



**Harper Adams  
University**

# Boost the Productivity and Regeneration of Natural Resources



Part of the Call to Action "Achieving a Sustainable Future for All"


August 2025


<https://www.thegfcc.org/>


# Table of Contents


1. Introduction .....	5
2. Challenges and Opportunities in Sustainable Natural Resource Use .....	9
3. Opportunities in Natural Resource Sustainability .....	17
4. Key Strategies and Actionable Recommendations .....	23
5. Inspiring Examples .....	34
6. Act Now: Be Part of the Solution .....	37
7. Helpful Sources .....	44


The Global Federation of Competitiveness Councils (GFCC) [\*Call to Action, "Achieving a Sustainable Future for AI"\*](#), provides a strategic framework for stakeholders to foster the responsible growth of their economies and societies. This framework is built upon the following Priority Action Areas (PAAs):


- 


**Boost the productivity and regeneration of natural resources (this paper).**
- 


Accelerate energy transformation and seize emerging opportunities.
- 


Incorporate sustainability and resiliency as key criteria for infrastructure development.
- 


Adopt sustainable full life-cycle consumption and production models.
- 

Nurture the health and well-being of communities to unlock sustainable growth.
- 

Invest in skills to empower people to access high-paying work opportunities.
- 

Balance long-term investment in R&D with accelerated translation and dissemination.
- 

Advance standards and metrics for data-based sustainability governance and management.
- 

Use novel financial architectures to mobilize resources for sustainable investment.
- 

Leverage education to forge a future innovation and sustainability-oriented mindset.

The Call to Action addresses the complex challenge of balancing economic, social and environmental dimensions with both short- and long-term goals in mind. This paper is part of a series that delves into the identified PAAs, offering a deeper understanding of each and practical guidance for implementation. Through these papers, the GFCC not only tackles global and local sustainability challenges but does so in a manner which will ensure economic growth and social inclusion, thereby generating resiliency and prosperity at all stages along relevant supply chains in the long run.

**These PAAs are mapped to the UN Sustainable Development Goals (SDGs),** providing a common framework for implementing sustainable practices and empowering governments, organizations, and civil society to advance their individual and collective contribution towards the SDGs. Each article in the series will be developed in collaboration with one or more of the GFCC's members and fellows, leveraging their areas of expertise.



**This particular paper explores productivity and regeneration of natural resources (i.e., reversal of fossil and mineral depletion). We will examine key trends, explore opportunities, provide actionable recommendations for implementation, and highlight innovative solutions and inspiring examples.**



# 1. Introduction

---

# We can no longer afford to **treat natural resources as inexhaustible commodities that nature can indefinitely supply in an unconstrained manner.**

Natural resources are essential for human societies and economic development. They are commonly categorized as renewable (e.g., forests, sunlight, wind, water) or non-renewable (e.g., fossil fuels, minerals and fissile materials). While renewable resources replenish naturally, albeit with caveats particularly related to forests and water (as explored later), non-renewable resources exist in *finite* quantities and cannot be replenished at a rate comparable to their consumption. Environmental resources differ by encompassing the interconnectedness of living organisms, ecosystems, and natural processes that support life. They represent a more holistic view of nature's assets (i.e., natural capital), going beyond individual materials or energy sources.

Increasing demands for a growing global population (e.g., necessities such as food as well as non-essential and lifestyle goods such as the latest technologies), coupled with unsustainable consumption patterns and, further, associated material production to meet said demand, are pushing Earth's natural resources to their limits. Forests are disappearing at alarming rates, freshwater sources are dwindling in quality (e.g., eutrophication of lakes), and biodiversity is declining sharply. **The consequences are already being felt across the globe** in the form of extreme weather events, water shortages, and feedstock depletion. For instance, the World Bank estimates that water scarcity could cost some regions up to 6% of their GDP by 2050.

**There is an urgent need for a fundamental shift in how we value and manage these assets.** This requires a transition towards a circular economy, reducing our reliance on resource-intensive products, protecting and restoring ecosystems to ensure their long-term resilience, and harnessing the power of technology to optimize resource use, monitor environmental impacts, and develop sustainable solutions such as 'closed' systems whereby the same materials can be upcycled.

However, throughout history, human ingenuity has consistently played a role in overcoming constraints—including and especially in natural resources. While acknowledging the finite characteristic of natural resources, the potential for technological innovation to enhance resource productivity, discover substitutes and even create synthetic resources, allow for the reuse of materials and even unlock previously inaccessible resources offers a contrasting perspective and must be factored into our future equation. For example, advancements in material science are leading to lighter and stronger materials requiring less raw input, and progress in energy technologies is diversifying our energy sources—a theme we explore in another paper.

In summary, humanity faces a **critical tension between the scarcity of natural resources and the vast possibilities that science and technology can unlock**. As the global population expands, so does the demand for food, housing, clean water and modern comforts—deepening our impact on the planet. Many still lack access to basic necessities, and meeting these needs requires more resources. Yet we cannot continue to extract and consume as we have in the past. To protect the environment, we must urgently scale the use of existing technologies and adopt best practices that are both economically viable and environmentally sound. But that alone is not enough.

We also need bold investments in science and technology to transform how we meet human needs—developing breakthroughs that decouple growth from the extraction of natural resources and environmental harm. That means building new materials from the atomic level up, in labs and advanced manufacturing facilities, instead of depleting ecosystems through mining. These two imperatives—**managing resources wisely today and investing in game-changing innovation for tomorrow—must go hand in hand**.

**Achieving a sustainable future will require short- and medium-term action to buy time, while we develop long-term solutions that make prosperity and environmental stewardship truly compatible.**

# The window of opportunity to address the environmental crisis that arises from the exploration of natural resources under the current technology/business paradigm is closing.

We need decisive action to transition towards a more sustainable—in economic, social and environmental terms—future. We need action from business, academia, government, civil society and individuals. At the same time, we need to expand investments in game-changing technologies and projects. These agendas are not mutually exclusive, they are complementary. They should **consider and respect the different realities and the asymmetries of resources across nations.**

This paper emphasizes the need to boost productivity and regeneration of natural resources through community engagement, responsible bold innovation, technology-driven efficiency, transparent monitoring, benefit-sharing, sustainable green technology transfer, and fostering a regeneration economy. These strategies are crucial for ensuring the **long-term availability of critical natural resources, the well-being of communities and the planet**, and achieving a sustainable future for all.

While energy is a crucial component of the natural resource landscape, a separate paper within this series specifically addresses energy production, consumption, and the transition to sustainable energy systems. Therefore, the discussions within this paper will primarily focus on the broader use and management of natural resources beyond energy, such as materials, water, and land.



## 2. Challenges and Opportunities in Sustainable Natural Resource Use

# Natural resource landscape

While the escalating consumption of natural resources, fueled by population growth and economic development, presents a critical challenge for the environment, global economy, security, and social equity, **it also catalyzes human ingenuity and the development of transformative technological solutions.** This evolving landscape requires careful navigation, recognizing the risks of finite resource depletion and, at the same time, the unprecedented potential for innovation to reshape how we extract, utilize, reuse, regenerate and create resources.

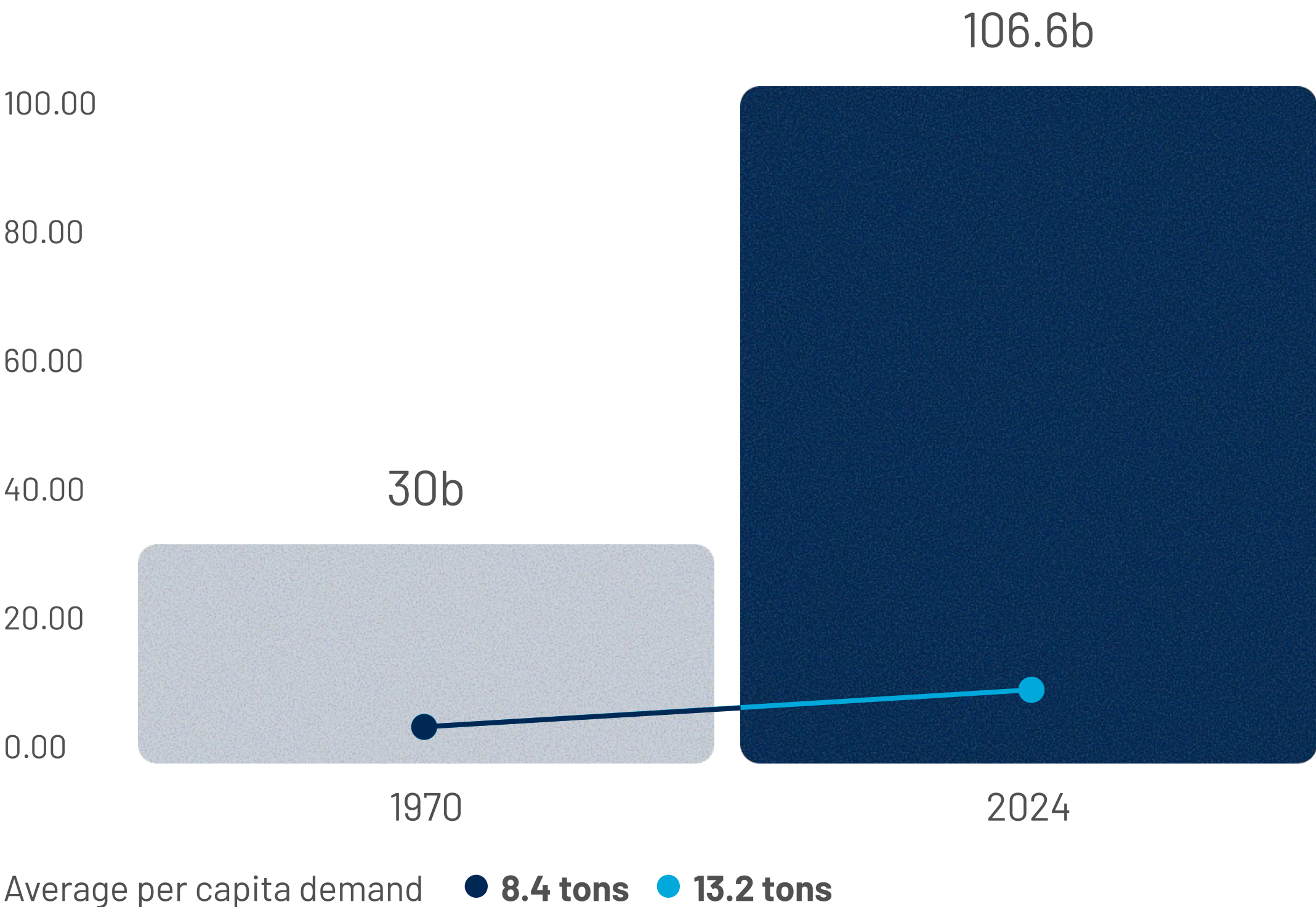
The main aspects shaping the natural resources landscape are:

1. Rising Resource Consumption;
2. Increased Environmental Impacts;
3. Risk of Resource Exhaustion;
4. Growing Frameworks for International Cooperation;
5. Public Awareness is Accompanied by Lack of Consensus;



# 1. Rising Resource Consumption

According to the UN Environment Programme's 2024 Global Resources Outlook, **global material extraction** surged from 30 billion tons in 1970 to 106.6 billion tons in 2024. This includes resources like **fossil fuels, minerals, metals, biomass, and water**.



Consequently, the global average per capita demand for materials rose from **8.4 tons in 1970** to **13.2 tons in 2024**. UNEP'S 2024 Global Resources Outlook also estimates that the demand for natural resources is expected to continue growing, with a projected **60% increase by 2060** compared to 2020 levels without significant policy interventions.

While developed countries have historically been the largest consumers of natural resources, a recent trend has shown a slight decline in per capita consumption showing signs of relative decoupling meaning their economies are growing faster than their resource use. This demonstrates that **economic growth doesn't necessarily equate to ever-increasing resource use**.

However, emerging economies are rapidly expanding their demand for natural resources driven by the transformation from agrarian-based to urban-industrial based economies which are more intensive in material and energy use. This presents opportunities for these nations to leapfrog traditional resource-intensive development models by adopting cutting-edge sustainable technologies, infrastructures and business models from the outset.

## 2. Increased Environmental Impacts

The extraction, transportation, processing, and consumption of natural resources have significant environmental impacts, including deforestation (loss of stored carbon plus indirect greenhouse gas emissions from land use change), biodiversity loss, water scarcity, and pollution. Resource extraction and processing account for

**90%** of global biodiversity loss and water and stress impacts, and

**50%** of all greenhouse gas emissions.

**1 million**

animal and plant species are now threatened with extinction, many due to habitat loss and degradation driven by resource extraction, as estimated by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES).





### 3. Risk of Resource Exhaustion

The over-exploitation of natural resources is leading to the depletion of various types of natural resources. This is particularly concerning for non-renewable resources like fossil fuels and minerals. For instance, known reserves of **critical minerals like cobalt and lithium**, essential for **batteries and clean energy** technologies, are estimated to be insufficient to meet the projected demand in the coming decades. Another critical concern, as highlighted by the latest refinements to the planetary boundaries, is the loss of rock phosphate which serves as a key fertilizer for the world's food systems;

**if this trend continues, agriculture may face a situation whereby optimal, or even sufficient, levels of crops cannot be grown to feed the ever-increasing population.**

## 4. Growing Frameworks for International Cooperation

While true **international cooperation on resource challenges remains a complex goal**, there is a growing number of frameworks designed to encourage and support collaborative action. The 17 SDGs, adopted by all United Nations Member States in 2015, provide shared blueprints for peace and prosperity for people and the planet, now and into the future, with several, such as #12 (responsible consumption and production), being directly linked to resource depletion.

Similarly, the Paris Agreement on climate change, with 195 signatory parties, aims to limit global warming to well below 2 degrees Celsius above pre-industrial levels. These frameworks offer crucial platforms for governments, businesses, and civil society to work together on interrelated issues like resource scarcity, climate change, and broad environmental degradation (e.g., acidification, eutrophication, and ecotoxicity).

However, the existence of these frameworks doesn't guarantee cooperation in itself; **successful outcomes depend on the active and sustained engagement of all stakeholders.**





## 5. Public Awareness is Accompanied by Lack of Consensus

Global awareness of the natural resource crisis is on the rise, particularly among younger generations who are increasingly concerned about resource depletion and biodiversity loss. While the desire for action is evident, **there's a lack of global consensus on the best path forward.**

Disagreements persist about which policies are most effective and how to share responsibility for addressing the crisis, particularly between developed and developing nations.

Furthermore, declining trust in government, business, media and civil society combined with the spread of misinformation create additional challenges in tackling this complex issue.

As the dynamics of natural resource consumption evolve, the landscape is increasingly shaped by the imperative for and the potential of technological solutions.

**The transition to a more sustainable resource use hinges on our ability to foster innovation, implement supportive policies, and encourage widespread adoption of technologies that enhance resource productivity, promote circularity, and minimize environmental impact, ultimately **decoupling human progress from unsustainable resource dependence.****



## 3. Opportunities in Natural Resource Sustainability

---

# The growing awareness of environmental challenges and the urgent need for sustainable solutions has unlocked a **wealth of opportunities** in the field of Natural Resource Management.

The current trajectory of natural resource consumption, while presenting a critical juncture, also signals opportunities to unlock new forms of resource productivity and abundance. This challenge is not only an opportunity to manage scarcity but also to leverage our capacity for innovation and redefine our relationship with natural resources to forge a more sustainable path.

Areas such as **conservation, advanced energy systems, precision agriculture, synthetic biology for resource creation, and radical resource productivity** are vital to create new pathways to meet human needs while preserving the planet's resources for future generations. To avert the environmental crises and ensure a future where both humanity and the planet thrive, **a paradigm shift is essential**. This shift necessitates a three-pronged approach:



# 1. Investing in technological breakthroughs to substitute and decouple from natural resource extraction

**To break the unsustainable link** between economic growth and natural resource depletion, we must proactively invest in innovation that enables high-performance substitutes for finite natural resources. Advances in fields such as synthetic biology, materials science, and advanced manufacturing are opening the door to a future where we can produce lab-grown minerals, engineer bio-based materials, and develop alternatives to traditionally mined or harvested resources.



Even more transformative is the potential **to design entirely new materials from the atomic level up** – tailoring their structure and function to achieve sustainability, circularity, and superior performance. Realizing this potential requires bold, long-term investment and the mobilization of ambitious R&D programs.

## 2. Scaling the diffusion of technologies that enhance natural resource productivity

A vast array of technologies already exists to improve the productivity and sustainability of natural resource use—but many remain underutilized. From precision agriculture and smart irrigation to decentralized water recycling, advanced waste management, and digital monitoring systems, these tools can significantly reduce environmental impacts while increasing output. **The real challenge lies not in invention, but in massive dissemination**—particularly in regions where infrastructure gaps, financial constraints, or capacity limitations hinder adoption. Unlocking this potential requires targeted policies, investment in capacity-building, and business models that enable inclusive access to these solutions.



### 3. Actively regenerating natural systems

Beyond simply reducing our impact, we need to actively invest in restoring and regenerating the natural resources we depend upon. This includes:



**Afforestation** (e.g., ensuring a higher ratio of woodland expansion/replantation to depletion)



**Sustainable land management practices** (e.g., avoiding soil erosion through innovative practices thus keeping nutrients in the ground)



**And protecting biodiversity** to enhance the resilience of ecosystems and their capacity to provide essential services (e.g., pollination).

Natural resource regeneration is not just an environmental necessity, **but also a growing business opportunity** for those willing to innovate and invest in regenerative practices and ecosystem services. It can be a business, as well as a source of resource security, reputation enhancement, and potentially access to government incentives and support.

# It is important to highlight

that improved resource productivity and natural system regeneration are not new ideas. Technological advancements have been underway for a while, and regulations aimed at better resource management have been implemented since the mid-20th century, but recent years have seen a surge in both radical innovation and more ambitious policy frameworks. However, the **true opportunity lies in significantly accelerating the pace and scale of technological advancement and change to mitigate scarcity and actively cultivate new forms of resource abundance and environmental flourishing.**

With that in mind, the strategies and actionable recommendations proposed in the next section of this document are geared not only towards technological advancements but also towards reducing friction, increasing support, and sharing the benefits of this transformation. This includes promoting community engagement, fostering responsible innovation, and ensuring equitable access to resources and opportunities.



## 4. Key Strategies and Actionable Recommendations

---

# Guiding principle

The guiding principle sets the overarching vision for this action area. This high-level statement summarizes the core philosophy or approach underlying the natural resources action area as detailed below.

*The productive use of natural resources is at the core of a sustainable and inclusive future. Investment and innovation that increases productivity and promotes the sustainable use of natural resources should be prioritized. All stakeholders should systematically monitor the impacts of any initiatives on ecosystems and communities. Policy making and innovation processes related to the development and use of natural resources should engage the communities they affect and ensure that their voices are always heard. The benefits obtained from the development of natural resources need to be shared among all stakeholders, including the communities directly affected.*

# Key Strategies

The following items present key strategies and actionable recommendations. The key strategies outline the general approaches to achieving the vision established by the guiding principle. These strategies are detailed into actionable recommendations that provide more specific focuses or practical technologies and tools to put the key strategies into action.

- 1. Community Engagement
- 2. Responsible Innovation
- 3. Technology-Driven Efficiency
- 4. Transparent Monitoring & Stakeholder Engagement
- 5. Equitable Benefit Sharing
- 6. Sustainable Green Technology Transfer
- 7. Regeneration Economy

# Key Strategy 1: Community Engagement

Include local communities in decision-making processes of natural resource development and management, respecting traditional knowledge, and incorporating their perspectives into policies and practices. Concerns about environmental damage and inequitable distribution of benefits often fuel community resistance.

By proactively addressing these concerns through responsible practices and innovative partnership models, project developers can build trust and pave the way for smoother project implementation by utilizing the concept of co-development.



Develop partnerships with local communities to implement responsible practices in mining, forestry, agriculture, fishing, energy production, and tourism that minimize environmental impacts, respect community well-being, and contribute to local development.




Enforce system-level environmental impact assessments for natural resource development projects to predict and adapt to unintended consequences and promote the restoration of degraded sites to protect biodiversity and ecosystems.




Prioritize renewable and low-emitting resource projects that generate jobs within local communities and invest in targeted retraining programs to ensure that local workers benefit from the transition to a sustainable economy.

# Key Strategy 2: Responsible Innovation


Foster innovation that prioritizes both environmental sustainability and social inclusivity by developing technologies and approaches that minimize resource depletion, reduce pollution, and create economic opportunities for marginalized communities.




Invest in "moonshot" technology projects with the potential of unlocking radical resource abundance and environmental regeneration. This includes supporting high-risk, high-reward research in fields such as advanced bioengineering, synthetic biology, materials science, nanotechnology, and quantum chemistry to enable sustainable material production. It also involves advancing technologies for the direct capture, conversion and utilization of carbon dioxide. These efforts must be pursued with careful consideration of their ethical, social and environmental implications to ensure responsible innovation.



Promote regenerative agriculture techniques that improve soil health and reduce land degradation. Additionally, support agroforestry (e.g., silvopastoral systems which have multiple sustainability benefits) and diversified farming systems such as intercropping that can enhance biodiversity and ecosystem resilience.



Invest in desalination projects powered by low-emitting energy sources to address water scarcity while minimizing carbon emissions.



Support innovation in materials science to develop alternative materials with optimized performance and lower environmental footprints through, for instance, lowering energy demands.

# Key Strategy 3: Technology-Driven Efficiency

Leverage technological advancements, such as the Internet of Things (IoT), remote sensing and artificial intelligence (AI), to optimize the use of natural resources.



Invest in precision agriculture, intelligent resource monitoring, and data-driven decision-making, that can ultimately minimize the use of resources, reduce waste and maximize efficiency.



Invest in infrastructure development to ensure access to clean water and sanitation facilities in water-stressed regions including wells, pipelines, treatment plants, and sanitation systems.



Implement water-efficient technologies such as low-flow fixtures, water-saving appliances, smart irrigation systems and others in homes, businesses and public spaces.



Leverage IoT and AI to monitor wildlife populations, track illegal activities, and observe the evolution of natural resources. This technology can provide valuable data to identify and disrupt poaching, inform conservation strategies, and enable more efficient habitat restoration efforts.



Implement water-efficient technologies such as low-flow fixtures, water-saving appliances, smart irrigation systems and others in homes, businesses and public spaces.

# Key Strategy 4: Transparent Monitoring & Stakeholder Engagement

Establish robust monitoring systems to assess the impact of the use of natural resources on the environment, communities, and ecosystems.



Create platforms to share data on resource use, environmental impacts (e.g., water quality, air quality, deforestation rates), and social and economic indicators related to resource-dependent communities.



Present monitoring data in clear and accessible formats and use diverse communication channels to reach all stakeholders.



Create channels for stakeholders to provide feedback on monitoring data and participate in discussions about resource management decisions.

# Key Strategy 5: Equitable Benefit Sharing

Ensure that the benefits derived from natural resources are shared among all stakeholders, particularly with communities directly affected by resource extraction or utilization.



Invest in sustainable agriculture practices and improve livelihoods of small and medium farmers, implement tools that facilitate access to markets and financing, and promote fair trade to empower small and medium farmers simultaneously enhancing food security.



Support initiatives that foster transparency and accountability in the mining sector and ensure that local communities affected by extraction and processing of minerals benefit directly from mineral wealth via, e.g., fair wages applied through increased local employment.



Encourage sustainable forestry practices, such as selective logging, reforestation and afforestation to protect biodiversity, maintain ecosystem services, create economic value whilst supporting the livelihoods of forest-dependent communities.

# Key Strategy 6: Sustainable Green Technology Transfer

Implement mechanisms to strengthen local capacities, and to fund and facilitate the transfer of cutting-edge green technologies to developing countries, empowering them to combat climate change effectively while advancing techno-economic progress and promoting social inclusion.



Invest in education, training, and skills development in developing countries, with a focus on the low-emitting energy and green technology industry verticals (e.g. waste management and recycling, sustainable transportation, green design and construction and environmental remediation).



Promote partnerships between universities, research institutions, and businesses in developed and developing countries to support skills development to aspiring entrepreneurs, establish incubators and accelerators, and facilitate joint research and innovation on areas such as low-emitting energy, agriculture, circular economy, and green technology.



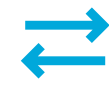
Develop mechanisms to transfer cutting-edge green technologies to developing countries, specifically excluding fossil fuel and outdated clean technologies from these initiatives



Develop dedicated global funds and financing mechanisms to provide seed funding, venture capital, and other financial support to clean tech entrepreneurs in developing nations. Create multilateral mechanisms to fund the development of local expertise and supply chains for green minerals in emerging nations.



Support developing nations to acquire local natural resources processing and green technologies manufacturing capabilities, shifting the focus away from raw material extraction.



Create multilateral mechanisms to fund the development of local expertise and supply chains for green minerals in emerging nations.



Align Overseas Development Assistance (ODA) with industry projects related to the sustainable use of natural resources and the national interests of the countries involved. Give scale to ODA and focus on the development of capabilities needed to operate new projects in emerging nations and autonomously design and implement future ones.

# Key Strategy 7: Regeneration Economy

Foster entrepreneurship and investment in new technologies and businesses that regenerate ecosystems and natural resources in general, providing transparent and clear regulatory frameworks for that.



Support and fund research and development, while offering targeted investment opportunities to companies developing technologies and innovative regenerative solutions for issues such as reforestation, soil restoration and ocean regeneration.



Create platforms for sharing best practices, case studies, and lessons learned in regenerative initiatives across different regions and sectors.



Develop and fund training programs on regenerative practices for farmers, foresters, fishers, and other stakeholders involved in land and resource management.



Integrate regenerative principles into curricula at all levels, from primary schools to universities, to foster a new generation of practitioners and innovators.



Implement pricing and payment schemes that reward landowners and businesses for activities that enhance ecosystem services, such as carbon sequestration, water purification, and biodiversity conservation.



Establish clear standards and certifications for regenerative practices across different sectors (agriculture, forestry, fisheries, etc.) and simplify the permitting process for regenerative projects.



Raise public awareness and educate consumers on the importance and benefits of a Regeneration Economy as well as implement clear labeling, based on sound and robust science, on products from regenerative sources to allow informed choices.



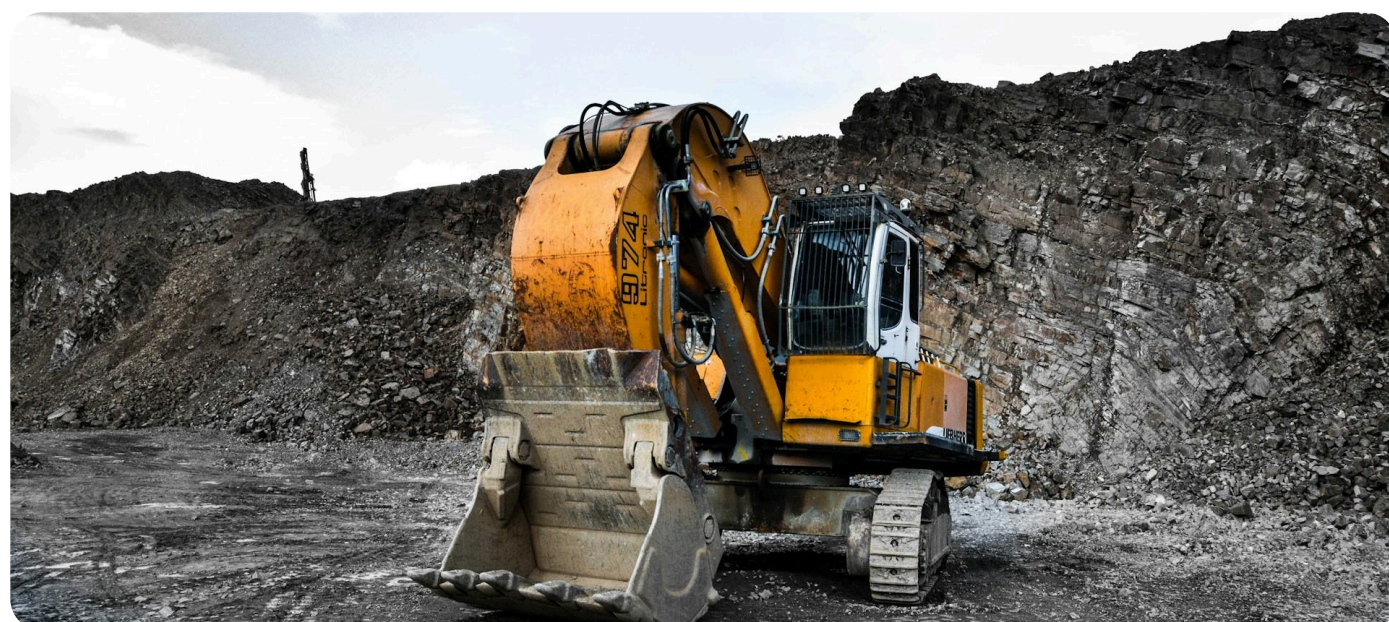
# 5. Inspiring Examples

---



## **Paludiculture Innovation Project (PIP)** [↗](#)

Paludiculture offers a potential solution for maintaining the profitable use of lowland peatland whilst significantly reducing the greenhouse gas emissions associated with their current (dryland) agricultural use. The Paludiculture Innovation Project (PIP) aims to create a facility for paludiculture research, development, demonstration and knowledge transfer.



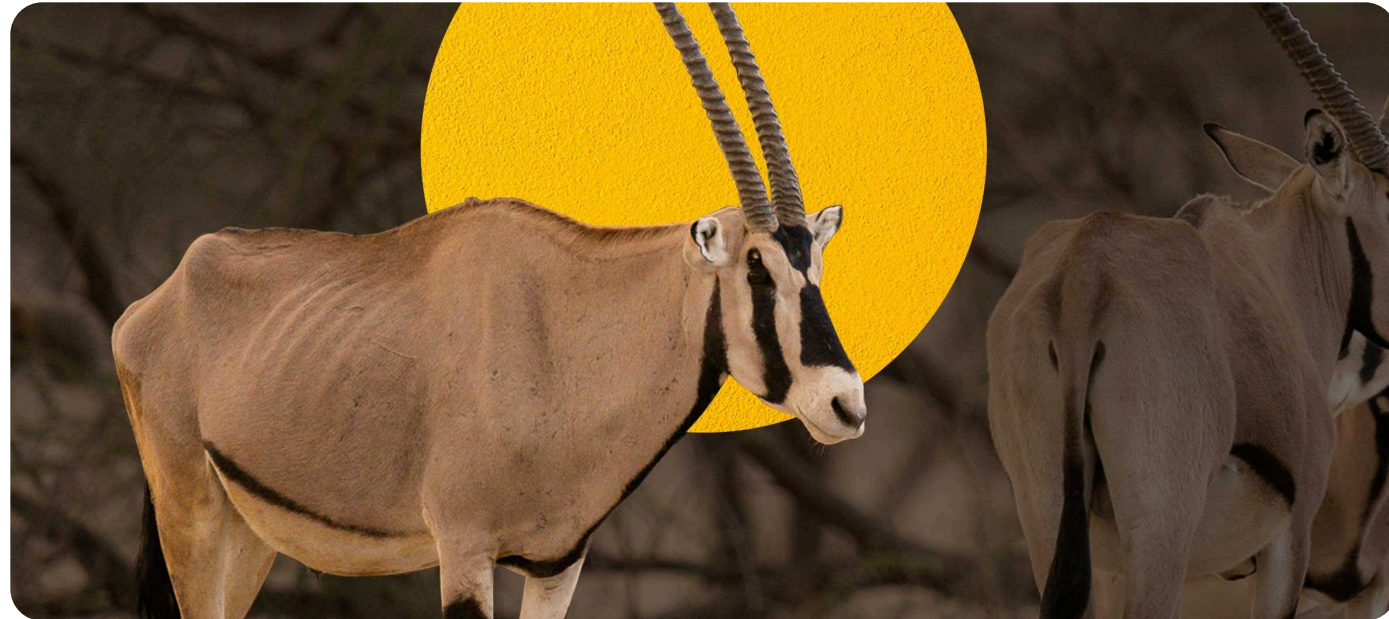
## **The Initiative for Responsible Mining Assurance (IRMA)** [↗](#)

Develops standards for responsible mining practices, covering environmental protection, human rights, and community benefits.



## **Kenya's Green Belt Movement** [↗](#)

Empowers women to plant trees, combat deforestation, and improve food security through sustainable agriculture practices



## [The Northern Rangelands Trust \(Kenya\)](#)

Works with communities to conserve wildlife and promote sustainable land use practices in northern Kenya.



## [Precious Plastic](#)

This global community is turning plastic waste into valuable resources by providing open-source designs for DIY recycling machines. They're empowering people worldwide to tackle plastic pollution locally.



## [Vertical Farming with AeroFarms](#)

Redefining agriculture by growing crops in vertically stacked layers indoors, AeroFarms uses 95% less water than traditional farming. It's farming turned on its head—literally—and could be key to sustainable food production.



## 6. Act Now: Be Part of the Solution

---

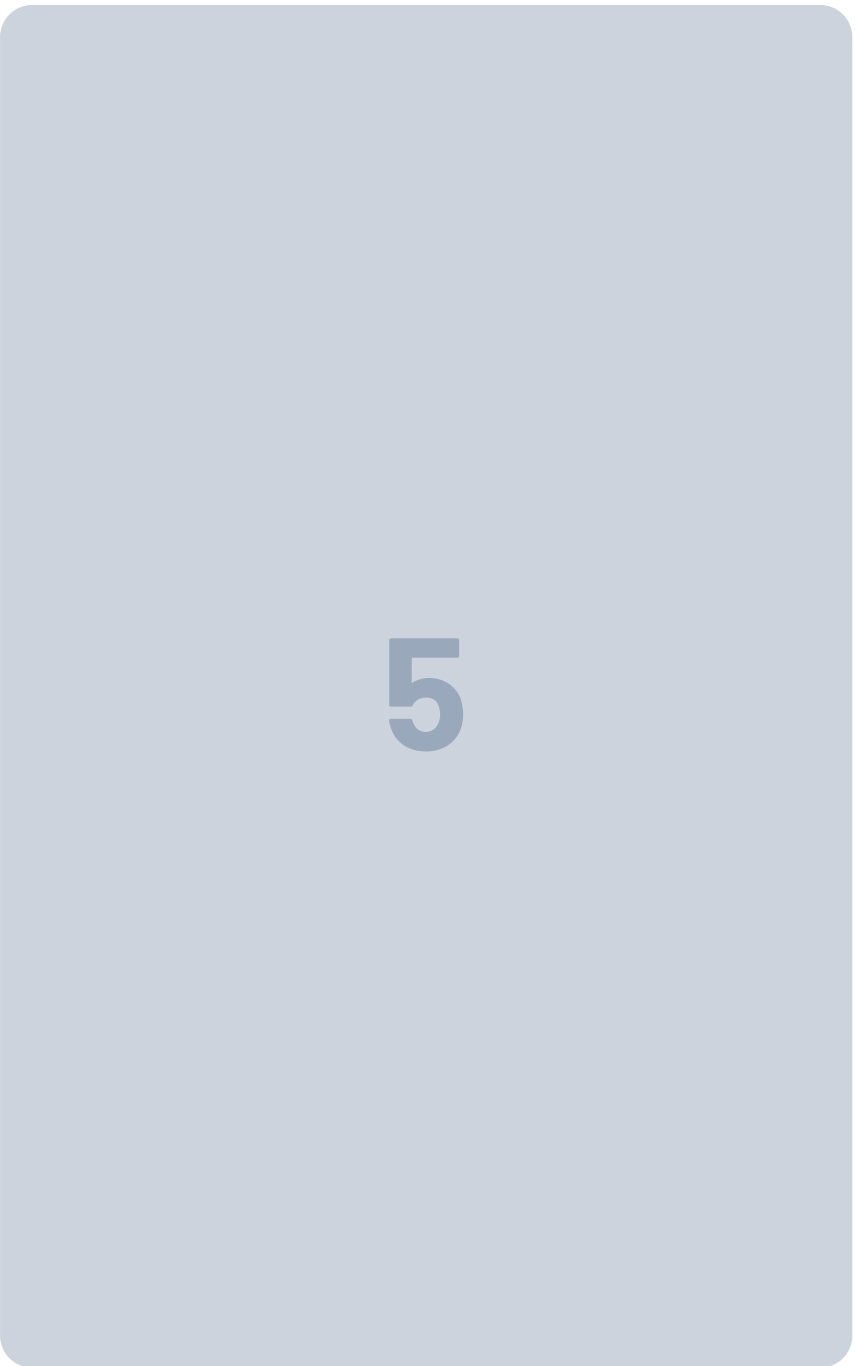
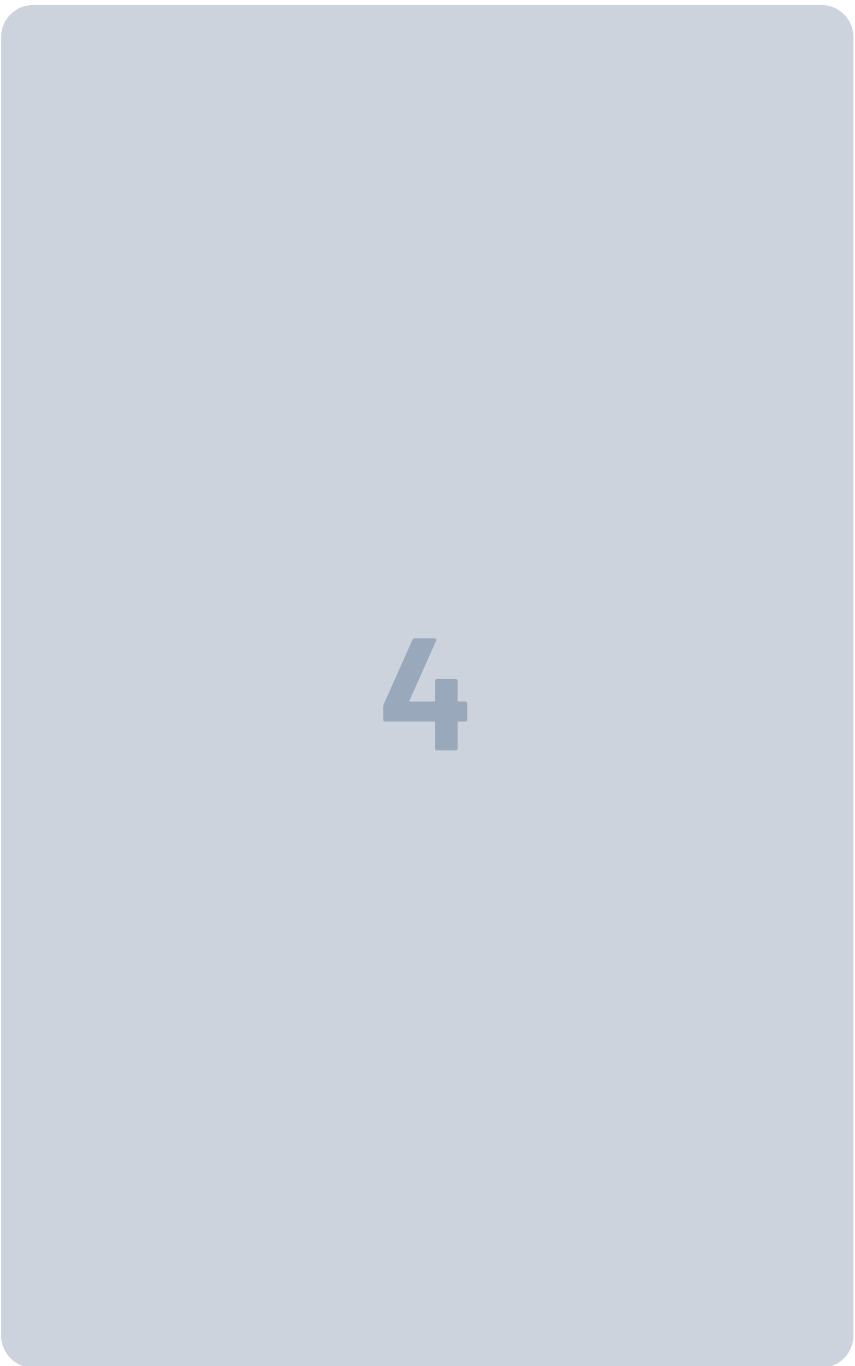
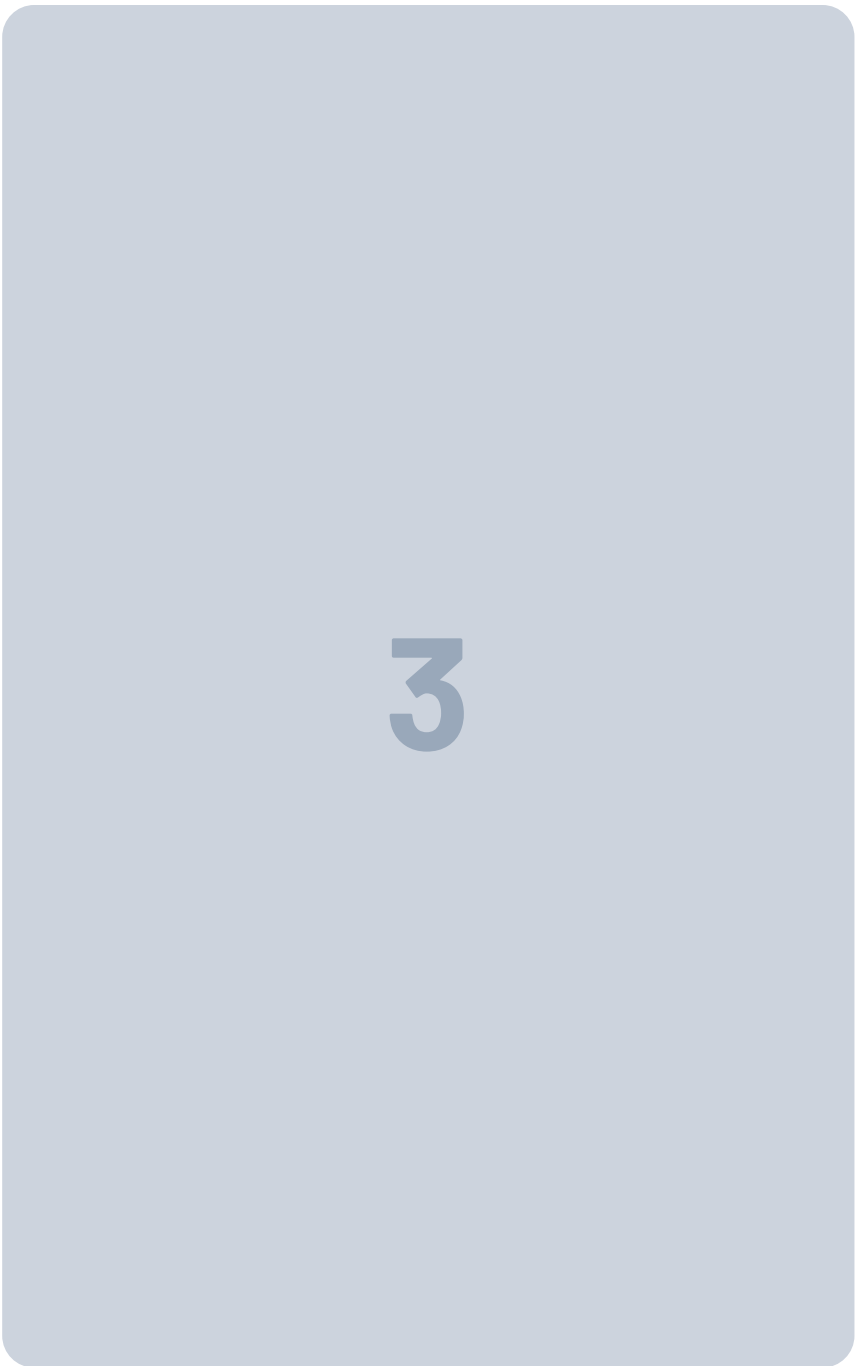
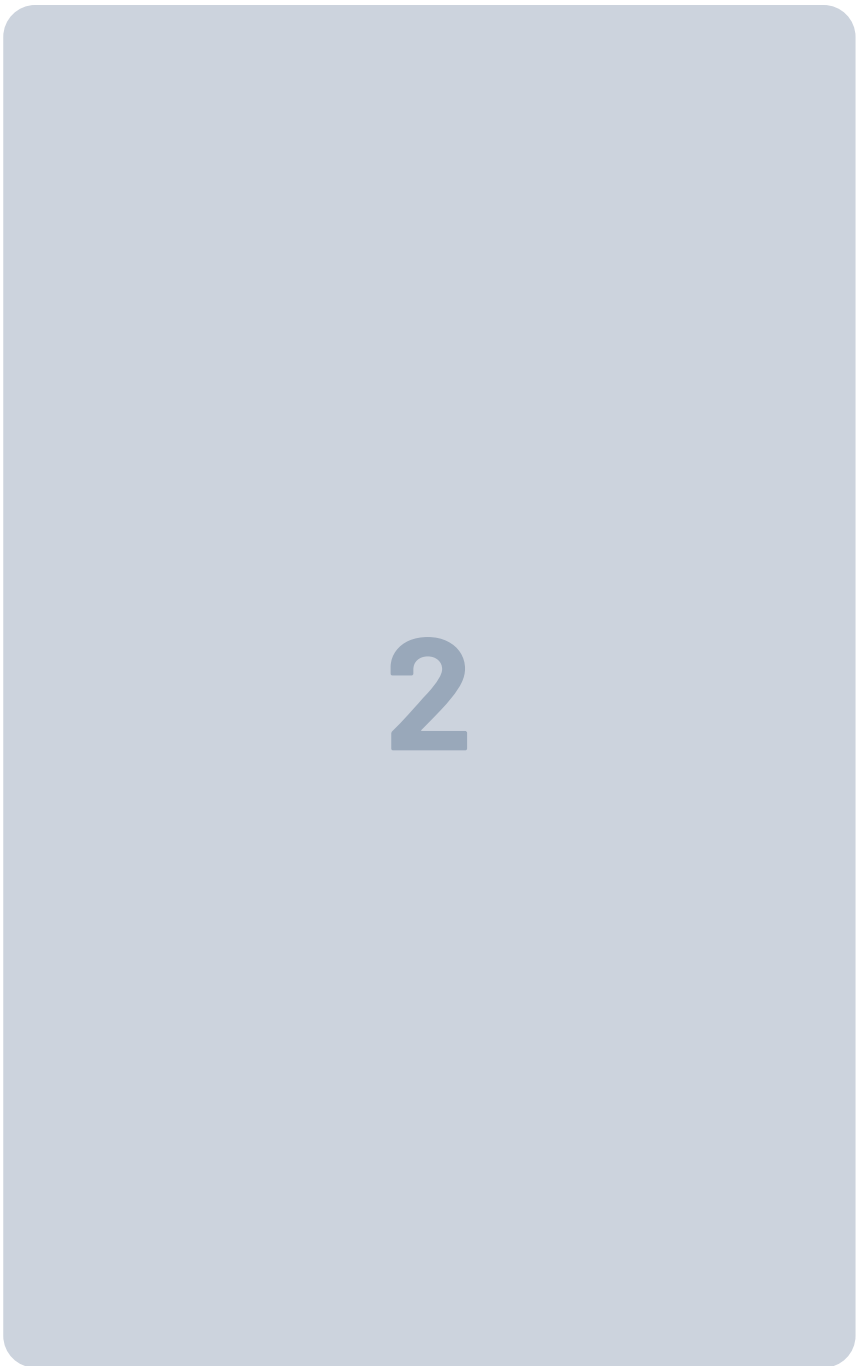


This paper provides actionable recommendations for diverse stakeholders—from governments and businesses to individuals and civil society—to enhance natural resource productivity and regeneration. While comprehensive implementation may require time and investment, **impactful change begins with small, achievable steps.**

**We urge all leaders to take the first step TODAY!**  
**Here's how you can contribute:**

# 1. Individuals

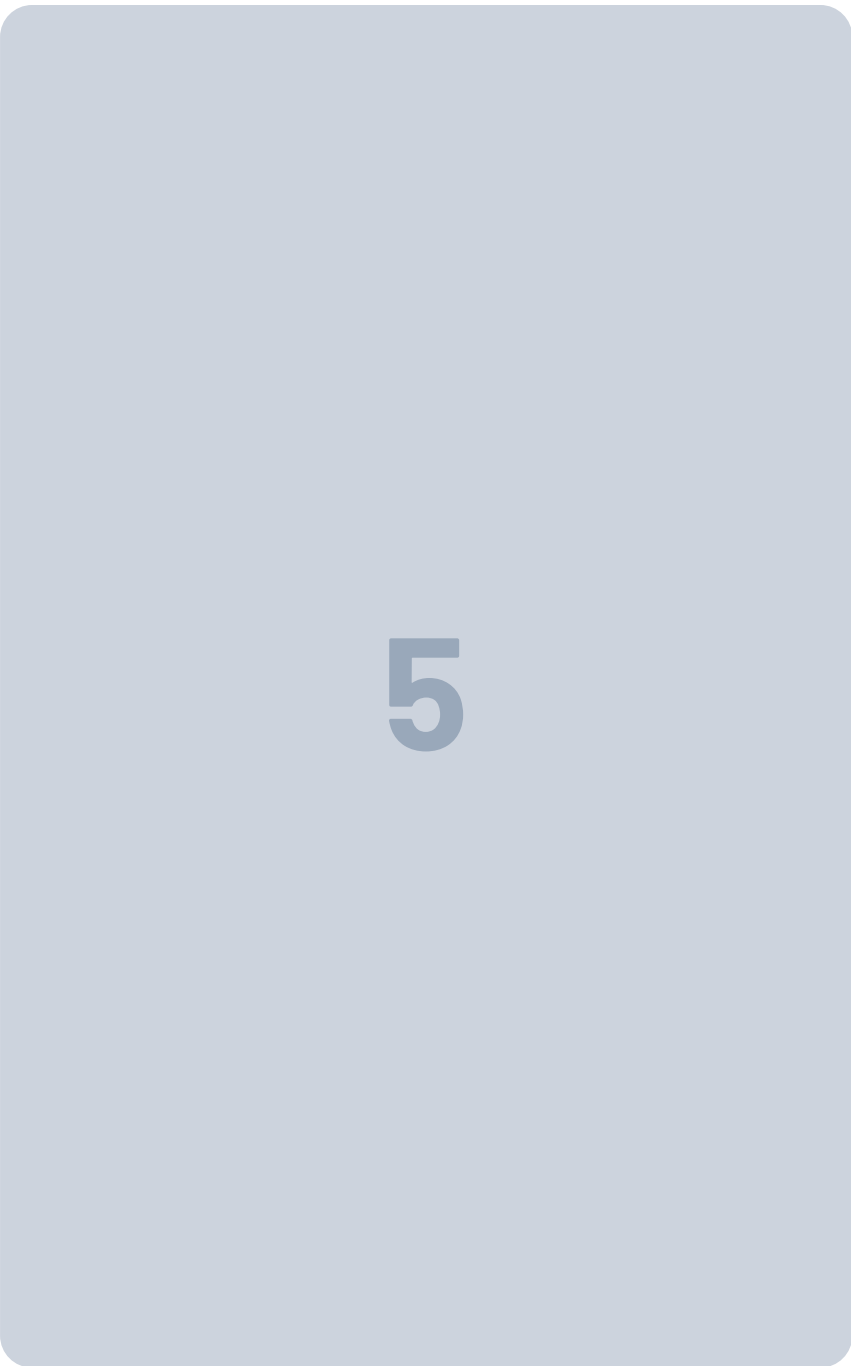
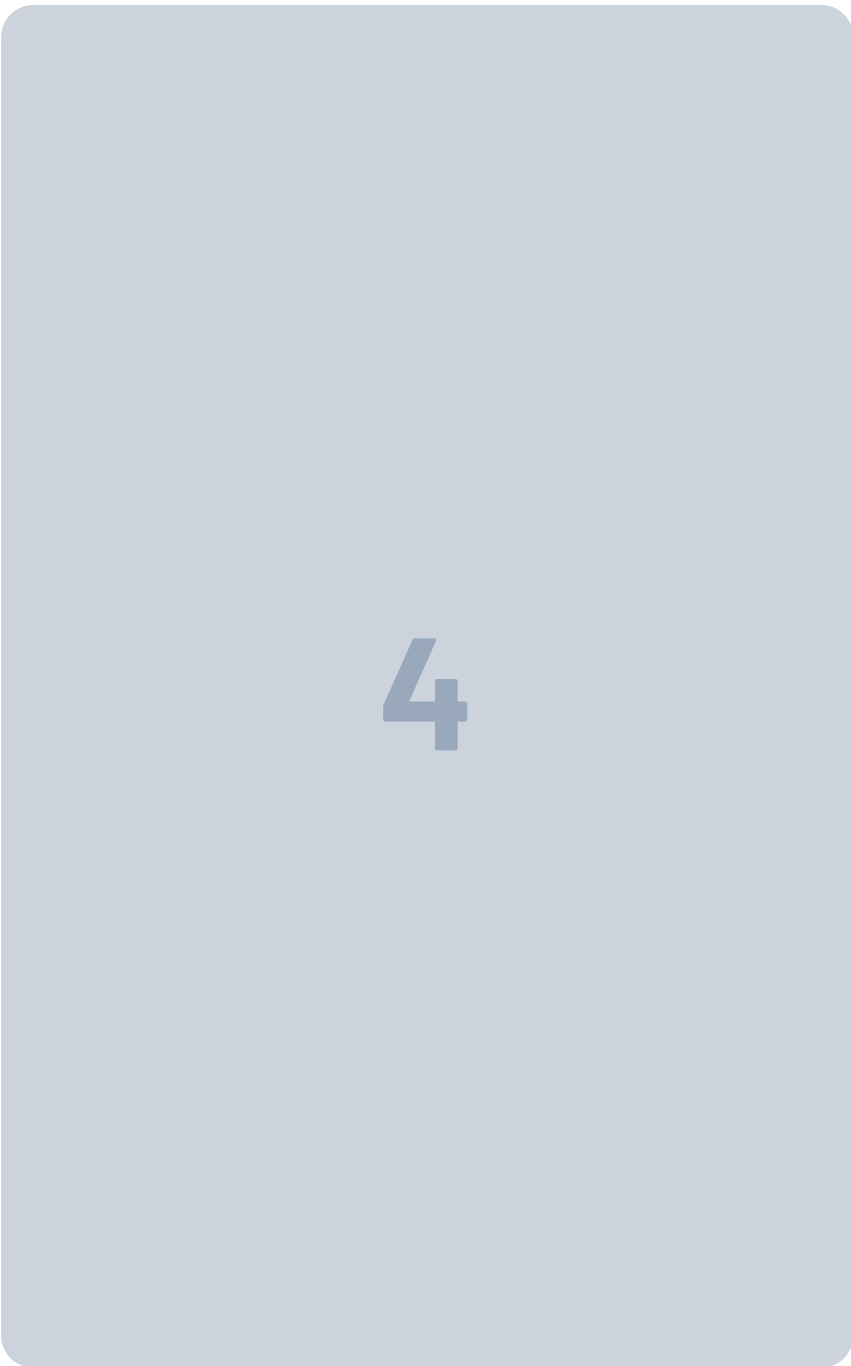
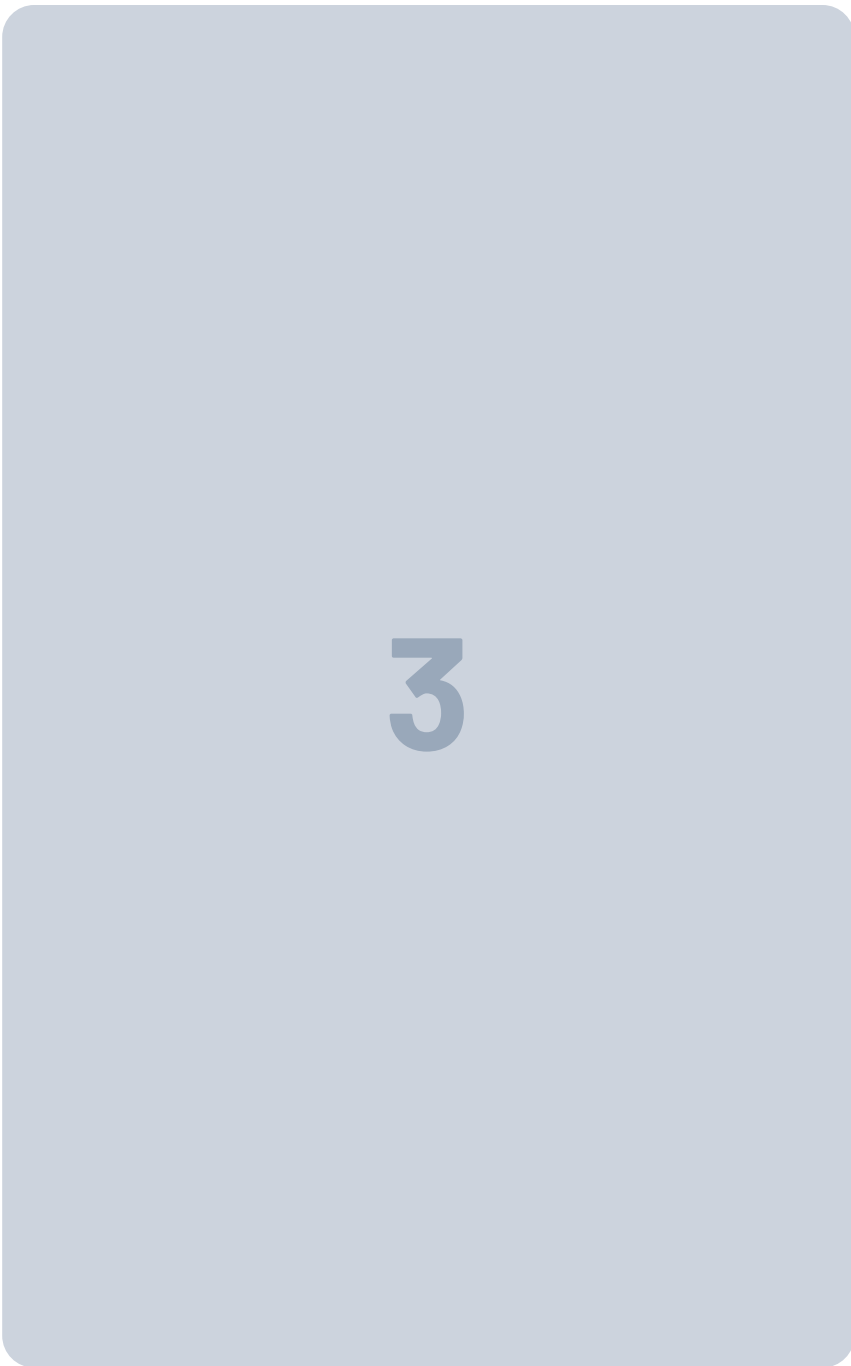
Search available incentives (rebates, tax deductions, etc.) for optimizing natural resource use/protection in your area. **Identify one small, cost-effective change you can make today** taking advantage of those which reduce your environmental impact and commit to them.



## 2. University (University Presidents/Leadership)

Map projects in your university that aim to advance natural resource productivity and regeneration. **Form a team that would pick those with the highest impact potential and accelerate them** – this could be achieved via funding, mentoring, global connections, fast track processes, and the provision

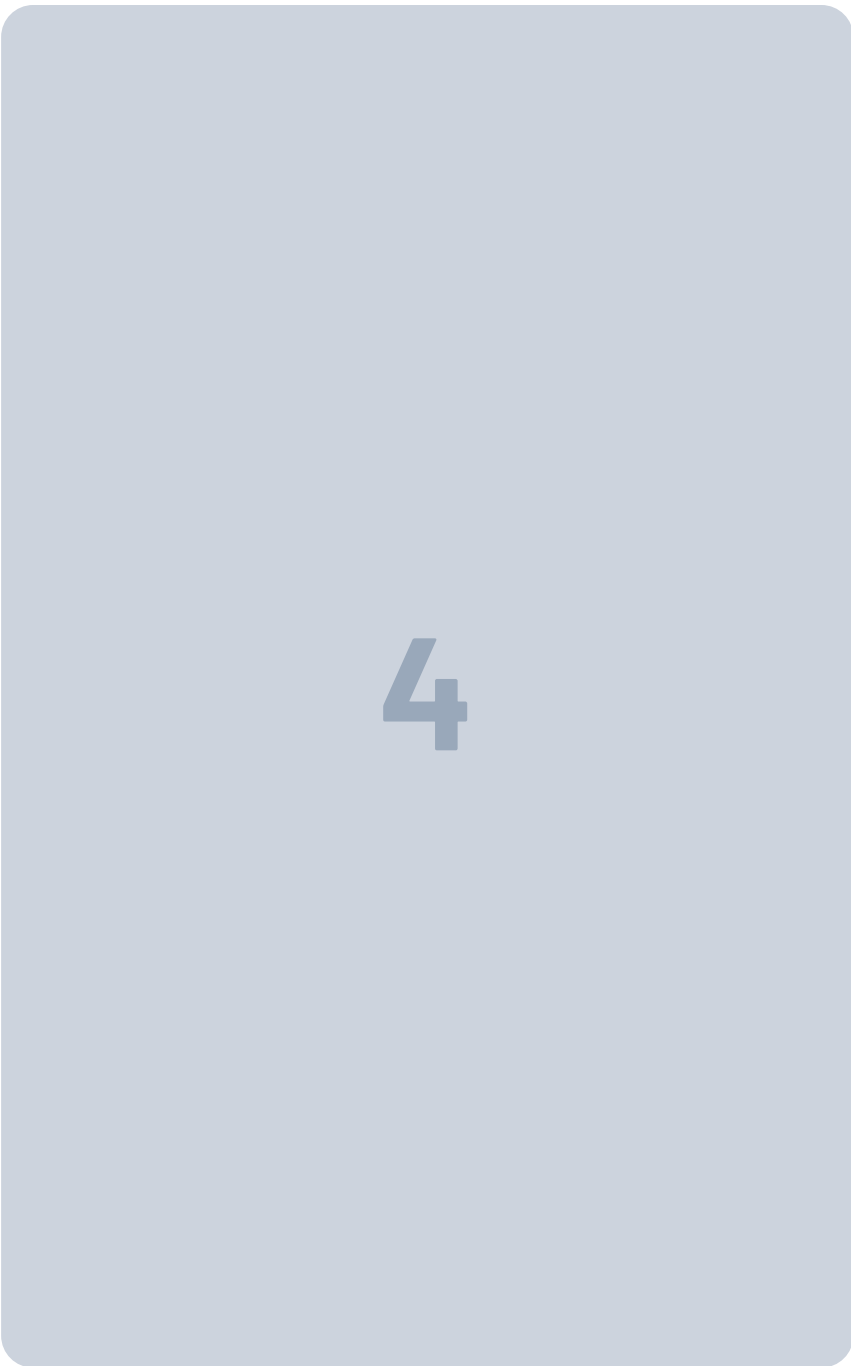
of other critical resources (e.g., steering available research students/assistants towards projects tasked with protecting water, optimizing land use, increasing pollinator species, etc.).



### 3. Government (Elected Officials/Agency Leaders)

Identify key industries in your region that, with targeted support, could increase natural resource productivity while simultaneously boosting economic growth and creating jobs. **Develop a concrete program to support** these industry verticals to grow via skills development, infrastructures investment, funding

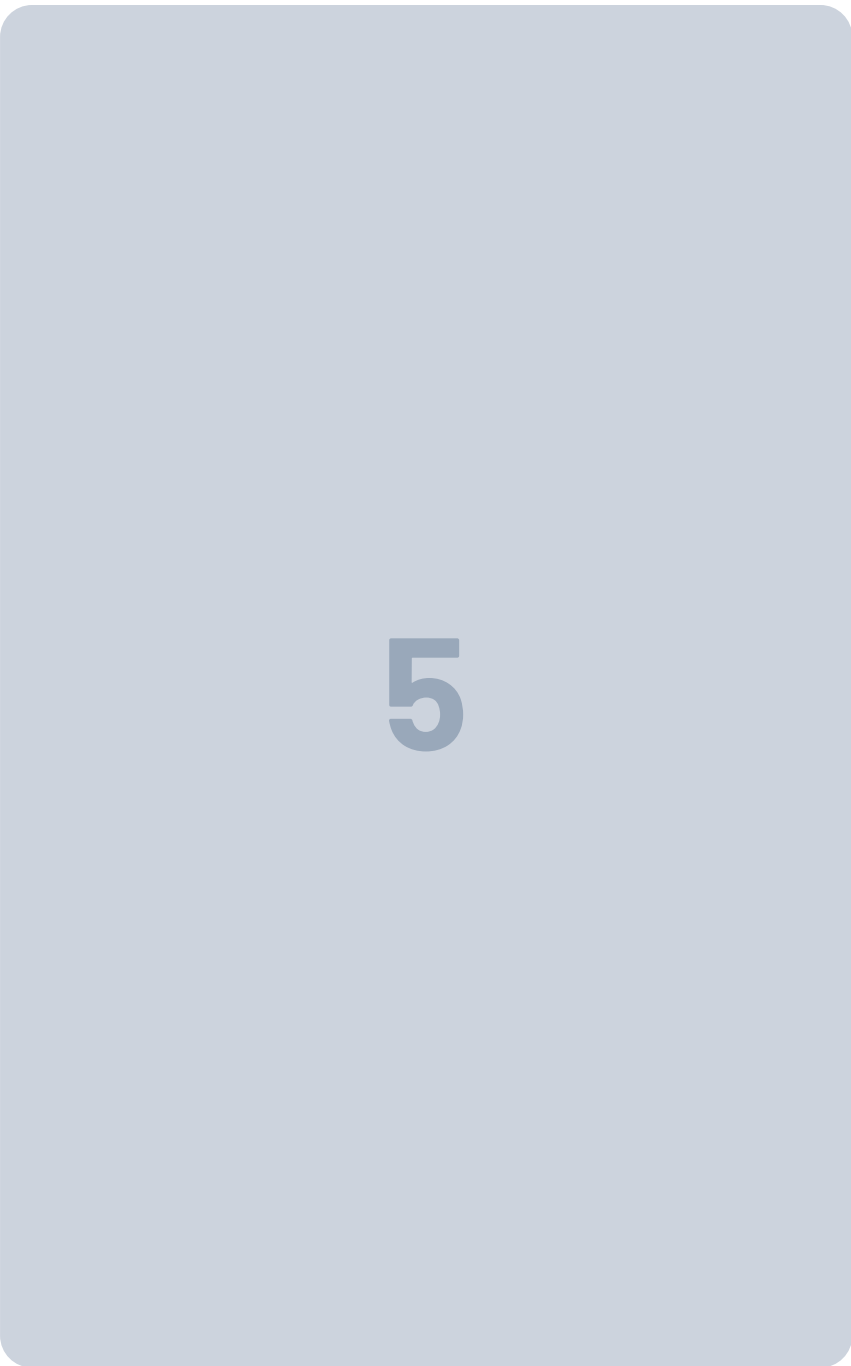
mechanisms, and not least, understanding key factors affecting natural capital such as predicting impacts associated with both direct and indirect land use change.



## 4. Non-Profit Organizations (Executive Directors/Program Managers)

Identify three specific policy actions your organization can champion to improve natural resource productivity or regeneration (e.g., resolve unsustainable exploitation, address policy gaps, or global-local coordination improvement). **Launch a dedicated initiative** with assigned teams to develop

and implement strategies (public awareness campaigns, lobbying, coalition building) to advance these policies effectively.



## 5. Businesses (CEOs/Business Leaders)

Identify the primary opportunities to boost natural resource productivity within your company and/or launch new business lines with high potential for significant gains in resource use or regeneration. **Task internal teams** with developing and executing concrete improvement and investment projects

related to those. For instance, these teams could assess and quantify ecosystem services such as pollination potential, water purification, and carbon sequestration activities across their operations and supply chains to inform strategic decisions.





# 6. Helpful Sources

---

Global Resources Outlook 2024: <https://www.unep.org/resources/>

World Economic Forum's Global Risks Report 2024: [Global Risks Report 2024 | World Economic Forum | World Economic Forum](#)

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES): [Global Assessment Report on Biodiversity and Ecosystem Services | IPBES secretariat](#)

The World Bank: <https://www.worldbank.org/>

The United Nations Sustainable Development Goals: <https://sdgs.un.org/goals>

United Nations Economic Commission for Europe (UNECE) report on Circular Economy: <https://unece.org/circular-economy/trends-resource-use>

USA FACTS on Environment & Natural Resources: <https://usafacts.org/topics/environment-natural-resources/>

Global Assessment Report on Biodiversity and Ecosystem Services: <https://www.ipbes.net/global-assessment>

United Nations (2015), Sustainable Development Goals: <https://sdgs.un.org/goals>

United Nations Framework Convention on Climate Change (UNFCCC), Paris Agreement: [https://unfccc.int/sites/default/files/resource/parisagreement\\_publication.pdf](https://unfccc.int/sites/default/files/resource/parisagreement_publication.pdf)

United Nations Framework Convention on Climate Change (UNFCCC), Paris Agreement: [https://unfccc.int/sites/default/files/resource/parisagreement\\_publication.pdf](https://unfccc.int/sites/default/files/resource/parisagreement_publication.pdf)

Global Scan (2023): <https://globescan.com/2023/08/03/insight-of-the-week-global-public-is-increasingly-worried-about-ecological-overshoot/#::~:~:text=Over%20the%20past%20decade%2C%20the,resources%20depletion%20and%20biodiversity%20loss.>

State of the Planet (2022): <https://news.climate.columbia.edu/2022/09/19/the-growing-awareness-and-prominence-of-environmental-sustainability/>

Gallup In Depth: Topics A to Z: Environment: <https://news.gallup.com/poll/1615/environment.aspx>

Clean Energy Wire (2024): <https://www.cleanenergywire.org/factsheets/global-surveys-show-peoples-growing-concern-about-climate-change>

# Global Federation of Competitiveness Councils

## MEMBERSHIP

### Albania

Albanian Council on Competitiveness and Innovation

### Australia

Australian Advisory Board on Competitiveness  
Monash University  
Netlinkz  
The Principals Funds Management PTY LTD  
Western Sydney University

### Brazil

Brazilian National Confederation of Industries (CNI)

### Bulgaria

Glavbolgarstroy Holding AD

### Canada

Sandra Duxbury

### Greece

Council on Competitiveness of Greece— CompeteGR  
Delphi Economic Forum  
Piraeus Bank

### Japan

Japan Science and Technology Agency  
Tsukuba Global Innovation Promotion Agency (TGI)

### Kazakhstan

Center for Research & Consulting LLC  
Kazakhstan Growth Forum

### Malaysia

Malaysian Industry-Government Group for High Technology (MIGHT)  
Universiti Teknologi Petronas

### New Zealand

Auckland University of Technology  
University of Auckland

### Oman

National Competitiveness Office

### Portugal

Universidade Católica Portuguesa

### Romania

Bucharest University of Economic Studies

### Saudi Arabia

Ministry of Investment for Saudi Arabia (MISA)

### UK

Centre for Competitiveness  
Aston University  
Harper Adams University  
Queen’s University Belfast  
Spectrum Index LTD

### Ukraine

Kyiv National Economic University named after Vadym Hetman

**USA**

Arizona State University  
Council on Competitiveness  
Georgetown University  
Lockheed Martin Corporation  
University of California San Diego  
University of Illinois  
University of North Carolina at Chapel Hill  
University of Pittsburgh  
University of South Carolina  
Vanderbilt University  
Whitecap Investments LLC

**Zimbabwe**

National Competitiveness Commission

**GFCC FELLOWS**

**Distinguished Fellows**

Amr Al-Dabbagh  
Prince Saud bin Khalid Al-Faisal  
Ahmad Tajuddin Ali  
Hiroshi Amano  
John Anderson

Spyros Artavanis-Tsakonas  
C. Derek Campbell  
Nathalie Cely  
Athina Chatzipetrou  
Lee Yee Cheong  
Luciano Coutinho  
Petros G. Doukas  
Alexander Downer  
Luis Fernandes  
Hippolyte Fofack  
Claudio Vilar Furtado  
Nika Gilauri  
Yanos Gramatidis  
Michinari Hamaguchi  
Zakri Abdul Hamid  
Karen Holbrook  
Jerry Hultin  
Greg Hunt  
Carole Hyatt  
João A. H. da Jornada  
Charles Kiefel  
Stephen Kingon  
Ashwani Kumar

Tae-Shin Kwon  
Joan MacNaughton  
Christos Megalou  
Peter Meyers  
Jan Mládek  
Michiharu Nakamura  
Liam Nellis  
Hiro Nishiguchi  
Lucas Papademos  
Richard Parker  
Emmanuel Pohl  
Frank-Jürgen Richter  
Laura Sandys  
Lori Schmidt  
Jack Sim  
Arthur Sinodinos  
Rogerio Studart  
Yusoff Sulaiman  
Manuel Trajtenberg  
Gregory F. Treverton  
Pete Worden  
Kandeh Yumkella

**Senior Fellows**

Edward D. Agne  
Chris Allen  
Rehan Chaudhri  
Fred T. Davies  
Margareta Drzeniek  
Mark Esposito  
Marcelo Augusto de Felippes  
Dionisio Garcia  
Banning Garrett  
Deborah Gordon  
Kwanza Hall  
Greg Horowitt  
Elisa Jagerson  
Nkem Khumbah  
Susan McCalmont  
James Metson  
Mark Minevich  
Michael Nelson  
Peter Smith  
Ted Zoller

**GFCC TEAM**

**Charles O. Holliday Jr.**  
Chairman

**Charles Kiefel AM**  
Vice-Chair

**Deborah L. Wince-Smith**  
President

**Roberto Alvarez**  
Executive Director and Secretary to the Board

**Chad Evans**  
Treasurer

**Simone Melo**  
Communications and Research Manager

**Elaine Rodriguez**  
Director of Operations

**Renata Tavares**  
Membership Engagement Manager

**The Global Federation of Competitiveness Councils (GFCC)** is a network that brings together leaders and organizations across sectors to amplify and accelerate competitiveness strategies and best practices worldwide, driving productivity, sustainable growth, security and prosperity for nations, regions, and communities.

The GFCC is a global membership organization founded in 2010. Our network is composed of members that pay yearly dues to secure their placement on the network and experts invited to participate as fellows.

Learn more about the GFCC at: [www.thegfcc.org](http://www.thegfcc.org)

Global Federation of Competitiveness Councils  
900 17th Street NW, Suite 700  
Washington, D.C. 20006  
[info@thegfcc.org](mailto:info@thegfcc.org)

This paper was authored by Roberto Alvarez, Elaine Rodriguez, and Graham McAuliffe, with key contributions from our members and fellows for the call to action 'Achieving a Sustainable Future for All.' We are deeply grateful to Prof. Ken Sloan for the ongoing partnership with Harper Adams University. Special thanks are also extended to Deborah L. Wince-Smith and Chad Evans for their invaluable review and substantial contributions to this document. Finally, we wish to acknowledge Chad Holliday for his inspiring and insightful guidance.

The Global Federation of Competitiveness Councils (GFCC) is a nonprofit, 501(c)(3) organization as recognized by the U.S. Internal Revenue Service. The GFCC's activities are funded by contributions from its member organizations.

 [facebook.com/thegfcc](https://facebook.com/thegfcc)

 [x.com/thegfcc](https://x.com/thegfcc)

 [/company/the-global-federation-of-competitiveness-councils/](https://company/the-global-federation-of-competitiveness-councils/)

 [/GlobalFederationofCompetitivenessCouncil](https://GlobalFederationofCompetitivenessCouncil)