if just 25% of global consumers adopted low-carbon lifestyle choices, global emissions could fall by **up to 20% by 2030**.[44]

In India, growing public movements around renewable adoption, waste segregation, and sustainable fashion demonstrate that collective behavioral change can reshape policy and corporate priorities faster than legislation alone.

*The Domino Effect of Climate Risk illustrates how inaction in one domain cascades into failures across others. This section extends that idea: recovery and resilience depend on **synchronized responsibility**. Governments must lead with foresight, corporations must innovate with conscience, investors must finance with prudence, insurers must price with vision, and citizens must engage with awareness.*

*ESG, therefore, is not a corporate afterthought, it is the **blueprint for collective resilience**. The effectiveness of climate action will be determined not by the strength of individual pillars, but by their alignment into one coherent structure. Only when responsibility becomes shared, and sustainability systemic, can societies withstand the next wave of shocks **without collapsing the dominoes again.***

[42] Bloomberg Intelligence. *ESG Assets May Hit $53 Trillion by 2030, Making Up One-Third of Global AUM.* New York: Bloomberg, 2023. (click here)
[43] Reserve Bank of India (RBI). *Discussion Paper on Climate Risk and Sustainable Finance.* Mumbai: RBI, 2023. (click here)
[44] United Nations Environment Programme (UNEP). *Emissions Gap Report 2023: Low-Carbon Lifestyles for a Sustainable Future.* Nairobi: UNEP, 2023. (click here)

5.

MOVERS & SHAKERS

In a world increasingly shaped by climate volatility, social upheavals, and governance failures, **ESG** principles have moved from the margins of discussion to the center of decision-making. What was once viewed as a voluntary framework for responsible businesses has evolved into a **strategic necessity**, one that determines access to capital, market relevance, and societal trust. ESG today defines how organizations, economies, and institutions will survive, compete, and sustain in a world that no longer tolerates short-term, unsustainable growth models.

This transformation is not theoretical; it is being written in **balance sheets, policy reforms, and consumer behaviors** worldwide. Investors are shifting portfolios, governments are codifying ESG mandates, and corporations are restructuring operations to align with sustainability imperatives. Those that lag behind are not merely missing an opportunity, they are courting obsolescence. The convergence of environmental and social realities with economic performance has made ESG the ultimate measure of **institutional resilience, relevance, and responsibility**.

Four interlinked Dimension

These four dimensions illustrate why ESG has become an irreversible force shaping the future. Together, they capture the multifaceted impact of sustainability, from financial resilience and policy evolution to shifting market dynamics and the fundamental imperative of survival. They reveal how ESG has evolved beyond a moral compass into a structural framework driving long-term competitiveness, accountability, and systemic stability across economies.

1. Financial Resilience

Companies that integrate ESG into their operational DNA tend to outperform those that do not. According to MSCI, **top ESG-rated companies have consistently outperformed lower-rated peers** over long horizons, driven by stronger fundamentals and better risk management. [45] Empirical studies also suggest that ESG integration helps **reduce idiosyncratic risk, drawdowns, and credit spread volatility**, improving risk-adjusted returns. [46]

Further, firms with stronger ESG ratings often enjoy a **lower cost of capital**, since they are perceived as more resilient and less exposed to sustainability-related risks. [47] A Stanford study also highlights that large institutional investors primarily use ESG as a **tool for volatility control and risk mitigation**, especially for long-term exposure. [48]

2. Policy Pressure

The global policy landscape is moving beyond the **"pay and move"** model of reactive compliance toward **integrated, forward-looking governance**. Nations now recognize that fragmented regulations, emission penalties or disclosure mandates in isolation cannot ensure resilience in an interconnected world. From the EU's sustainability directives to the U.S. climate-linked incentives and Asia's emerging ESG laws, policies are evolving to embed transparency, accountability, and lifecycle impact at the heart of competitiveness.

In India too, this shift is evident. Policy thinking is expanding from compliance to **end-to-end sustainability** architecture, linking energy transition, mobility, tariffs, logistics, and waste management through an inclusive, outcome-driven lens. Such coherence marks a transformation from policy as enforcement to **policy as strategy**, shaping future markets where resilience, circularity, and credibility define economic strength.

[45]MSCI Institute (2024). *17 years of MSCI ESG Ratings and long-term corporate performance.* (Link here)
[46]MSCI ESG Research. *Comparing Risk and Performance for Absolute and Relative ESG Scores.* (link here)
[47]MSCI ESG Ratings and Cost of Capital. *Research on ESG resilience and financing costs.* (link here)
[48]Stanford Graduate School of Business (2023). *Big Investors Say They Use ESG to Reduce Risk (But Mostly Focus on E & G).* (link here)

Core Dimensions of ESG Transformation

1. ***Financial Resilience*** *- ESG strengthens stability, reduces risk, and drives innovation-led value creation.*
2. ***Policy Pressure*** *- ESG compliance is becoming* ***mandatory****, defining trade and investment eligibility.*
3. ***Market Drivers*** *- ESG is reshaping* ***capital flows and consumer behavior****, turning sustainability into a competitive edge.*
4. ***Survival Imperative*** *- ESG is the* ***blueprint for enduring shocks*** *and ensuring continuity in an unpredictable world.*

"ESG is the new architecture of progress, where resilience, responsibility, and performance converge."

3. Market Drivers

The momentum behind **sustainable finance** is unprecedented. Bloomberg Intelligence projects that **global ESG assets under management (AUM)** will reach **USD 40 trillion by 2030**. [49] This expansion is fueled by investor demand for transparency, consumer preference for ethical products, and financial institutions prioritizing **green lending and sustainable underwriting**. According to a Bloomberg survey, **85% of investors expect ESG-linked assets to grow further** in the next two years. [50]

ESG integration has therefore become a **prerequisite for credibility** in global markets. Companies ignoring it risk losing customers, capital, and competitiveness; making ESG adoption not an optional differentiator but a **business survival strategy**.

4. Survival Imperative

The cost of a compromised ESG is no longer measured in lost value, but in the fragility of survival itself. A Swiss Re Institute analysis warns that **unchecked climate inaction could erase up to 18% of global GDP by 2050**. [51] Climate disruptions, resource scarcity, and social instability are no longer distant possibilities, they define our current reality.

In this context, ESG is not just a framework for sustainable growth but a **blueprint for survival**, helping nations and corporations withstand shocks, safeguard assets, and ensure continuity in an increasingly volatile world.

The stakes are existential for all - Government, Corporates and People.

ESG as the Architecture of the Future

The evidence is overwhelming, **ESG is not a trend, it is a transformation**. It represents a fundamental shift in how we define success, resilience, and legitimacy in the modern world. No stakeholder, whether government, corporation, investor, or citizen- can afford to stand apart from this movement.

ESG has evolved beyond compliance checklists and public image exercises; it is now the **infrastructure upon which economies and societies must rebuild their future**. To disregard ESG is to accept fragility, instability, and eventual irrelevance. The urgency is clear: the transition to sustainable, transparent, and equitable systems cannot wait for the next crisis to force change.

Adopting ESG is not merely about staying competitive, it is about **ensuring survival** in a century where resilience, accountability, and sustainability will determine who endures and who is left behind.

[49] Bloomberg Intelligence (2024). *Global ESG assets predicted to hit USD 40 trillion by 2030 despite challenging environment.* (link here)
[50] Bloomberg Professional Insights (2024). *BI survey: Investors see AUM growth for ESG and climate funds.* (link here)
[51] Swiss Re Institute (2021). *World economy set to lose up to 18% GDP from climate change if no action taken.* (link here)

6.

INTRODUCING A NEW LENS: *ESOS*

After extensive analysis of the preceding sections, the **Green Infrathink Foundation (GIF)** recognizes that addressing the complexity of modern sustainability challenges requires a shift from fragmented frameworks to an integrated design logic. Building on the insights derived from climate risk interlinkages, shared accountability, and systemic ESG transformation, GIF proposes the **ESG Societal Operating System (ESOS)**, a unified model for resilience, accountability, and adaptive governance.

ESOS redefines ESG not as a corporate checklist, but as a societal architecture, an operating system that enables governments, markets, and communities to anticipate disruption, adapt dynamically, and maintain equilibrium amid volatility.

From Framework to Function: The Evolution Toward ESOS

Modern societies operate in a state of **permanent transition**, climate shocks, supply chain disruptions, geopolitical instability, and technological change interact at unprecedented speed. Linear governance models and isolated market responses can no longer manage this complexity.

ESOS addresses this gap by embedding ESG principles into the *core decision-making logic* of nations and institutions. It transforms ESG from an evaluative framework into a **coordinated system design** that enables:

- Governments to align sustainability goals with fiscal and social priorities.
- Corporates to innovate responsibly and integrate long-term value creation into strategy.
- Investors to use ESG as *risk intelligence*, quantifying resilience and transition readiness.
- Citizens to anchor trust in transparent and accountable systems.

Without this systemic integration, progress in one area can amplify fragility in another, creating the familiar domino effect of disruption. **ESOS introduces coordination logic** that binds environmental, social, and governance functions into a single, adaptive system.

The Three Pillars of ESOS: E, S, and G as System Modules

At the core of ESOS, lie three intelligent modules - **E, S, and G** - that operate as the hardware, human interface, and processor of modern civilization. Their integration defines how societies anticipate, absorb, and adapt to disruption.

1. Environmental (E): The Hardware of Civilization

In ESOS, the environment forms the *hardware of civilization*, the physical systems that sustain life and production. It includes climate stability, biodiversity, resources, and ecosystems, the infrastructure that makes economic and social activity possible.

Under ESOS, **E evolves from conservation to control logic**, the base layer that regulates the flow of energy, materials, and emissions across sectors.

It calls for:

- Integrated carbon and resource accounting in governance and industry.
- Circular economy principles guiding production and procurement.
- Climate data embedded into urban design, mobility, and infrastructure planning.
- Resilient infrastructure investments that build *adaptive capacity*, not reactive recovery.

When environmental systems fail, every other system crashes. ESOS therefore treats the environment not as a variable but as the foundation of survival.

2. Social (S): The Human Interface of Resilience

If the environment is hardware, society is the *human interface*, the platform through which resilience is activated. ESOS repositions the social dimension from a welfare lens to a **core productivity and stability driver**.

It operationalizes "S" through mechanisms that expand collective intelligence and inclusion:

- Transition frameworks to reskill workforces displaced by automation and decarbonization.
- Health and safety systems viewed as economic infrastructure.
- Equity and mobility indicators integrated into national development planning.
- Community participation loops for urban planning, disaster preparedness, and policy design.

A society that is **inclusive, informed, and empowered** acts as a shock absorber rather than a shock amplifier and becomes an asset in resilience economics.

3. Governance (G): The Processor of Trust and Accountability

Governance connects the environmental and social pillars, the **processor** that converts data and decisions into coordinated outcomes. Under ESOS, governance evolves from compliance oversight to **algorithmic accountability**, capable of updating, learning, and self-correcting.

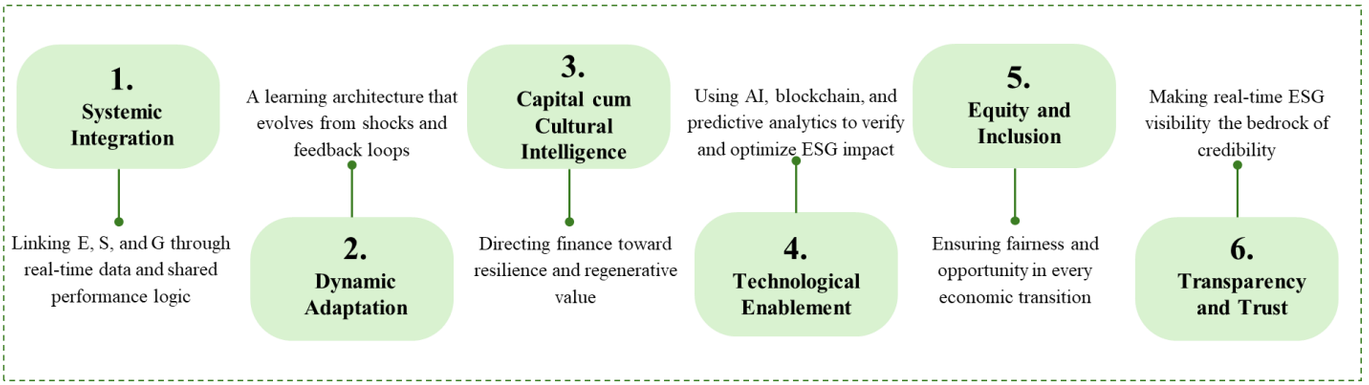
Its design includes:

- Integrated decision dashboards combining environmental, fiscal, and social data.
- Multi-stakeholder governance linking state, market, and civil society.
- Dynamic regulation that evolves alongside technologies and risks.
- Radical transparency, from open climate finance portals to ESG-linked budgets as the foundation of institutional trust.

Good governance, in this model, is not reactive protection, it is **preventive intelligence** that anticipates failure before it cascades.

Core Features of ESOS

The ESOS framework is defined by six core features that translate sustainability principles into an active, data-driven, and adaptive system of governance and growth.



The core features of ESOS define how this system functions, how data becomes intelligence, how finance becomes regenerative capital, and how technology becomes the architecture of trust.

ESOS (ESG as a Societal Operating System) *transforms ESG from a reporting framework into a* ***functional, adaptive governance model****.*

ESOS is an adaptive model that unites ***integration, innovation, equity, and transparency*** *into the architecture of a resilient, sustainable future.*

ESOS builds ***resilience, accountability, and inclusivity*** *across public, private, and civic systems.*

It converts sustainability into a ***living, intelligent system*** *that learns, responds, and evolves.*

"ESOS is the functional architecture of a sustainable, intelligent, and collaborative civilization."

The Strategic Value of ESOS

Adopting ESG as a societal operating system transforms how **risk, value, and performance** are defined. It replaces reactive governance with predictive intelligence, creating a new competitive paradigm rooted in adaptability and integrity.

- **For Governments:** A unified dashboard linking sustainability, fiscal health, and social protection.
- **For Businesses:** ESG as a *strategic capability*, driving innovation and efficiency.
- **For Investors:** A standardized model for risk intelligence and transition readiness.
- **For Citizens:** A governance model that rebuilds trust through transparency and shared participation.

The Operating Code of Modern Civilization

ESOS represents the next evolution of ESG, from principle to protocol, from metrics to mechanisms. It reimagines how societies coordinate environmental, social, and economic systems toward stability and balance.

In an age of deep interdependence, the cost of fragmentation is collapse. The promise of ESOS lies in coherence a shared operating system that translates

Get your Strategy, Direction & Commitment - "RIGHT NOW"

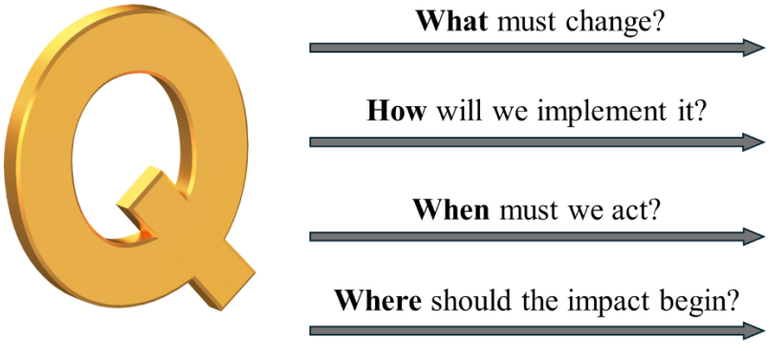
The story unfolding before us is not merely about climate change, governance, or economics in isolation, it is about how the threads of our collective existence are being rewoven under immense pressure. ESG, in this context, is not a parallel agenda, a corporate add-on, or a governance burden. It represents the **architecture of resilience itself**, a framework to redesign how societies define growth, fairness, and security in an increasingly unpredictable century.

The choice before us is neither abstract nor distant. The floods that erase decades of infrastructure, the untimely rains that undo the labor of farmers, the market volatility that erodes livelihoods, and the migrations that reshape communities, all stand as reminders that survival and progress depend not on fragmented responses, but on **shared systems of accountability and coordinated responsibility**. ESG, in all its form and meaning, is the visible and necessary framework through which such systemic coherence can be achieved.

But frameworks alone are no longer enough. The world now demands **functioning systems, not declarations**. This is where **ESOS, the ESG Societal Operating System becomes essential.** It transforms ESG from a reporting framework into a **living, adaptive architecture** that connects environmental balance, social stability, and governance integrity into one responsive mechanism of survival.

Adopting ESG and transitioning toward ESOS is therefore not merely about compliance; it is about cultivating foresight, embedding trust, and creating **systems with elasticity**, ones that can bend with shocks rather than break under them.

The question is no longer ***"Why ESG?"*** but



And the answer to all four is one:

We need a unified system - ESOS.
A system that defines *what* to change, *how* to operationalise it, *when* to accelerate, and *where* to prioritise impact.
Only through ESOS can intention become infrastructure, and sustainability become the operating logic of society.

The path forward demands **detailed, actionable, and measurable blueprints** that translate sustainability intent into governance logic. The sooner ESG and ultimately ESOS becomes the **common operating system of governance, commerce, and citizenship**, the greater our collective chance not merely to endure the crises ahead, but to **design a future that is stable, equitable, and enduring.**

Green Infrathink Foundation (GIF)

From Thought to Transformation

Integrating Research, Policy, and Advisory for one cause - SUSTAINABILITY

In an era where sustainability has become both a necessity and a challenge of coordination, the **Green Infrathink Foundation (GIF)** stands as a catalyst for systemic transformation. Founded on the belief that sustainability must be designed, not declared, GIF operates as a **think tank** that bridges research, policy, strategy and on-ground execution to drive measurable impact. As a **consultancy focused on sustainable business transformation and growth**, GIF works with governments, industries, and institutions to embed **ESG** principles into the architecture of infrastructure, governance, and enterprise strategy, translating sustainability from **intent to impact**, and from **vision to implementation.**

This report, ***"Compromised ESG: For how Long?"*** reflects that commitment, it examines how ESG must evolve beyond fragmented frameworks into a unified, adaptive model for accountability and transformation. By proposing the **ESG Societal Operating System (ESOS)**, GIF advances its vision of sustainability as an operating logic for societies, one that builds coherence, transparency, and long-term resilience across economies, institutions, and communities.

GIF stands committed to serve, to contribute, and to collaborate with businesses and business houses on this journey, placing a serious bet on SUSTAINABILITY. We offers comprehensive services, including advisory expertise, to support our clients navigate this convergent and transformative path with clarity, ease, and objectivity.

GIF nurtures a deep and unwavering commitment to Sustainability.

Sustainability is a growth opportunity - it is the wisdom that **ensures it stands the test of time.**

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****The views, vision, and version of the content expressed herein are built upon the novel initiatives and insights of individuals, corporates, and associations working in this space.***