Biodiversity and Environmental Challenges for the Financial System

Virtual conference hosted by
Banco de Mexico and **CEMLA**

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Acknowledgements

Banco de Mexico would like to thank CEMLA's valuable support in co-organizing this event. Additionally, a grateful acknowledgement is made to the panelists of the conference, whose expertise and points of view were highly relevant. Finally, Banco de Mexico appreciates the BIOFIN Mexico team for its support in the development of this report.

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1. Biodiversity loss and financial risk

November 30, 2021

Opening Statement – Alejandro Díaz de León, Governor, Banco de Mexico

Mexico is a biologically megadiverse country. It occupies the fourth place in the group of 17 megadiverse countries hosting 70% of the globally known species. Unfortunately, it is threatened by climate change and deforestation originating in agriculture and livestock extension, as well as by air, ocean and soil pollution, unsustainable fisheries, and the pressures of unorganised and unplanned urbanisation. These problems are particularly acute, not only in Mexico, but in most emerging markets and low-income countries.

The source of biodiversity loss and ecosystem degradation is linked with market failures and the difficulty to internalise and properly value and price the externalities caused by activities that erode our biodiversity and natural capital.

The pressure we place on ecosystems by the current level of economic activity is no longer sustainable, as it compromises the health and living conditions of both current and future generations, entailing unknown economic and financial risks. Preserving and restoring natural capital is essential to mitigate these risks.

Safeguarding natural capital has also positive global externalities. The financial community is just beginning to understand the value of ecosystem goods and services for economic activity and sustainability. There is a strong link between climate change and biodiversity loss. When considering their specific characteristics in the transition to a sustainable economy, it is essential to take into account climate change and biodiversity loss together. Losing biodiversity and natural capital makes developing and emerging countries poorer and less resilient.

There is a growing conviction among international businesses and the financial community that nature must be explicitly considered as part of the economic analysis and cannot be ignored or treated as a separate system.

As human activities continue impacting nature and the economy, we will face increasing physical and transitional risks.

Nowadays, there are many tools that companies and market participants can use to assess the impact of ecosystem services in critical economic sectors, such as agriculture, tourism, construction, electricity generation and construction materials, among many others. This conference will address how some of these tools and frameworks provide relevant information to financial institutions on nature-related financially material risks.

As financial institutions understand better the benefits of ecosystem services and the potential for nature-based solutions, they will provide and improve their loan pricing and will identify potential investment opportunities, unlocking capital toward these activities.

Innovative financial instruments are beginning to be used for ecosystem conservation. With the support from the scientific, financial, and other stakeholders, financial authorities can play a crucial role in addressing the risks and opportunities associated with restoring and conserving biodiversity and natural capital. This can be achieved by promoting metrics, standards, disclosure practices, and integrating biodiversity-related risk factors into financial decision-making.

By ensuring that financial institutions have access to information on ecosystem services and dependencies, promoting nature-related financial disclosures and integrating material information into their financial decisions, authorities can contribute to the preservation of natural capital. Financial authorities can also consider the role that credit bureaus can play in collecting and providing data to credit institutions on the environmental compliance of borrowers. By making this information accessible in their reports, credit bureaus could limit illegal predatory behaviour by firms that degrade the environment, especially in emerging countries with a weak rule of law.

Finally, central banks have been granted autonomy to insulate them from short-term political pressures, giving them the flexibility to pursue long-term objectives. Although the principal mandate of central banks is the provision of money, safeguarding financial stability over time is also vital. Under this long-term perspective, their actions need to be aligned with broadly defined social welfare and sustainability objectives, which are precisely the issues that will be addressed at the conference.

Opening statement - José Sarukhán Kermez, coordinator of the National Commission for the Knowledge and Use of Biodiversity (CONABIO)

Can we imagine a different future focusing on social well-being within the biophysical boundaries?

I am going to give a few examples of the kind of elements that are needed to make successful and relevant investments in the conservation of biodiversity; not only for the sake of nature itself and the ecosystem but also for the people who live and depend on those ecosystems for their well-being and livelihood. Very precise and detailed information on the biodiversity is needed; everything from species to ecosystems and depending on the approach also on the groups of plants, like for example all the edible plants on which we depend. There is a need to develop analytical platforms that could help effective decision-making on where to develop projects, which are the best places, how to manage them, and how to assure that the investments are achieving the sustainability goals set from the beginning. These decisions must be based on the best possible science and information, otherwise it's a sort of shooting in the dark. Additionally, in Mexico, as well as other developing countries, it is necessary to include in the decision-making the people who live or own the ecosystems, mostly indigenous peoples, and local communities.

To make good choices or decisions on where to invest and implement biodiversity conservation projects, it is necessary to know beforehand which areas are a priority for conservation or restoration. In Mexico, there is information and maps constructed by CONABIO that guide where to invest money in conservation, restoration and sustainable management of land and water ecosystems. We have worked with the Canadian and the US government to generate a continental map of soil use and soil changes which is comparable with Europe's continental map. It can be used as a first step to depict how healthy an ecosystem is, when there isn't enough advanced knowledge of the biodiversity, ecosystem, species, and other factors.

CONABIO has a map that shows the integrity of the ecosystem, meaning the completeness of the ensemble of plants and the whole plethora of different animal groups of the ecosystem. This allows to see how healthy an ecosystem is because the fuller they are, the healthier they are. You can have an area covered by trees but with no animal components, that is not an ecosystem. This information is also extremely useful for decision-making on where to invest to preserve ecosystem. The map also exemplifies marked areas which contain species with a high-risk of extinction, due to a combination of human impacts and issues that have to do with climate change and their impact on the species and ecosystems.

That work has been done for coastal ecosystems as well, where monitoring is done every five years on the mangrove ecosystems in Mexico as well as the coral reef areas. With this technology we can know how much impact and who has impacted these areas.

CONABIO has also developed a platform that helps preserve forests and ensure that the agriculture frontier does not keep expanding, degrading natural and essential ecosystems. This platform was implemented a few years ago and has prevented the approval of agricultural subsidies in areas that need protection. We are the first country with that type of technology.

In conclusion, if this conference is taking place in a virtual form, it is precisely because we have altered, diminished, and fractured so many ecosystems throughout the globe that the pandemics that we are suffering now have forced us to move virtually. Since the middle age or even before, pandemics have originated from ecosystem destruction and severe disturbance of said ecosystems. It will keep happening as long as the conditions are not healthy. The loss of biodiversity in a country just generates a total loss of resilience, not only ecological but also economic, political, and social.

We have lost, and I say 'we' meaning all the countries, half a century on not educating societies on the risks of biodiversity loss and the importance of preserving healthy ecosystems to have healthy societies and economies that are durable and sustainable. This is something that needs to change.

Keynote speaker Henry M. Paulson Jr., Founder, Paulson Institute; Latin America Conservation Council (LACC)

What has led to this biodiversity loss crisis? There are many causes, from population growth to climate change.

The approach of this conference is on the political and economic market systems that have treated biodiversity as inexhaustible, as if it is a free good. They have failed to recognise the value of natural capital and its services. We need to account for the value of natural capital in our market-based systems.

While it is difficult to place a precise value on natural capital, if we do not set a value, natural capital gets treated as essentially being free, and politicians put zero value on it. We need to adapt our market-based systems so that the rewards, actions, and policies are oriented to account for and preserve natural capital and punish those that destroy it.

This is difficult, when we talk about changing policies and practices and economic models, because political leaders have a strong incentive to keep their jobs, which makes it very difficult to trade short-term gain for long-term prosperity. Nevertheless, we know that it is much better to preserve natural capital than to deal with the costs that make up for the restoration and the consequences of what was destroyed.

According to research made by the Paulson Institute, the biodiversity crisis is moving quicker and, in many ways, even more alarming than climate change. Regarding climate change there is a lot of scientific research done, and we have the suitable models and frameworks. However, with biodiversity loss, there is not enough work to know what the real consequences and costs are. For example, a study[1] by the Chinese government showed that you could do things that don't cost a lot and make a big difference. Much of the problem comes from an economic model that needs to be updated.

If we were to change food production, in a way that did not destroy biodiversity, there would be supplementary resources of about USD $540 billion a year. What we need to do, is redesign the system so that it properly accounts for nature. What will save our ecosystems is to value them properly.

The role of financial institutions in solving the problem is tremendous, but not realistic if carried out without government support.

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[1] Biodiversity Conservation in China. (2021). *China-Embassy.gov.cn*. http://lw.china-embassy.gov.cn/eng/zgjj/202112/t20211216_10470547.htm

Financial institutions should be transparent and open regarding risk modelling and biodiversity loss. A framework and standards for the disclosure of loans or investments that destroy natural capital is required. There is a need for standards for transparency, verification, and accountability. In addition, the government must give the financial institutions the tools in terms of the proper regulations and incentives to avoid the destruction of natural capital. What is happening with biodiversity conservation is that we are winning many battles but losing the war, but we have to keep fighting.

Regarding indigenous peoples and local communities, it is impractical to think about preserving nature without coming up with a way to make this work for them. You can't have people living in abject poverty and expect them to look after preserving watersheds.

Panel 1: Assessing biodiversity risks on the financial system

What are the key characteristics of biodiversity-related financial risks? What are the similarities and differences between the above and climate-related risks? Why should financial institutions integrate biodiversity risks in their financial decision making? How are central banks and financial regulators starting to assess said risks?

Moderator Serafín Martínez Jaramillo, head of the Environmental and Social Risk Assessment and Policies Division, Banco de Mexico.

Setting the stage Robert Watson, Professor Emeritus, School of Environmental Sciences, University of East Anglia.

Panel participants:

- Steve Polasky, Regents Professor & Fesler-Lampert Professor of Ecology/Environmental Economics, University of Minnesota
- Nick Robins, Professor in Practice - Sustainable Finance, Grantham Research Institute, The London School of Economics and Political Science (LSE)
- Thulaja Thessa K Vasudhevan, executive, Bank Negara Malaysia
- Romain Svartzman, economist, Banque de France
- William Harding, head of Implementation, the UN-convened Sustainable Insurance Forum

Panel 1: Assessing biodiversity risks on the financial system.

This panel discussed different aspects of financial risks stemming from biodiversity. In the context of an increasing demand for ecosystem services, there is a rapid deterioration of natural capital as well as other environmental issues that put the supply of ecosystem services in risk. Some takeaways of the panel were the following:

- The economic and social impacts of the decline in ecosystem services can be alleviated if the value of nature is incorporated into economic and financial decisions, and with a proper investment in the recovery and protection of natural capital.

There is a growing interest from financial institutions and central banks regarding the dependency on ecosystems.

- Climate change has been a starting point to address biodiversity and other environmental issues that affect the financial system. The inclusion of biodiversity loss in frameworks should consider current restrictions given by data limitations and modelling complexity.

Robert Watson, Professor Emeritus, Tyndall Center for Climate Change Research, and University of East Anglia

Nature provides ecosystem services essential for human existence and well-being, companies are highly dependent on them, and have a huge footprint on biodiversity and our nature in general. At the World Economic Forum in 2020 a paper called "Nature risk rising"[1] was presented stating that there is no doubt that nature is degrading at an unprecedented rate. We are seeing changes in land and sea use, the loss of forests, grasslands, mangroves; overexploitation of our plants and animals; overfishing, climate change, changes in temperature, precipitation, sea level, ocean acidification, pollution caused by the excessive use of agricultural chemicals, fertilizers, pesticides, and invasive alien species. These direct causes of biodiversity loss worsen the indirect causes, these being the growing demand for food, energy, water, and other materials, due to rapid economic growth all over the world, population growth, international trade, and technology.

Unless we meet the Paris climate goal of reducing global warming to a significantly lower increase of two degrees Celsius by 2100 (preferably only 1.5 degrees Celsius) climate change is likely to become the leading cause of biodiversity and ecosystem services loss.

While some provisioning services continue to increase, such as food production, most regulatory services are degrading significantly.

We need to recognize that climate change, biodiversity loss and nature degradation are no longer just environmental issues; they are also economic, development, security, moral and ethical issues. All this makes it impossible to meet the 17 sustainable development goals of the United Nations, and moreover, while industrialized countries are mainly responsible for most of the environmental degradation, the most vulnerable are poor countries and people.

In 2010 governments around the world set 20 Aichi goals trying to conserve and protect diversity, by 2020 none were fully met, and some took steps backwards. We must hope that when adopting the Post-2020 Global Biodiversity Framework the objectives and goals will be accompanied by monitorable actions.

The Paris target of less than 2°C is also failing. Unfortunately, all the current promises that even came out of Glasgow, suggest that emissions in 2030 will be like the current ones. Bearing in mind that climate change and biodiversity loss are interconnected we need harmonized objectives and actions between the two conventions (Convention on Biological Diversity and United Nations Framework Convention on Climate Change).

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[1] Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy. (2023). World Economic Forum.
https://www.weforum.org/reports/nature-risk-rising-why-the-crisis-engulfing-nature-matters-for-business-and-the-economy

One of the important causes of biodiversity loss is the lack of recognition that nature is finite and has both economic and social values: instrumental, relational, and intrinsic. To achieve a sustainable world, we need to transform our relationship with nature, as well as our economic, financial, and productive sectors. We need to use natural capital in decision-making as part of inclusive wealth, along with built human capital. This is a much better measure of sustainable economic development than than gross domestic product, which of course measures economic growth, but not sustainable economic growth. Sustainability needs to be subsidized and financed, the price of environmental degradation needs to be internalized in the price of goods and services, and pollution must also be priced.

There is a need to adopt a circular economy, sustainable production, and consumption, and recognize the interrelationship between the agricultural, the energy and the water sectors. It is also clear that these issues are not only the responsibility of governments, but need to include the private, and financial sectors, international organizations, NGOs, indigenous people and local communities, the society in general, the media and the academia. However, governments must lead by changing their economic thinking and legislate accordingly. Finally, the financial sector, banks, pension systems, and insurance companies have a very important role to play with these stakeholders.

Steve Polasky, Professor, University of Minnesota

Biodiversity and nature provide the basis for the economic system, and we take these contributions for granted. We become aware when we have sufficiently degraded and altered nature and when it fails to provide these essential services. There is a need to start seeing nature as an essential set of assets that provide a wide range of goods and services and as a provider of vital natural capital.

The majority of nature's contributions are in decline, and this has tangible economic and social consequences. There are quantifiable losses in economic terms associated with the decline in natural capital. There are also quantifiable gains that can be made by investing in natural capital.

The World Bank recently published a study titled "The Economic Case for Nature"[3] a joint effort with the Natural Capital Project of the University of Minnesota, Stanford University, and Purdue University's global trade analysis project. This analysis combines the InVEST Model (Integrated Valuation of Ecosystem Services and Tradeoffs) and the GTAP Model (Global Trade Analysis Project), to analyze the effects of different policy options. One of the results suggests that, with only partial accounting of ecosystem services, investing in nature generates GDP gains of billions of dollars annually with the largest profits concentrated in low-income countries. The analysis also showed that a lack of investment would lead to a catastrophic loss of ecosystem services and potentially billions of dollars in damage.

There is currently a large gap between the scientific understanding of how we are changing nature and the state and functioning of economic and financial systems. In the current system, nature's values are not accounted and are invisible to businesses, households, and governments. The great challenge we face is to incorporate the values of nature into our economic and financial systems.

There are many signs that this is beginning to occur, such as the "gross ecosystem product" calculation that estimates the monetary value of the ecosystem service stream as well as the recent adoption of ecosystem accounts in the United Nations System of Environmental Economic Accounting. The notion of inclusive wealth accounts for how we are sustainably changing capital in all its forms, including natural capital. There's the Taskforce on Nature-related Financial Disclosures (TNFD)[4] , and there are efforts of several companies to account for the value of nature in supply chains.

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[3] World Bank Group. (2021, July). The Economic Case for Nature. World Bank; World Bank Group. https://www.worldbank.org/en/topic/environment/publication/the-economic-case-for-nature

[4] TNFD – Taskforce on Nature-related Financial Disclosures. (2022, November 7). TNFD. https://tnfd.global/

Nature contributes greatly to public goods, produces many public goods with externalities. If externalities are not internalized there is a lack of incentive to continue supplying the kinds of public goods that natural capital provides. However, the current market system, prices, incentives, and the private sector are ill-equipped to supply and maintain natural capital. Thus, public policy has a role to play.

This is an important moment; we need to transform our economic and financial system to incorporate the value of nature so that it counts in a way that is truly essential to the economy and human well-being.

One last point is that where we are financially rich and where we are rich in biodiversity are not the same parts of the world. Thus, we need to pay attention to how we coordinate international financial flows so that we can sustain nature.

Nick Robins, Professor, Institute of research Grantham, London School of Economics and Political Science.

The Network of Central Banks and Supervisors for Greening the Financial System (NGFS)[3] , comprised of the financial system with hundreds of central banks and supervisors, along with the International Network for Sustainable Financial Policy Information, Research and Exchange (INSPIRE) established a joint study group to analyze questions such as what does the biodiversity loss that we face with nature means? What does this mean for the mandates of central banks and supervisors? Particularly what does this mean in the context of financial risk?

Biodiversity loss can be translated and transmitted as a financial risk. This happens in ways that both financial institutions and central banks are beginning to understand. Many financial institutions ultimately rely on healthy ecosystems.

Financial institutions may be involved in lending or investment activities that have negative impacts on biodiversity, therefore, as governments implement appropriate policies and societal and market expectations change, financial institutions may face transition risks due to misaligned corporate objectives. In this sense, the framework for climate change also talks about biodiversity and there is the opportunity for an integrated approach in managing climate and biodiversity related risks.

Several central banks are beginning to assess these risks. One of the issues is how do we ensure that biodiversity risks are properly incorporated into mechanisms for developing future scenarios? There are also central banks that begin to apply biodiversity criteria to the management of their own portfolios (the Swiss Central Bank and the Bank of France).

There are things that can be done, such as ensuring that financial flows are aligned with biodiversity values, very similar to the financial provisions of the Paris agreement. We need to ensure that the impacts and dependencies of businesses and financial institutions are properly assessed and reported through frameworks such as TNFD and that the financial system is aligned more broadly with the restoration and preservation of nature.

Learning form COP 26 in Glasgow, it is clear that without adequate attention to restore nature the climate objectives of net-zero emissions or resilience will not be met; we could build upon the financial institutions that have joined the Glasgow Financial Alliance for Net Zero (GFANZ)[4] , and have committed to net-zero portfolios by 2050. The real challenge is how it translates into actions that reduce the negative drivers of biodiversity loss.

One of the most worrying issues is that emerging economies are more dependent on healthy ecosystems and will be more affected by the collapse of biodiversity, but they have a real need for greater financial flows. That is a challenge, how do we increase international financial flows, both in terms of public and private finances to restore and sustain biodiversity?

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[3] Banque de France. (2017). NGFS. Banque de France. https://www.ngfs.net/en

[4] Glasgow Financial Alliance for Net Zero. (2021). Glasgow Financial Alliance for Net Zero. https://www.gfanzero.com/

Thulaja Thessa K Vasudhevan, Executive, Central Bank of Malaysia

Why should financial institutions consider the risk of biodiversity loss? If the financial sector is trying to address the risks of climate change, it must also understand that the risk of biodiversity loss is highly intertwined and may even aggravate the risk of climate change.

At The Bank Negara in Malaysia, biodiversity-related risks have begun to be analyzed. We know that climate risk has benefited from the momentum of the climate change agenda, and this has led to the development and advancement of tools and methodologies, and to the integration of scientific knowledge and financial sector analysis.

Malaysia is an emerging economy with great biodiversity and ecosystems that sustain economic activities and livelihoods. Understanding the dependencies and impacts on ecosystem services is a first step to enter this discussion and understand how to conduct an analysis of the financial sector. We are using tools to map dependencies and impacts of the entire banking sector giving visibility to ecosystem services.

The conversation around biodiversity risks is intertwined with climate risks and how each compound with each other, and how this relationship itself could serve us to identify priority areas within an emerging economy.

The loss of biodiversity can have very local specific effects and consequences, so methodologies must be contextualized. This will make it possible to build relationships and commitments with other local actors. We recognize that we need to work very closely with the government and many of the local parties, including civil society.

This exploratory approach involves engaging and having conversations with other stakeholders outside the financial sector. It must be understood that biodiversity-related risks are intertwined with social and health impacts and consider biodiversity and environmental policies as a very important part of the development agenda. Finally, different types of methods need to be explored, including qualitative ones as there are data limitations that affect the ability to quantify.

Romain Svartzman, Economist, Banque de France

If we want to have a comprehensive approach to risk management, it is good to analyze climate change, but we must also examine other potential impacts and risks that could arise, both physical and transitional, related to biodiversity loss.

With the creation of the TNFD, probably in the coming years there will be more expectations for financial institutions to better understand financial risk related to biodiversity and its interaction with climate-related risks and move towards the decision to have a nature rating with a scientific perspective.

In France, the Energy and Climate Law adopted in 2019, expanded the legal requirements that already existed for financial institutions regarding climate change to biodiversity. It states that, from 2022, financial institutions have to disclose their impact on biodiversity and their dependence on biodiversity and ecosystem services. In addition, they will need to explain how these impacts are connected to transition risk and how these dependencies are connected to physical risks. This law requires financial institutions to disclose how their strategies align with international biodiversity conservation goals.

It is important, to remember that, for climate and biodiversity, non-financial policies (for example, industrial) are needed. We must be careful on how much financial institutions can do and how much we want them to do and even think about the undesirable consequence, for example, potential greenwashing or players seeking rents or replacing others. We must be careful with the institutional context in which the financial system is integrated with other stakeholders.

The risk-based approach linked to biodiversity loss can have impacts on price, or on financial stability. A Banque de France working paper of the Bank of France summarizes the issue for central bankers, this was raised as a complex problem due to the lack of universal metrics among other aspects. We need to start the discussion about where to go and how to work on scenarios, including the connection to the climate.

William Harding, chief of implementation, UN-convened Sustainable Insurance Forum

The Sustainable Insurance Forum (SIF)[7] is a group of 34 insurance supervisors and regulators working to understand and strengthen responses to sustainability issues. Initially the work focused on climate risks, but recent developments make it clear that nature-related risks should be considered by both the insurance industry and supervisors.

The global insurance sector is beginning to take a more holistic view of nature-related risks to expand beyond climate and natural hazard risks. The SIF recently published a study to explore and understand the dependence of the insurance sectors on nature[8]. The study employed a mixed research methodology using a survey of 108 insurance sector participants from 32 countries, including insurers, reinsurers, insurance brokers and industry associations.
Some key points outlined by the study regarding the industry's future are the impact of physical and transition risks. Physical risks result from the material destruction of nature, causing both direct and indirect financial losses for companies and insurance companies. Transition risks encompass those that arise due to global policy, regulatory, economic and market transformations.

Nature-related risks to economic sectors are transmitted to the broader economy at both the micro and macro levels, leading to increased financial risks for the insurance industry. There is a potential increase in insurance, operations, liquidity, market, and credit risks.

As the loss of nature increases, these financial and economic risks could increase in magnitude and frequency. However, nature positive activities, whether insured or funded by the insurance industry, contribute to the conservation and preservation of nature, and can have a positive feedback loop to reduce physical and transition risks.

The insurance sector understanding of nature-related risks and collection of relevant data and designing of tools to assess these risks is at a relatively early stage. However, some in the industry are already acting despite the absence of unique frameworks to incorporate nature-related risks into assessment and management practices.

Some actions highlighted in the report are the need for insurers to begin assessing risks and impacts; to report and disclose their risks; manage them; commit to positive practices and develop insurance products aligned with nature. To insurers and reinsurers, we have told them to continue to identify and create data analysis tools, metrics, and forward-looking indicators to assess and measure nature-related risks.

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[7] Sustainable Insurance Forum (SIF) About. (2022, July 4). Sustainable Insurance Forum (SIF). https://www.sustainableinsuranceforum.org/about/

International Association of Insurance Supervisors. (May 2021). Application Paper on the Supervision of
[8] Climate-related Risks in the Insurance Sector.
https://www.sustainableinsuranceforum.org/view_pdf.php?pdf_file=wp-content/uploads/2021/05/210525-Application-Paper-on-the-Supervision-of-Climate-related-Risks-in-the-Insurance-Sector.pdf

Another point is to disaggregate the level of assets and nature-related risks by regions and sub-regions, and countries, as well as by types of risks; this can help to develop a diversified portfolio globally and to develop a better strategy of risk management practices.

To insurance supervisors, we recommend educating and raising awareness among regulated entities regarding risks and encouraging the use of voluntary frameworks and international sustainability standards. At SIF, we aim at The Climate Training Alliance as a platform that provides resources for capacity building on nature's risks and sustainability.

Regarding the methods, there is concern that there is no single universal framework that provides the exact metrics to be tracked, which can be easily combined into a supervisory risk rating. It is thus still essential to start with qualitative work.

Keynote speaker Elizabeth Maruma Mrema, Executive Secretary, Convention on Biological Diversity

The first message is that, beyond climate change, biodiversity is now recognized as a real challenge for the financial sector. We are at a crucial time for both the climate and biodiversity of our planet and for all of us. The conferences of the Parties of the Convention on Biological Diversity and Climate Change have made it clear that it is imperative to include individuals, local communities, and indigenous people in solutions. They have given finance and business a clear message that they must simultaneously shift towards nature positive and net-zero emissions models.

The participation of all actors, in addition to governments, including business, the public and private financial sectors in all developed and emerging markets is critical. There is a momentum to look at all aspects of the economy, including financial institutions, to contribute to restoring and building nature. There is an urgent need to consider nature beyond climate in all decision-making processes at the government and business and financial levels. Central banks are crucial.

The risk of inaction is enormous, and the opportunities for action are just as significant because half of the world's GDP depends on nature. There are tremendous economic opportunities that are important for businesses and financial institutions.

UNFCCC COP26 marked a significant change in a critical aspect, and nature was part of the climate discussion, the Glasgow final texts recognized the importance of protecting, conserving, and restoring nature and ecosystems to achieve global climate ambition. More than a hundred world leaders committed to ending and reversing deforestation by 2030, and the Glasgow Financial Alliance for Net Zero (GFANZ) was founded. We also saw the launch of the International Sustainability Standards Board (ISSB). All these commitments must be followed by concrete actions on the ground of truly making the difference we expect.

The unmet Aichi Targets and therefore, the Post 2020 Framework must answer why we failed and thus learn the lessons to do better. Investments and incentives for finance, with respect to biodiversity management, need strategic and profound consideration. Disclosure of nature-related risks can be a potent tool in financial terms and influence decision-making. At the same time, a common disclosure framework will support the alignment of financial flows with positive results and with the Post-2020 Global Biodiversity Framework.

The Task Force for Nature-related Financial Disclosures (TNFD) is a market-driven initiative for the market in collaboration with public development banks, other stakeholders, and experts in the field of biodiversity. TNFD aims to provide a framework for 2023 for financial institutions and organizations, to report and act on the evolution of nature-related risks, and to support a shift in global financial flows away from nature's adverse outcomes to positive outcomes.

It will build on the Task Force on Climate Financial Disclosure (TCFD) structure and foundation and will leverage synergies to avoid any potential conflict or duplication. Over time, these two frameworks will complement each other. Better information will enable financial institutions and companies to incorporate nature-related risks and opportunities into their decision-making processes.

The term nature-related risks refer to the risks and opportunities for an organization posed by the links between its activities and nature. In addition to shorter-term financial risks, they also include longer-term risks represented by the impacts and dependencies of nature. What does this mean? It means that organizations disclose not only how nature can positively or negatively impact the primary financial components of the organization from the outside in, but also how the organization positively and negatively impacts nature, therefore, from the inside out.

TNFD has different working groups: for the definition of risks related to nature, impacts and opportunities; for the availability of data, standards, and metrics; to integrate a better understanding of the risks and opportunities associated with nature, and one for pilot development. There is also a forum that forms a global, multidisciplinary consultative network of institutions that share the vision and mission of the TNFD. What is in it for central banks and regulators? These can benefit from standards, material, and framework that can be adopted or adapted immediately as a method of regulatory compliance or guidance for decision making.

Announcements have been made in favor of nature beyond climate. This is very encouraging for us, and they must now be followed by concrete actions on the ground. The commitment of central banks and regulators is critical.

Panel 2: Disclosures, information, and tools

Is it possible and advisable to integrate biodiversity risks to the existing tools and information on climate change?

Moderator Santiago Lorenzo, head of the Climate Change Economics Unit, UN ECLAC

Panel participants

- Katie Leach, Senior Program Development Manager, Share Action
- Margareth Kuhlow, Global Finance Practice Leader, World Wildlife Fund
- Richard Mattison, President, S&P Global Sustainable1
- Rolando Ocampo, Director, Statistical Division, UN ECLAC
- Gemma James, Senior Lead, Environmental Issues, PRI

Panel 2: Disclosures, information, and tools.

This panel discussed information challenges in the financial system to incorporate biodiversity risks in financial decisions. Some takeaways were:

- It was thoroughly discussed the importance of considering jointly climate change and environmental degradation. The inaction to assess and manage these risks together could derive in higher costs and in stronger feedback loops between them.

- Biodiversity data tends to have problems of availability, completeness, accessibility, consistency, and standardisation. These problems hinder investments decisions due to the lack of assessment of ecological impacts.

Rolando Ocampo, Director, Statistics Division, CEPAL

The central issue is how the current limitations of biodiversity data availability are being addressed. The UN Secretary-General declared "we will no longer allow senseless environmental destruction to be regarded as economic progress" so now is the time to complement GDP measures.

It is important to include not only stocks and flows, but also the cost of ecosystem services. For example, in the 90s, 25.3% of global rainforests were in Latin America and the Caribbean, this dropped to 22.9% by 2020. In the last 30 years, 138 million hectares were lost, which is equivalent to an area larger than that of Peru.

The Living Planet Index (LPI) tracks the abundance of the population of mammals, reptiles, and amphibians in their biospheres around the world. While the LPI lacks data on species and locations that are difficult to monitor, technological advances will change this as datasets can be compiled in increasingly sophisticated ways. Between 1970 and 2016 there has been a 4% decrease in LPI for subtropical regions, which is the most deteriorated of any other region.

The System of Environmental and Economic Accounts (SEEA)[9] aims to measure changes in the ecosystem's ability to provide services, integrate information on stocks to provide a picture of trends in systems, and provide a tool to compile information on the environmental challenge and link to change in the economy and other human activities. Multidisciplinary collaboration is required to generate the framework and various indicators are needed to understand and maintain ecosystems.

The UN Statistics Division is developing platforms and tools for environmental metrics and analysis. You can also see the OECD's Green Growth Knowledge Platform[10] which contains various databases. These functionalities and tools can be completed using local data and tabulating them to generate mappings and follow-ups.

We launched the geo-portal[11] where you can visualize statistical aspects worldwide with more than 200 layers of environmental information such as climate change or demographic and economic information. We have information such as our statistical yearbook, the impact of Covid-19 in LATAM and the Caribbean, the Biblioguide for environmental statistics among other things. As an institution the challenge is to see the opportunities for a better development of nature statistics.

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[9] *System of Environmental Economic Accounting* | . (2022). Un.org. https://seea.un.org/

[10] *Green Growth Knowledge Partnership.* (2023). Greengrowthknowledge.org. https://www.greengrowthknowledge.org/

[11] *Geoportal CEPALSTAT.* (2023). Cepal.org. https://statistics.cepal.org/geo/geo-cepalstat/?lang=en

Margareth Kuhlow, Global Financial Practice Leader, World Wildlife Fund

It is necessary to incorporate biodiversity information data into climate analysis. We cannot look at climate in isolation. We have learned over time that the cost of inaction is greater than the cost of preventive actions.

If we only look at climate in isolation, we are underestimating the economic/financial risks of climate and overlooking the economic/financial risks of biodiversity loss. It should become good practice to interconnect climate and biodiversity, especially for financial regulators or any financial institution that analyzes risks, in addition, they must ensure that in their risk and forecast radar they use up-to-date risk metrics.

The Network of Central Banks and Supervisors for Greening the Financial System (NGFS), along with INSPIRE, have been examining the relationship between biodiversity loss, financial risks, and financial stability[10] . The document shows evidence that biodiversity loss could have significant economic and financial implications as a result of physical risks to those who rely on ecosystem services, in addition to the transition risks posed by changing policies designed to avoid biodiversity loss. Physical risks are more difficult to diversify and become a much greater challenge because it may be that they simply increase the price or do not cover them, and this becomes a public cost.

Putting a disclosure framework in place will allow standards to be set, but specific metrics are also needed to have standardized disclosure.

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[10] International Network for Sustainable Financial Policy Insights, Research and Exchange. (2022). Inspiregreenfinance.org. https://www.inspiregreenfinance.org/publications/central-banking-and-supervision-in-the-biosphere/

Gemma James, Senior Leader, Environmental Affairs PRI (Principles for Responsible Investment)

One of the biggest problems is that you can't count biodiversity in the same way you count carbon, it doesn't follow the same addition rules, and setting parameters for biodiversity is complex.

A study was done with the purpose of understanding what data investors require to make informed decisions including the relationship with biodiversity. We sought current and emerging biodiversity data approaches and analyzed whether they meet investors' needs, as well as a gap analysis. It was found that what they mainly need is to know the exposure of companies and their portfolio to find the best relative risks and how to manage them.

And what is the ecological impact that these companies have applied through prevention or mitigation strategies? One challenge is that there are quite a few data approaches available, but many of these focus on specific aspects with nothing linking the pieces of information and supporting the interaction of that data flow through a decision-making model. So how can you investigate the real ecological impact of your exposure once you go through that chain? The information available is very disjointed and it is difficult to present a clean and consistent narrative throughout that process.

Another challenge is the lack of asset location data, which is critical to understanding risk exposure, of course there are tools that provide insight into, for example, where geographic risk exposure may be found but what investors really need is operational and supply chain data of the company, and this is not yet possible.

It all comes down to the questions of how much? And where? It highlights the lack of consensus on core metrics and the lack of standardized disclosure. Today investors require five to ten core metrics to compare and analyze a company's biodiversity performance overall. The debate is which ones?

The quality and accessibility of the data is also important, there is the belief of a lack of consistency and integrity in the data and that therefore it is not evaluable. This can originate, for example, from the way in which data is formatted which leads investors to use various data sets, which reduces the number of investors who want to do this or who have the budget to do it. There is also the prospect that datasets do not have a vision for the future.

On standard-setting institutions, I think they are not there to develop the metrics, but to collect, collate and decide which ones are the best. They have a key role to play in developing that common baseline for reporting. On biodiversity, we would expect contextual metrics to be sought and supported with an interpretation of the data.

Investors need to understand the connection between their portfolio exposure, for their risk management, and their impact on biodiversity. Disclosure frameworks should make it possible to recognize such links.

Katie Leach, Senior Program Development Manager, ShareAction

The financial sector uses a wide range of platforms and portal tools to guide investment decisions, including climate risks. When it comes to nature-related risks there are several different datasets and tools that can be used like those used to integrate nature into ESG assessment and engagement.

While there are gaps and challenges, there is a diversity of steps that can already be taken. We know that we must start by looking at the priority sectors for nature, whether with a high impact or dependence on nature. What are some of those impact metrics? Some we already know as the use of land, water, GHG, and pollution among others.

When looking at drivers of biodiversity loss, some of the data may be in the TCFD reports. The issue of dependency it is more difficult to quantify, but there are recent analyses, i.e., by the Dutch Central Bank and the Bank of France. The geographical location is also important for a spatially explicit assessment of biodiversity risk.

You can start extracting climate-related data and thinking about it from a biodiversity perspective, it is thus also important to approach both together and try to extract those metrics, tools, and datasets.

We have a study on the barriers[15] to investor action to address biodiversity loss and the results are very similar to those discussed by the previous speaker, as are the technical barriers to data and metrics.

There is also a general lack of awareness about what biodiversity loss means for the financial sector and how it is connected to climate change and other issues such as human rights. Therefore, financial regulators, policymakers, investors, liaisons, and private financial institutions must develop awareness around this.

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[15] Biodiversity: a scoping report. (2020).
https://api.shareaction.org/resources/reports/Biodiversity-scoping-report-Final.pdf

Aaron Morales Apodaca, ESG Specialist, Standard & Poors.

As an investment and as a corporate risk, climate change has taken the lead and reflects in the number of companies that are setting net zero targets and serious climate strategies. Companies have become more sophisticated in the way they collect data and how they manage these complex issues, this helps drive the biodiversity agenda. But climate change and biodiversity are not 100% interrelated. While there is a lot of overlap, many elements are quite independent.

We did a survey on climate and biodiversity data and the performance of companies. Companies dependent on nature depletion, interrelated with climate change and biodiversity loss, have shown a decline in the performance of their ESG scores over the past two years.

We also need to agree on a minimum of indicators, for example, geographic exposure indicators to understand low regional or local impacts because this problem tends to be highly regionalized and based on individual asset locations.

Physical risks continue to be one of the biggest challenges, at least in terms of measuring the true financial impact of asset impairments and the potential for increased operating costs and the possibility of revenue loss and there is much we can learn and apply to the current biodiversity challenge.

Current international trends in sustainability-related information disclosure

Since 2020, efforts triggered to develop a comprehensive reporting system that integrates sustainability reporting with mainstream financial disclosures. In September 2020, five principal framework and standard-setters –namely CDP, Climate Disclosure Standards Board (CDSB), Global Reporting Initiative (GRI), International Integrated Reporting Council (IIRC), and Sustainability Accounting Standards Board (SASB) –, for the first time, issued a shared statement of intent to work together[14].

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[14] Statement of Intent to Work Together Towards Comprehensive Corporate Reporting Summary of alignment discussions among leading sustainability and integrated reporting organizations CDP, CDSB, GRI, IIRC and SASB. (2020).
http://www.integratedreporting.org/wp-content/uploads/2021/01/Statement-of-Intent-to-Work-Together-Towards-Comprehensive-Corporate-Reporting.pdf

On November 2021, during COP26, the IFRS Foundation announced the creation of the International Sustainability Standards Board (ISSB), specifically to develop a comprehensive global baseline of high-quality sustainability disclosure standards to meet investors' information needs. In this regard, the IFRS Foundation created a Technical Readiness Working Group[33] (TRWG), which included the CDSB, the Task Force on Climate-related Financial Disclosures (TCFD), the International Accounting Standards Board (IASB), the Value Reporting Foundations (comprised of SASB and IIRC), and the World Economic Forum (WEF), to provide a running start for the new board[34].

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[33] IFRS – Technical Readiness Working Group (2021). Ifrs.org https://www.ifrs.org/groups/technical-readiness-working-group/

On March 31, 2022, the ISSB launched a consultation[17] on its first two proposed (exposure drafts) standards. One sets out general sustainability-related disclosure requirements and the other specifies climate-related disclosure requirements. The consultation closed on July 29, 2022.

The objectives of the proposed standards are the following:

a) General Requirements for Disclosure of Sustainability-related Financial Information: To require an entity to disclose information about its significant sustainability-related risks and opportunities that is useful to the primary users of general-purpose financial reporting when they assess enterprise value and decide whether to provide resources to the entity.

b) Climate-related Disclosures: To require an entity to disclose information about its significant climate-related risks and opportunities:

> ***I.*** to assess the effects of significant climate-related risks and opportunities on the entity's enterprise value;
>
> ***II.*** to understand how the entity's use of resources, and corresponding inputs, activities, outputs, and outcomes support the entity's response to and strategy for managing its significant climate-related risks and opportunities; and
>
> ***III.*** to evaluate the entity's ability to adapt its planning, business model and operations to significant climate-related risks and opportunities.

In an effort to contribute to the development of a comprehensive reporting system, CDSB[18] and the Value Reporting Foundation have merged with the IFRS Foundation[19].

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[17] IFRS- ISSB delivers proposals that create comprehensive global baseline of sustainability disclosures. (2021). Ifrs.org. https://www.ifrs.org/news-and-events/news/2022/03/issb-delivers-proposals-that-create-comprehensive-global-baseline-of-sustainability-disclosures/

[18] IFRS- IFRS Foundation completes consolidation of CDSB from CDP. (2021). Ifrs.org. https://www.ifrs.org/news-and-events/news/2022/01/ifrs-foundation-completes-consolidation-of-cdsb-from-cdp/

[19] IFRS- IFRS Foundation completes consolidation with Value Reporting Foundation. (2021). Ifrs.org. https://www.ifrs.org/news-and-events/news/2022/08/ifrs-foundation-completes-consolidation-with-value-reporting-foundation/

2. Assessing impact and its integration in the financial decision process

December 1, 2021

Opening remarks from Manuel Ramos Francia, General Director CEMLA

This conference represents an effort to improve our understanding of the environmental challenges for the financial system and to integrate them into the agenda of central banks, authorities, universities, and the private sector. What is at stake is nothing less than the future of humanity and of the economic and social systems.

Discussions about the recent COP26 in Glasgow have once again highlighted the difficulties of reaching global consensus to cut carbon emissions and stop the increase in temperatures. This conference seeks to contribute to making the consequences of environmental degradation and biodiversity loss more visible and to be a platform for knowledge. Our objective is to raise awareness and encourage the implementation of a stronger agenda that incorporates the environmental dangers into global financial sector discussions. A better understanding by the financial sector of climate change and biodiversity loss, which are closely interrelated, can lay the groundwork for more ambitious and urgent agreements to act and address both agendas.

It's easy to see how various ecosystem services fall into the category of common, non-exclusive, and non-rivalrous goods, a characteristic linked to market failures. In addition, there is a lack of measurement and valuation of these services.

Financial systems are affected by biodiversity loss, mainly through channels that have been linked to the so-called physical and transition risks. Physical risks capture the potential for reductions in the quantity and quality of ecosystem services and can affect the ability of companies to access credit and pay their debt. Transition risks reflect the risk of changes in policy preferences or technologies due to adaptations to sustainable practices to prevent biodiversity losses.

Increasing public scrutiny of corporate investments is an example of this type of risk. The transition to a greener economy means that certain economic sectors may face higher costs and certain changes in asset values that affect financial companies. Transition risks have received less attention, but their importance is likely to increase as action is taken against environmental degradation. We should not forget that there is also a feedback loop.

Financial firms can have an impact on biodiversity through their investment and lending decisions, as well as risk taking. Central banks have ample room to incorporate these emerging challenges into policy action.

Policy frameworks can be adjusted to assess risks related to the environment, and monetary policy can be adjusted to avoid amplifying the effects of environmental damage through monetary transmission.

What can we do to help avert the environmental climate disaster? If our goal is to provide appropriate policy pathways to halt the loss of diversity and build a path towards environmental restoration, there is a need to reassess some important assumptions.

We first need to think about the utility function of environmental climate policy, which is how much current consumption we must sacrifice to avoid the cost of environmental degradation.

The second challenge relates to designing an appropriate policy approach. In the case of climate change, a single policy instrument such as a carbon tax may not be sufficient and should probably be complemented by other market-based policies and incentives. Biodiversity loss is much more complex in many of the factors and their interaction, so policy making becomes even more difficult.

Some of the points where economics is central to act in this regard are 1) the need to modify the traditional market economy by explicitly including natural capital as an input in the production process and 2) changing the way in which economic performance and welfare are evaluated and measured, as well as setting appropriate prices for risk.

Another aspect is the design of policies that have the right incentives for societies in general, and governments in particular, to implement them. This is a Herculean task, as the policy needed to address global warming and environmental degradation requires an unprecedented level of international collaboration in a configuration that is inherently highly non-cooperative. Perhaps it is time to think deeply about what the best feasible global governance would be to lead us to a scenario that maximizes the likelihood of avoiding disaster.

Keynote speaker: Partha Dasgupta, The University of Cambridge

I start from a question: How did we get to this state where we realized that we are really digging a hole by destroying the biosphere?

One of the reasons, and I think this is the key, is that at the end of World War II all the attention was given to the accumulation of productive capital, roads, buildings, ports, health, human capital, and so on. It made sense at the time, at least globally. Since the human economy was small relative to the biosphere, we could overlook nature, which, generally speaking, was an infinite stock. That has served us well in a sense, because in the last 70 years, since 1950, the average person today enjoys a much higher income and is less likely to be in absolute poverty and live significantly longer than 70 years ago.

Nature has been ignored in all the calculations with which development is measured. GDP is a flow, not a stock. The fact that nature is the basis of our production and part of the foundation of the human economy, but has been ignored in data such as GDP, implies that we cannot capture that a huge gain has been enjoyed at the expense of the future. GDP does not account for the depreciation of capital assets and, of course, of Mother Nature.

Adam Smith's notion of the wealth of nations, which should be remembered as an inclusive notion of wealth, considered not only produced capital and human capital, but also natural capital. According to a study applied by Managi and Kumar in 2018, during the period from 1990 to 2014, produced capital per capita globally doubled, human capital increased by 14% to 15%, but natural capital decreased by 40%. In other words, we have devoured natural capital to produce human capital.

We have already explained why this imbalance may have occurred without us realizing it, because many of the services offered by Mother Nature do not have a price. What I want to do now, is to use this framework to look at the asset structure of our global economy, and with that to understand that when we talk about development economics, I really mean an asset management problem.

The first point I want to talk about has to do with the fact that it is no accident that the most biodiverse regions in the world are in the tropics. Nor is it an accident that the world's poorest countries are in the tropics. The failures I am talking about are most pronounced in the case of ecosystem services and in the case of supply chains between poor and rich countries. For example, poorer countries are supplying primary products such as coffee beans to richer countries and then transforming them into ground coffee, which is bought in supermarkets in rich countries such as the United Kingdom and the United States. There is a long supply chain, however, the price at which the primary product is sold is almost by definition, lower than the social cost. If the export price is below the social cost of the supplier country, each unit of export carries with it a transfer of wealth from the exporting country to the importing country. We are seeing a loss of wealth by poor countries in the supply chain, and this is the logic of missing markets. Yet we are exalting the virtues of open trade, free trade, and globalization. I am not against globalization, but we have to follow the logic of economics. Hence, it is strongly suggested that we need to do something about it, one possibility is for poor countries to unite and impose an export tax to protect natural capital, and thereby protect their own wealth.

The second point is that our ecological footprint, our demand of nature´s services exceed the supply. I call this gap between demand and supply the impact of inequality. This inequality gap is currently not on good terms.

The ecological footprint is a function of income and is an increasing function. It increases at a decreasing rate, which means that, if you take two people, one who is rich and one who is poor, and you take a dollar from the rich person and give it to the poor person, the ecological footprint will increase. This is a way of saying that, in order for the ecological footprint not to increase, the average income has to decrease. This is an extremely important observation.

This has enormous implications for public policy, especially global public policy. There is an absence on the part of international institutions to handle the problems that the global economy has for us with respect to Mother Nature. There are two great global public goods: the open ocean and the rainforest. Both differ in one very important aspect, the oceans are an open access resource beyond 200 miles. No one owns them. The oceans are supplying all of humanity with a wealth of goods and services. No one pays for the maritime traffic that generates millions of dollars transporting goods throughout the Pacific, Atlantic and Indian Ocean; the oceans are being exploited for fish and of course, they are also a dumping ground for pollutants.

On the other hand, we have rainforests in the Amazon, Africa, Malaysia, etc., which are also a public good, but within national jurisdictions. The incentive for countries to protect their rainforests is less than the desires of humanity, because even Brazil is a small part of the world economy. Moreover, Brazil can legitimately say that it prefers to develop and not protect the rainforest. It is not a question of whether we believe the argument or not, but that, if Brazil really needs to develop, it is very easy to complain, but we need an economic response.

We need international institutions that can monitor and be in charge of the global commons, which a rough estimate suggests generate millions of dollars that could be used for many worthwhile projects. Above all, it could be used to pay for the ecosystem services that the rainforest provides. Payment for environmental services is not a strange idea in countries such as Costa Rica and the United Kingdom, where various projects are being implemented that benefit both the land and the farmers, and they are paid for the services they provide. In many cases, payment for ecosystem services could be beneficial. The exact detail doesn't matter, the idea is quite simple. It is a way to correct the externalities that are ruining our relationship with nature. On the other hand, there is a lot of negotiation involved, but that is part of life, the fact is that we need to think along these lines and look for institutions at the international level.

There are local communities that have already found institutional arrangements, there is an enormous amount of literature written by anthropologists that have shown that, in Africa, Latin America and Asia, small rural communities have found ways to manage their local ecosystems. Unfortunately, these communities have been threatened by modernization. The misunderstanding by economists and policy makers has generated enormous tension among the poorest in their countries.

Moreover, we have found that the most sophisticated economies have shattered the lives of very poor people, and at the same time, have not offered a way out of the global problems we are facing. Therefore, I want to end by reminding you that the fault is not with economics, economics is fantastic, it is flexible, it is usable, and it tries to solve the problems of our lives. We have misused it, but if we come together as we are doing now at this conference, recognize that it is not a very easy subject to introduce and let nature be introduced into economics in an organic way, then we will be on the way to saving ourselves.

Panel 3: Modelling approaches to biodiversity finance

Panel 3: Modelling approaches to biodiversity finance

What are the advances in the definition of metrics related to biodiversity and their impact on financial decisions?

Moderator Ilmi Granoff, director of Sustainable Finance, ClimateWorks Foundation
Panel participants

- John Tobin, Professor of Practice of Corporate Sustainability, Cornell University
- Eva Zabey, Executive Director, Business for Nature
- Claudia Kruze. Managing Director Global Responsible Investment & Governance, APG.
- James Belmont, Climate Risk Lead, Baringa
- Onno van den Heuvel, Global Manager, the UNDP Biodiversity Finance Initiative – BIOFIN
- Nina Seega, Research Director, Sustainable Finance, Cambridge Institute for Sustainable Leadership

Panel 3: Modelling approaches to biodiversity finance.

This panel discussed the challenges of incorporating biodiversity risks into financial decision processes. Some takeaways were the following:

> *- In contrast to climate change where metrics such as carbon dioxide emissions can be easily tracked, the complexity of biodiversity loss requires a wider pool of metrics and interactions for its risk assessment. For instance, preventing deforestation and the preservation of endangered animal species have different drivers and effects on ecosystem services.*
>
> *- Metrics are bounded to practicality and cost-effectiveness criteria which matter when implementing policy frameworks focused on reducing environmental risks.*

Nina Seega, Director of Research for Sustainable Finance, Cambridge Institute for Sustainable Leadership

In contrast to climate, when talking about biodiversity there is a much broader set of metrics and risks, how can the complexity be reduced? For this, you take the distinction between transition risks, physical risks, and liability risks.

You take a type of risk, look at how it manifests itself, and how it is affected by a decline in a particular service, air quality, or habitat quality, for example. The next question is how does this impact companies, including transmission channels, disruption of activities, the value chain, or assets, as well as commodity price volatility. That carries over to financial risks such as credit, market, liquidity, and business.

On the side of transition risks, it is slightly different since they manifest as a response to nature and also come in the form of policy regulation.

Initially the term biodiversity loss and land degradation began to be used and now nature is used as a broader concept. What is important in terms of metrics and models is that they are expressed in conventional financial language and brought as close as possible to financial institutions.

In terms of the 2030 target that we have to help reverse biodiversity loss, what it says is that we have to completely reconfigure our economic and financial systems, this is not a long-term issue, but a really immediate and urgent issue. For example, in terms of subsidies, about $140 billion goes towards biodiversity conservation annually, and $540 billion goes towards subsidies that are harmful to nature (i.e., four times as much money).

The data is there, the tools are there, in addition to ENCORE; a regulatory framework is also being built, and there are people (bankers, academics, financial regulators, central banks) who are working on it, such as the NGFS. The momentum is there, I just think we need to introduce a little more urgency.

We also need to change the conversation to talk about this as a fundamental dependence of our GDP on nature, and that will help us really address the financing puzzle. The sectors that rely heavily on nature are forestry, agriculture, fisheries, food, beverages, utilities, construction, and electricity. Financial institutions have portfolios that are full of those sectors. We have an incredible opportunity with climate to completely rebuild the system. We're going to bring nature into the conversation and we're going to move nature positive rather than thinking about climate now and nature five years from now. If you're doing a customer engagement on climate, do a customer engagement on nature at the same time, if you're doing your risk analysis, think about environmental risks, don't just think about climate risks.

John Tobin, Professor, Corporate Sustainability Practice, Cornell University

Investing in biodiversity is fundamentally different than investing in climate when it comes to measuring the negative or positive impacts associated with investments. That's because global climate has a key advantage: one metric, equivalent to metric tons of CO2, and those metrics provide a common language for investors, corporate and policy makers. Also, for the past few years it has had a clear target, 1.5 Celsius of warming, but when it comes to biodiversity it's a very different thing.

One project or investment may seek to prevent deforestation, the next may seek to save an endangered species, and the third may seek to maintain the integrity of a watershed. Metrics can be developed to measure the success of these individual transactions, but there is no way to compare which of these three projects offers the greatest non-financial returns. In other words, there is no equivalent to tons of CO2 equivalent or for the 1.5°C case. This is the starting point for measuring success in biodiversity investment. There is an enormous amount of effort devoted to making sense of non-financial returns and biodiversity, to put some measure of rigor on it to the extent possible, and ideally to develop metrics to help investors evaluate some of these non-financial returns.

What is interesting to ask is, what are the common characteristics of good biodiversity metrics? Some of the characteristics are that they are standardized and can be applied across systems or across transactions. If you compare non-financial returns on two very different things, such as deforestation on the one hand and endangered species on the other, that could be a very distant and potentially impossible goal. We need to develop metrics that, at least in the relatively short term, allow deforestation projects to be comparable to each other while endangered species projects can also be measured or evaluated against each other in terms of non-financial returns. Clearly these metrics will have to be rigorous, but they must be easy to understand and apply. Scientists and economists may be able to develop very sophisticated metrics, but unless these metrics are practical and cost-effective, they will never be used. We need these metrics to be applied by governments, NGOs on the ground and above all by companies and investors.

Some of the things that we value and that we have no doubt that we value, are very difficult to value in something that is quantifiable or at least in something that is quantifiable in a way that allows comparison with another value, at least for the moment. Finally, on the issue of metrics, the idea that we should put a number on everything that is a value is something that perhaps we have to overcome and recognize that there are important values that are inherent in biodiversity, and which may be very difficult to quantify, but which should not prevent us from moving forward.

Onno van den Heuvel, Global Manager, Biodiversity Finance Initiative, UNDP-BIOFIN

One of the challenges we face is that in general, we have a lack of available data. One of the priorities is to bring together environmentalists with the financial sector. This is the kind of work we are doing at BIOFIN, where we help these two groups come together and develop national biodiversity finance plans, but it is much more than just a plan, it is a national platform where we help create an important database.

Globally, there are now a number of important tools available. At BIOFIN, we do a review of private sector spending and we do the exercise of knocking on the door of companies and asking them how much money they are spending on biodiversity, 99% of the companies do not have a concrete answer.

This demonstrates that we are in the early stages despite this important global momentum. The formula is not only to look at direct risks, but also at indirect risks and impacts on nature. There is increasing evidence that the real impact and return on investment is out there. How can we reduce the negative impacts of investments? For example, in climate, we may think that green energy investments are all positive for nature, but if we look closely, we know that windmills have various impacts on birds and bats, and that hydropower has effects on fish.

Biodiversity is a local and complex issue, and we need to approach it in a systemic way; bringing together the most important actors in the conservation and financial community and let them work together on the best national platform we can suggest.

We also need to look at the intrinsic value of biodiversity, that is what IPBES is telling us. It is also important that we see what is the follow-up of public policies. Within a country, the government needs to establish conservation policies as the first line of defense, and these should come from the top of the hierarchy. Then, in the second layer, you have already secured the most important parts of the natural areas, and after that, we could see where we could possibly incur some biodiversity loss that is acceptable or not. And here is an important missing piece. Some countries have strategic environmental assessments, which do this exercise for national policies and things like subsidies, but most countries have developed various fiscal policies that are blind to nature.

Eva Zabey, executive director, Business for Nature

Modeling, like any other assessment tool, is key before commitments are made with respect to nature and biodiversity as it is necessary to be sure how impacts and dependencies are understood. Although thought to be complicated, synthesizing has been attempted for decades and there are now several tools available. For example, ENCORE can be used to display which sector, which geography, what the major impacts and dependencies are going to be, and therefore the associated risks and opportunities.

In terms of assessment and modeling, there are four characteristics to consider:

1) Where and at what geographic scale those impacts and dependencies are taking place? It is necessary to focus on the local and also where most of the value of the investment is at risk.

2) What is the status of biodiversity in the company and in the portfolio of financial institutions?

3) What are the other natural and human systems interconnected to it such as soil, oceans, water and climate health systems? So, what is the status and when are these impacts and dependencies occurring? We are talking about nature, which means understanding the temporality of natural processes. People may think, "We need quarterly results," but the natural world does not work in quarterly cycles. You also need to know whether the impacts are going to be immediate, such as deforestation, or longer term, such as pollution.

4) Who is affected by the impacts of the company and its dependencies? This has to do with the importance of indigenous people and local communities and the benefit of their profound knowledge and experience.

On how to consider the multiple impacts on nature in terms of risks, it should be noted that economic valuation can be very useful. We can, in an integrated way and using appropriate tools, find a way to try to balance and incorporate the multiple and different impacts and dependencies, focusing on the real impact and value for people and businesses. There are examples such as the more than 84 financial institutions that have signed the "Finance for Biodiversity Pledge"[26] , which commits them to collaborate, but also to assess, that biodiversity impact as well as to set targets and report on biodiversity impact by 2024. We need to ensure that we use data in an appropriate, credible, robust and science-based way. We also need governments to implement ambitious policies so that policy certainty gives companies the courage to invest quickly, innovate and change their business models.

A key moment is the CBD COP15 in China. We need a clear mission equivalent to 1.5°C now. We need to include value in that framework and integrate nature into all decision making. Finally, we need to eliminate or redirect harmful incentives and subsidies that are not helping us to achieve a nature-positive world.

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[26] Home- Finance for Biodiversity Pledge. (2020, September 22). Finance for Biodiversity Pledge; Finance for Biodiversity Pledge. https://www.financeforbiodiversity.org/

Claudia Kruze. Managing Director Global Responsible Investment & Governance, APG.

At APG we are very long-term investors and our main client, and also owner, ABP, has established a responsible investment policy through three transitions: the first is the climate and energy transition, the second is the digital transition and the third is the natural resource transition. So natural resources and biodiversity are one of the lenses through which we look at investment policy and our own investments.

The two perspectives we adopt are risk and opportunity. For climate change, we have taken both a top-down and bottom-up approach. For top-down, we have done an assessment of climate risk exposure against different scenarios for the entire portfolio, and for bottom-up, the portfolio managers have to explain, for their specific investments, what the climate risk exposure might look like and how it could be mitigated.

Regarding biodiversity, we can look at both opportunities and solutions in which we can invest to mitigate risk. For metrics, you look at the example of climate change, where there is physical risk, transition risk, and new technology risk. For physical risk we look for very asset-specific data sources, for example, for our real estate investments, we have launched investment initiatives called The Carbon Risk Real Estate Monitor. How could you use it for biodiversity? I don't know, but I emphasize the importance of having tools that allow you to benchmark assets against an objective and a trajectory. There is one question we are always asked: what can you invest in? There is a very broad spectrum of finance, and it is very important to think about how to structure an investment opportunity so that the different players in the investment chain can contribute capital.

James Belmont, Climate Risk Leader, Baringa

First, there is a sequence, meaning that the political impetus to make the transition likely came first with climate change. The issue becomes something that matters to the sustainability manager, and now it is something that matters to the chief risk manager. With respect to the measurement, you have to consider granularity and ability to distinguish at the company level between the winners and losers of climate change and between high- and low-impact companies. You have to be specific and use company-level analysis in terms of default probabilities and security.

The second point is that the models must be configurable. They must enable banks and investors to take into account the policies that companies plan to take to improve their biodiversity profile, so that creditors and investors can continue to invest in those companies that they have successfully influenced in the transition of their businesses.

Third, disinvestment is a last resort. If the major financial services companies withdraw investment from certain high-impact companies, then other parts of the financial services sector that are less regulated or have less shareholder pressure will step in and provide the funding. Therefore, there needs to be an option to take a forward-looking view based on what companies are planning to do, assuming someone like the financial services provider believes it is credible.

The fourth point is about incorporating biodiversity into front office decisions and an investment team. It's important to get the front office teams excited about the opportunities for financing the transition. We know in climate it's going to take about $300 trillion of investment over the next 30 years to transition our economies to net zero, that amount of funding needed in a cash-strapped world is a recipe for supernormal returns if you can identify where to place your bets.

So, while there may be a core of people in banks and asset managers and insurers building tools, there are thousands of people on the front lines of institutions, who need to know how to identify opportunities to finance the transition, so that they see it as an issue that can be a potential driver of business growth. Finally, it should be emphasized that there needs to be legislation that forces listed and unlisted companies to disclose some common standard.

Keynote speaker Gretchen Daily, Faculty Director, Stanford Natural Capital Project, Stanford University

As we look across the landscapes and see the ever-increasing mark of humanity across the planet, there are several questions that we need to integrate more effectively into the financial decision-making and policy that sustains the financial system.

First, how much and where should we protect? Second, how can we secure people and nature at the same time and achieve what we dream of in terms of inclusive and green development? And third, how can we go beyond metrics such as GDP to measure and evaluate progress?

All of this requires valuing nature in some sense, not necessarily in monetary terms, but in a deep and meaningful way, and that has been the tremendous challenge. Until relatively recently, we looked to philosophy, spirituality, or even poetry and aesthetics, to talk about those values (and they are still relevant areas). We have come a long way to lay the groundwork to get to where we are now.

It is remarkable to think about where we started to systematize a global approach. Carl von Linné, came at a time when every part of the world and every small sector had its own unique way of thinking about nature. He helped to advance a global view, developing a universal language for thinking about and characterizing the diverse and different elements of nature and their interrelationship.

It brings us to the point where we are now, in the midst of the next revolution, and to think about, how do we value nature? Not only in the interrelatedness and intimate interdependence of people in the biosphere, but sector by sector, place by place. And with this, coming to a shared understanding of how people, societies and institutional systems in different places, value nature, proposing a universal language and advancing in a system that can be used globally and give dignity to differences around the world. But at the same time, allowing us to work together in a harmonized system that takes into account cross-scale interactions.

In this context, there have been heroes who have played a key role in advancing the knowledge base and putting it into practice, making it accessible and meaningful in many different decision-making contexts around the world. There have also been cases, territories and scientific efforts that stand out as pioneering.

After the Millennium Ecosystem Assessment and other global scientific efforts, the time has come to try to systematize these into a universal approach.

One such case was The Natural Capital Project[26] . It is a platform based on science and integrating it with economics and valuation, in an accessible and actionable for everyone and make it credible and legitimate globally. We have developed data and a software system. With this data, we build layers of information about the earth system at the finest scale as we can get around the world, so that any place can explore its situation with respect to the role that nature plays in contributing to water security, climate security, cities, food, safety, security, health, both mental and physical, the ability to be resilient in the face of increasing risks and shocks such as in-floods. It is therefore a highly integrated system. This system has been adopted by all countries to some degree and in some places, it is being fully utilized. In 2021, we launched Urban Invest, which has also started to be deployed in a number of cities in Europe, North America and Asia, among others.

The way it works is to think about a change in management policy or finance and then look scientifically and with data at how that would imply changes in the ecosystem, structure and conditions. We want to provide answers of all these benefits of nature for people.

Globally, the idea is to build a system of accounts, an analytical approach and a final high-level metric in parallel to GDP, but one that complements and reveals nature's contribution to society. There is increasing interest in this, such as the recent statement committing multilateral development banks to integrate nature into policies, analysis, assessments, evaluations, advice, investments and operations by 2025, building on the tremendous progress that has been made.

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[26] Natural Capital Project. (2022). Natural Capital Project. https://naturalcapitalproject.stanford.edu/

Panel 4: Capital markets and biodiversity

How can capital markets generate investment opportunities that integrate the goal of no biodiversity degradation? What are the emerging practices or solutions?

Moderator Danae Kyriakopoulou, Senior Policy Fellow, the Grantham Research Institute on Climate Change and the Environment, The London School of Economics and Political Science (LSE).

Panel participants

- Christopher Flensborg, head of Climate & Sustainable Finance, SEB
- Frédéric Samama, chief responsible investment officer, CPR Amundi Group
- Sandra Abella, director, eco.business Fund
- Iain Henderson, managing director, Sustainable Finance ADM Capital
- Greg Watson, principal specialist, Biodiversity and Natural Capital, Climate Change and Sustainable Development, IADB
- Matthew Arnold, global lead, Impact Finance & Markets, TNC

Panel 4: Capital markets and biodiversity

This panel discussed the relevance of biodiversity for different organizations focusing on how they can align their conservation efforts with the transformations in capital markets, considering aspects ranging from the solutions and innovations to the regulatory transition.

Iain Henderson, Managing Director, Sustainable Finance, ADM Capital

Asia is quite an interesting place for biodiversity from a financial system point of view, and to put it in context, it is highly exposed to climate change and environmental crisis. Many of its economies are highly dependent on environmentally sensitive industries, such as agriculture or fisheries. In addition, a significant proportion of the population lives at sea level. And, relative to the world average, it is underinsured against these risks.

When thinking about climate-related natural catastrophes, an emerging framework for thinking about risk is a function of hazards, meaning the severity and frequency of physical events, exposure, and vulnerability, meaning the susceptibility of damage to that asset. In Asia there is a growing recognition of the role of biodiversity and physical climate risk, and their implications for the financial system. For example, the extent of flooding in a watershed following a typhoon, in part, depends on the type and distribution of vegetation in the watershed, which influences the intensity of water reaching the river systems and ultimately the damage. Another example is storm surges and the impact of coastal damage where coral reefs, mangroves, coastal wetlands, play a role in determining the extent of physical climate risk. Unfortunately, there are more and more signs of disappearance of regulators of this type.

As an example, the Monetary Authority of Singapore has developed environmental risk guidelines[22] differentiated from those of other jurisdictions around the world. First, they cover environmental risks beyond climate change, which is the bread and butter of many jurisdictions around the world. They explicitly cover biodiversity loss and pollution and land use change. They recognize that these risks can interact with climate effects, depreciating asset values. Second, the guidelines also go beyond banks to include insurers and asset managers.

We are also launching a sustainable agriculture fund, and like clean energy and mobility, investments in food and agriculture systems will be one of the key drivers for biodiversity in this decade.

One interesting element is that there are more and more conversations about how biodiversity affects the credit risk of our portfolio. A lot of what we do in Asia is guaranteed loans to small and medium-sized companies, we are increasingly thinking about how biodiversity loss can increase asset vulnerability, collateral or profitability impact.

On barriers, even though biodiversity is a fairly local issue, local experiences often require new configurations of actors. Another issue that has a great potential for gain, is to rethink subsidies and try to make them positive for nature. On opportunities, I think a great potential is biodiversity monitoring, new technologies and the use of "big data" algorithms to generate simple metrics, scales, visualizations and its understanding.

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[22] Monetary Authority of Singapore. (2020).
https://www.mas.gov.sg/-/media/MAS/Regulations-and-Financial-Stability/Regulations-Guidance-and-Licensing/Commercial-Banks/Regulations-Guidance-and-Licensing/Guidelines/Guidelines-on-Environmental-Risk---Banks/Guidelines-on-Environmental-Risk-Management-for-Banks.pdf

Frédéric Samama, Head of CPR Responsible Investments, Amundi Group

We know the commitments at COP 26, and it is quite feasible to align portfolios with such targets. There is a 10% reduction in the volume of CO2 being financed year on year, the good news is that it is scalable. The bad news: reducing 10% becomes increasingly rigid, it becomes 18% in five years from now. Since $130 billion is being committed, it could create massive selling pressure on the stock, and, we should reduce carbon emissions by 95% by 2050. The likelihood that policy makers will jump to impose some new restrictions is very high.

On how we include biodiversity risk in our portfolios. We have companies where we evaluate physical risks, for example, together with multilateral banks, we developed a fund that has a retention mechanism and invests in green bonds. We also have a fund dedicated to food in which we try to invest in companies with a presence in the food chain; in this fund, we are committed to reducing our water footprint by 50%.

On the geographic aspects, we have a very clear mapping of the terms of the geography and the activities that we need to stop doing (example of the Amazon). We talk about pricing things so that capital markets can walk and reallocate assets in a subtle and fluid way. But, when we talk about biodiversity, it is about our survival, maybe we should not put a price on it, we should just say: "we are not going to touch that". So, it's not about knowing the price of the river and how much it contributes to the whole ecosystem, it's just about saying, "that has to be protected, period".

Sandra Abella, Director, Eco.Business Fund

I will start with Latin America and the Caribbean where there are different degrees of preparation to face this new reality. In most of the markets where we operate, regulators are not paying attention to this issue. Some started with environmental and social risks a couple of years ago, but what you see is that most places still don't include these as key risks that institutions need to assess.

Many institutions have gotten ahead of the regulation, as they have decided to be prepared for when the regulation comes. This is already visible, especially in the larger markets, where they have been working on the design and implementation of their environmental and social management systems.

The Eco. Business Fund has worked with about 15 institutions in the region to help them have a system not just for regulatory compliance or for investors but is integrated into the way they do their operations. These same institutions look at this, not only as a risk, but also as business opportunities as they can offer some solutions to address or mitigate those risks.

There are also needs and requirements. We have a double responsibility to generate impact, but also benefits to our investors, so that's where we find a gap. We get a lot of projects where, for example, the size is very small, the sponsors are very young and not experienced enough. But the main problem we have is size, because we cannot do any project with a budget of less than $5 million, and most of the projects we see are below that threshold.

Christopher Flensborg, Head of Climate & Sustainable Finance, SEB

A current trend is transparency: public media, mass media, and social media are forcing transparency around the world. If someone is acting in Sweden, you can see it in Latin America, and if someone has to stop seeing it in Latin America, someone else will continue to see it in Asia. That means that the way we deploy money has to consider that everybody can be aware. Now, with the combination of transparency and purpose, which are the two mega trends, biodiversity will go all the way to the top of the agenda.

Risk management has to comply with the various stakeholders, not only regulators, but also investors, your staff, society, etc. When investigating biodiversity risk, we ask how is it impacting the balance sheet and how are companies taking this on board and driving this? There is a need to create new collaborations between local societies, factories and NGOs, to make sure that the risks being managed are understood. Also, this needs to be explained to the investment communities, in order to secure funding.

There are different types of risk, in the context of climate change mitigation, in the context of adaptation and in the context of biodiversity. Thanks to transparency and access to information, there will be a revaluation of prices and changes in acquisitions.

On the other hand, the time horizon in which markets work is too short, and most of the things we have to do for planning are 10 to 50, to 100 years. And unfortunately, we are in trimestral economy, hopefully this is going to change, because we need to discount future values to new economic models. We also need to create an ecosystem for planet earth, create an economic ecosystem, equitable and flexible to understand who are the beneficiaries and the contributors, and be able to identify and capture those long-term economic values.

The lack of information on projects is a major challenge and a barrier that needs to be addressed. An example of this is the large number of valuable projects that may be out there, of which the financial sector and investors are not aware.

And finally, to avoid greenwashing, encourage transparency, because investors will penalize bad behavior.

Matthew Arnold, TNC Global Leader, Impact Finance & Markets

450 financial institutions have set zero emissions commitments in Glasgow. JP Morgan created a Paris-aligned commitment in October 2020. The amount of expertise, talent, and challenge that all these commitments entail is enormous. There is a capacity issue to move from those commitments to effective net zero actions. Also, carbon has one metric, but biodiversity has many metrics and, capital markets love simplicity.

The Nature Conservancy is working with financial institutions. While most investors want to maximize returns TNC is optimizing a conservation outcome, and there's a lot of overlap, but often there's also some tension. I don't know if it's a regulatory challenge, but it's potentially an institutional challenge of how to co-optimize two variables that are often in conflict with each other.

Also, on the one hand, we have an extractive and destructive economy, and on the other hand we have one that is regenerative. The extractive economy has to collapse, but there are people and institutions that will fight to protect it. We can make the transition, but it is a fight.

We also have to consider that the projects are not only financial, but they are also projects where relationships, beliefs and government processes must be considered.

Greg Watson, Principal Specialist, Biodiversity and Natural Capital, Climate Change and Sustainable Development, IDB

One of the challenges is that the language used does not connect investors and scientists. Between policymakers central bank, the ministry of planning and the ministry of finance, there are different types of arrangements. They have an infrastructure plan, a COVID recovery plan, a blue economy plan, a climate change plan, and they may have a biodiversity plan, and map all of those together to find the points where, often there are huge overlaps where a nature-based solution could actually provide benefits across a wide range of them.

There are different cases with different actors, but all of them have a great interest in that ecosystem, in maintaining and restoring it, and also in generating a financial mechanism that can restore and maintain that ecosystem in the long term. So, we have to think very creatively about how to bring all those groups together in different types of programs. In countries where the debt burden is high, there is an interest in financing these kinds of activities, and there is a need to create trust funds.

Our clients face challenges in terms of budgeting and choosing priorities, and also destructive processes in the territory happen because there is an economic reason for it. So, we need to build economic reasons that make sense and counteract the others.

On opportunities, there are several, one of the things we have been working on is a project with the New York Stock Exchange, with a new asset class called The Natural Asset Company. Intrinsic Exchange Group has been working to offer natural capital valuation of a public or private land and create a natural asset company to offer that value in the public offering on the New York Stock Exchange as an asset class. It is interesting to think about the bio-economy and sustainable investment as alternatives to destructive practices. The IDB has worked on this with national development banks; the challenge is to find a way to channel that financing.

At the IDB, we have developed an Integrated Economic-Environmental Modeling Platform (IEEM)[21] , which is a predictive model for the interaction of policy decisions and their impacts on biodiversity and economic futures, which is a predictive model for the interaction of policy decisions and their impacts on biodiversity and economic futures.

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[21] Banerjee, O., & Cicowiez, M. (2020, January 2). The Integrated Economic-Environmental Modeling Platform (IEEM): IEEM Platform Technical Guides: User Guid. Iadb.org; Inter-American Development Bank. https://publications.iadb.org/en/integrated-economic-environmental-modeling-platform-ieem-ieem-platform-technical-guides-user-guide

December 1, 2021

Keynote speaker Ronald Cohen, chairman, Global Steering Group for Impact Investment

There are three forces that are happening to improve our lives and our planet.

The first is a change in values. Ten to 15 years ago, large numbers of young people began to refuse to buy or purchase products from businesses or companies that did not share their values. They even began to refuse to work for these companies. This began to be noticed by most of the population and eventually by investors.

We have seen the flow of ESG investment grow. We have seen impact investing (which is investing with the same intent as ESG but very rigorously measuring the impact created) grow to a trillion dollars today. Around the world, we can see the bond market is adjusting to these new ideas of sustainability-related bonds and loans. A few years ago, it was thought that "ESG" was a phase, a fleeting thing that would soon disappear. But the emphasis on climate change, youth protests, the recent COP 26 assembly and the proclamations of the world's governments leave us in no doubt that these changes in people's values are having an effect on the flow of investment, and thanks to the flow of investment in business behavior.

Those who thought this would only revolutionize investment without involving business are starting to see shareholder meetings where Exxon Mobile directors are being fired and replaced by new directors who understand the environmental situation. We have seen a rebellion at the Shell shareholder meeting, and we have seen Shell determine that they must reduce their carbon emissions to 40% before the end of this decade. We have also seen other shareholders at Procter & Gamble meetings protesting against deforestation caused by the use of palm oil. Something is changing our economies today and the change in values is at the root of this.

The second major force is the power of technology, which has leapfrogged by combining artificial intelligence, augmented reality, genomics and computing. This makes it possible to impact and make improvements in ways that humanity had never anticipated. Even 10 to 15 years ago, we did not have the models that today's entrepreneurs are inventing to reduce social and environmental degradation while having a high return in profits. The best-known example of this is Tesla, a company that through new technologies completely transformed the industry into electric vehicles.

The third force, also comes from a branch of technology. It is our ability today through computing and big data to measure in a granular way, in monetary terms, the impacts that companies have through their operations, their forms of employment and through their products, on people and the planet.

If we look at the environmental dimension on which this forum focuses, we have published in monetary terms, in dollars, the damage created by 3,000 public companies around the world, which have provided us with enough information to be able to report on their impacts. Of these 3,000 companies, 450 create more damage in 1 year than they make in profits; 1,000 create damage equivalent to a quarter or more of their profits. And the other 2,000 create damage of less than a quarter of their profits, meaning they have an easier path to zero carbon emissions.. But together these 3,000 companies generate $4 trillion dollars of damage in a single year. If you look at the correlation of this data with stock market prices, you can see that the markets are already taking the impact into consideration.

There is also an exercise in measuring the impact of diversity in the workplace (in terms of a company's workforce). Harvard's Impact Weighted Accounts initiative[24] shows that it is feasible to translate the impact quantities that we have begun to standardize and bring them into the realm of financial analysis and business valuation.

A very important statement was made at the COP 26. It was the announcement by the International Financial Reporting Standards Foundation (IFRS) to establish the International Sustainability Standards Board (ISSB)[25] to standardize impact measurement. It is significant because those who thought it would be very difficult to measure impact and that we would never get there, can now see that it has been overcome. Companies and investors will be measuring impact and standards issuers and regulators will be pushing us and pushing in that direction. The more information and data that flows, the greater the pressure on regulators to make sure it flows to everyone in the same way at the same time.

In parallel to the ISSB, the G7 Impact Taskforce[26] is addressing the issue of impact transparency and integrity. We will start to see valuation ratios adhering to the standardized metrics that the ISSB put in place for both environmentally and socially green issues. Central banks and governments will need to start focusing on how these changes can help them achieve their highest priority goals.

These are things that are happening not because of a political system for the most part, but because of our economic system. Governments need to provide transparency to allow the power of investors, consumers and talent to change the behavior of companies. A hundred or more companies are embracing these ideas and trying to prepare for these changes, but many others are not taking this seriously. It is time for governments to start talking about the importance of this transparency and the need for standardization and monetary valuation of impact.

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[24] Impact-Weighted Accounts- Harvard Business School. (2017). Hbs.edu. https://www.hbs.edu/impact-weighted-accounts/Pages/default.aspx

[25] IFRS- Global sustainability disclosure standards for the financial markets. (2021). Ifrs.org. https://www.ifrs.org/news-and-events/news/2021/11/global-sustainability-disclosure-standards-for-the-financial-markets/

[26] Impact Taskforce | Impact Taskforce. (2022). Impact-Taskforce.com; https://www.impact-taskforce.com/

Transparency has a very significant impact:

- It creates a race to the top. No company wants to be seen as the dirtiest company or the one with the worst labor practices or the most harmful products.

- It opens the door for new entrepreneurs to realize what the negative impacts are and to start working on innovations that provide profitability and revenue similar to what Tesla has tried to do, while avoiding the negative impacts or creating positive impacts.

- Provide governments with the ability to give companies incentives that have to do with taxes. A fairer system that charges companies according to the damage they cause because some companies are polluting and damaging the environment more than others.

Panel 5: Success cases and opportunities in financing land use, sustainable agriculture and reforestation

What are the innovative market instruments that integrate a sustainable use of biodiversity? What impact-investment opportunities are being developed for land use and sustainable agriculture? What are the rights of indigenous communities as custodians of biodiversity? What is the role of the financial sector in ensuring that the rights of nature and indigenous communities are respected?

Moderator Patricia Moles, specialist researcher, Environmental and Social Risk Assessment and Policies Division, Banco de Mexico

Setting the stage Thomas Hertel, professor of Agricultural Economics, Purdue University

Panel participants

- Sergio Rial, CEO, Santander-Brazil
- Tammy Newmark, CEO and managing partner, EcoEnterprises Fund
- Paulina Campos Monteros, director of the Biodiversity Program, GIZ Mexico
- Greg Fishbein, director, Agriculture Finance, TNC
- Andrew Mitchell, founder & senior advisor, Global Canopy
- Pierre Yves Guedez, senior technical specialist, International Climate Trust Funds, IFAD

Panel 5: Success cases and opportunities in financing land use, sustainable agriculture and reforestation

This panel was devoted to discuss experiences and proof of concepts for a better usage of land resources, focusing on the mitigation of biodiversity risk through sustainability and the reduction of dependency on ecosystem services. Some takeaways were the following:

- Agricultural production has a great influence on biodiversity, while unsustainable practices have a major negative impact. Agricultural production is one of the major sources of ecosystem transformation, and its environmental costs have a disproportionate effect on the lower income population.

Thomas Hertel, Professor of Agricultural Economics. University of Purdue.

In context, unsustainable agricultural development is the major threat to biodiversity, and is the main driver behind land use change and deforestation, thus the big source of biodiversity degradation in the world today. Shown below there is a figure from an article that recently appeared in "Nature", "Bending the Curve of Terrestrial Biodiversity an Integrated Strategy"[42], and it can be seen that without further policies there will be a significant loss of biodiversity.

The loss of biodiversity ecosystem services affects the poor the most. According to the study called "The Economic Case for Nature", there are significant losses of GDP, but also significant losses from the collapse of biodiversity ecosystem services can be seen in low-income countries, while more modest losses were recorded in high-income countries, so this falls disproportionately on the poor.

To move towards a more sustainable agriculture, something that has been explored and used extensively in the past, particularly in the United States and Europe, has been agri-environmental subsidies. The reason for this, unlike what you would do when you talk about climate change, for example, where you immediately think of the electric utility sector, coal-fired power plants, where you take a regulatory approach; is that this approach is not possible in this context because there are millions of individual entrepreneurs in the field making their own decisions, so regulatory measures are very difficult, if not impossible.

Unfortunately, recent studies suggest that even in the European Union, where there have been aggressive reforms to try to address environmental concerns, they are failing to address biodiversity losses. A recently published empirical study examining the U.S. and EU programs aimed at improving environmental quality in relation to agriculture suggests that in some areas the targeting is effective, however, with respect to biodiversity, water stress and nutrient runoff, the key areas of environmental degradation associated with agriculture, the targeting is simply not effective.

Other well-known levers are payments for ecosystem services (PES) where there are different methods. Another lever that is receiving increasing attention is that of public research and development (R&D). In the end, if you want agriculture to be more sustainable, you have to do more with less, and that is productivity growth.

Productivity growth is the main driver of output increases in agriculture since 1990. In fact, total greenhouse gas emissions, both emissions from agriculture and associated land use change, have been flat since 1990; that's really attributed to productivity growth.

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[42] Leclère, D., Obersteiner, M., Barrett, M., Butchart, S. H., Chaudhary, A., De Palma, A., ... & Young, L. (2020). Bending the curve of terrestrial biodiversity needs an integrated strategy. Nature, 585(7826), 551-556. https://www.nature.com/articles/s41586-020-2705-y

Productivity growth can be linked to public research and development expenditures aimed at improving technologies for agriculture that allow farmers to do more with less. These results are similar to those observed in "The Economic Case for Nature", but it is when methods such as PES and knowledge are combined that the greatest impact is obtained and both monetary and nature benefits stand out.

Supply-side policies may reduce overall land use, but it may be that in certain environmentally critical regions land use will continue to increase, leading to biodiversity degradation. In addition, it is increasingly recognized that what we consume, for example, in the OECD countries, affects biodiversity loss. And indeed, these commodities that are traded, that are exported from the biodiversity-rich regions of the tropics are effectively being subsidized, our consumption is being subsidized. So, the question arises: can demand-side policies address this?

A recent study explores demand-side policies out to 2050, it highlights food waste. We can reduce the amount of food we eat, we can switch to more vegetarian diets; but in most regions, especially the richer ones, it's food waste that's driving us, and that food waste is going to increase even more in the future.

"Bending the curve" on biodiversity requires an integrated approach. There needs to be supply-side policies, such as R&D investments to counteract this; demand-side policies as well.

Indigenous populations and local communities should be highlighted, as they are central to biodiversity conservation at the global level. Indigenous populations' lands encompass 40% of global protected lands, so if they are not involved in a bottom-up policy design, we will not be efficient. The approach that has been taken in this direction is through a project called "GLASSNET: Global to Local Analysis of Systems Sustainability"[14], which is about understanding the global forces that are driving these pressures at the local level, the character of these tensions and how they arise, as well as their solutions which vary greatly by locality. Indigenous communities need the global context, so they understand where the system is going, but they also need to develop their own solutions, and those solutions could feed back to the global level.

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[14] https://glp.earth/how-we-work/contributing-projects/glassnet-global-local-analysis-systems-sustainability

Andrew Mitchell, Founder & Senior Advisor, Global Canopy

The global food system is probably responsible for 70% of the loss of biodiversity on the planet, secondly, we spend about 150 billion a year on nature protection (most of it is government money), while the value of subsidies that cause harm to nature is about 5 times all the government money spent on nature protection. So even if you doubled all the money the government spends on nature protection, we would not come close to "winning the battle" with subsidies alone. Additionally, if you add in the negative money for nature from the private sector it is many times more than the subsidies, and it hasn't even really been calculated (some say it could be as much as 100 to 1).

That's why conservation constantly loses, that's why natural capital is destroyed as we create financial capital, these numbers are huge, so we won't win this unless the private sector money is turned around. And you also must be careful when talking about agriculture, because depending on where it is it may not be a big part of the GDP of the region and therefore it will not be of great interest to the treasury departments.

This is much bigger than anything that climate change has thrown at us, and yet all the companies and many financial houses under the banner of what they call ESG (Environmental, Social and Governance) criteria applaud themselves for all the "wonderful" work they are doing, but the "E" is actually a "C", it's CSG, it's "climate, social and governance", so we are doing very little on the broad aspect beyond carbon.

The growing understanding about impact assessment could be how our economy is going to change over the next few decades, and we are starting to see that GDP is no longer a good measure of the health of economies, because it values everything we build and nothing we protect.

This seems to be finally being understood, particularly at COP 26, but 15 years ago at the climate COP it was mentioned that nature should be put at the center of the climate solution, but this idea was discarded because of the depth of misunderstanding. We have come a long way, and what we are now seeing is that central banks are now taking nature seriously.

There are several interesting examples, and some of the main points are: differentiated terms and interest rates on loans can create incentives for farmers to do the right thing and be passed down to small farmers. Education is another focus, as is the importance of having good long-term partners on the ground.

ENCORE is becoming a really good tool for some central banks that want to look at the systemic risk of nature in their national economic system. It is very easy and usable. As an example, you can see what the Dutch central bank has done with the Indebted to Nature Report[29] ; you can also see the report "A "Silent Spring" for the Financial System? Exploring Biodiversity-Related Financial Risks in France"[30].

Greg Fishbein, Director, Agriculture Finance, TNC.

Brazil continues to be deforested, largely driven by the expansion of cattle and soybean production, and those sectors are set to grow. We expect 7 million more hectares of planted area in Brazil over the next decade, and a 35% increase in cattle production over the next two decades. But there is a way forward, changing the way we produce food to meet all that growing demand without causing more habitat destruction. Livestock yields are extremely low, they can be increased two to three times by maintaining sustainable systems of lactation and regeneration. We know that there are tens of millions of hectares of land that have already been cleared and are suitable for the soybean sector to expand to meet future demand. All of that requires loans and capital investment, which creates a huge opportunity. There is an initiative that was launched with UNEP and the Tropical Forest Alliance in Glasgow called Innovative Finance for the Amazon, Cerrado and Chaco (IFACC), which is focused on bringing together banks, companies, and capital groups to solve that problem of scale. There is a commitment of $3 billion in loans and investments through 2025, so it's a good starting point.

Australian banks are starting to provide special loans to transition farmers to these types of practices. But why if the model makes sense, doesn't it scale more quickly? It's about the farmers and the transition that needs to be made, and how to get there, the technical assistance, the risk they perceive, and how it can be shared and managed in a way that is attractive to farmers, financial institutions and other actors.

Another example is a guarantee product to ensure farmers' returns when they adopt these practices to address complexities. The economics are increasingly supporting the expansion of loans in these production models that are more resilient, more climate-friendly, more sustainable. We are starting to see the flow of capital, but challenges, risk management, transaction costs and transitions need to be addressed so that we can see the flow of capital at a scale that really transforms the system. Things take time, i.e., the speed of things at the farm level does not necessarily match capital markets.

It also must be considered the possibility of having agriculture and biodiversity together in the same concept.

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[29] PBL Netherlands Environmental Assessment Agency. (2020, June 18). Indebted to nature. Exploring biodiversity risks for the Dutch financial sector. https://www.pbl.nl/en/publications/indebted-to-nature

[30] Banque de France (2021, August 27). A "Silent Spring" for the Financial System? Exploring Biodiversity-Related Financial Risks in France. Banque de France.
https://publications.banque-france.fr/en/silent-spring-financial-system-exploring-biodiversity-related-financial-risks-france

Tammy Newmark, CEO, and Managing Partner, EcoEnterprises Fund

Markets have evolved a lot, but there is still a gap in financing to businesses and rural areas that are linked to nature-positive businesses. The question arises of who is going to finance that. So, over the last 20 years, what the EcoEnterprise Fund has done is build "portfolios for the planet," they put together examples to illustrate how one can achieve climate resilience, regeneration and preserve and conserve biodiversity.

There are many examples of this in Latin America and it is important to make visible that these models work, including the incorporation of the business aspect, the private sector aspect, and the returns. There are business leaders (women and men) who are working on the ground, who are looking for and identifying opportunities and are addressing the challenges.

As to scale, some people say "oh, these are small businesses and rural areas," but when you really look at the cumulative impacts of all their businesses you see big numbers of $2 billion dollars in sales, $500 million dollars of additional capital that they have brought to these businesses. We are talking about 50,000 producers, 7 million hectares that have been sustainably managed or preserved. In other words, there really is a direct correlation between regenerative and sustainable business activities and working with local communities.

The use of transparent certification mechanisms is also important.

Another example is the Union for Ethical BioTrade (UEBT), which works with indigenous communities and has achieved very strong portfolios. It should also be emphasized that when talking about large institutional investors or real assets, in many of these biodiversity-rich areas there are local communities and indigenous peoples. This could lead to conflict when "setting aside" or buying land. For this reason, EcoEnterprises Fund and the companies it works with encourage working with local communities so that they have voting rights in these transactions. The Union for Ethical BioTrade, which works a lot with the Nagoya Protocol, share benefits where the economic benefits that local communities obtain are real and tangible. It must be ensured that what is extracted or what is benefited really goes back to the local community.

Pierre Yves Guedez, Senior Technical Specialist, International Climate Trust Funds IFAD

The International Fund for Agricultural Development (IFAD) focuses on transforming rural economies and food system, making them more productive, inclusive, resilient, sustainable and to increase food security. Their target population is very focused on the rural population living in poverty and experiencing food insecurity, mainly the most vulnerable and marginalized people, including indigenous communities.

The way they work is directly with the ministries of finance, agriculture, and environment, through investments on the ground. So, they have three- or four-years period of planning cycles, following a bottom-up approach, and in all the projects and investments they are doing in the countries, they have four main themes: environment and climate (a very important part related to biodiversity), youth, nutrition, and gender.

So, they have different tools where they discuss their investment plans with national counterparts, governments, and beneficiaries to assess "ex-ante" the expected impact they foresee for those investments.

For instance, there is a new tool called Biodiversity Integrated Assessment and Computation Tool (B-INTACT)[16] . Through this tool they assess the impact of their investment on biodiversity at policy level, at project level. It also provides science-based information on how and where to invest.

In the context of the climate and biodiversity CDPs we hear a lot about biodiversity, about nature, indigenous people, about women and youth. This is the result of years of work. One hopes for an outcome that also reflects this better integration of these different issues. This integration of issues is also expected to be seen in international food system summits (where these issues have been viewed through the lens of production, processing and consumption), as well as in trade agreement negotiations.

Regarding the private sector, after COP 26, many requests have been received from different impact funds and private companies, small or large, to support more integrated initiatives. But it is not only a matter of scaling up; there are things to correct, such as perverse incentives.

Another line of work that IFAD is pursuing is to establish an investment taxonomy for private companies, as there are many linkages between adaptation, climate change and biodiversity. Work is also being done with multilateral banks and national development banks to share their investment framework and practices and see how to orient them towards the SDGs or NDCs among other things.

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[16] Biodiversity Integrated Assessment and Computation Tool (B-INTACT) | Policy Support and Governance | Food and Agriculture Organization of the United Nations. (2020). Fao.org.
https://www.fao.org/policy-support/tools-and-publications/resources-details/en/c/1205486/

The relationship between indigenous peoples' territories, biodiversity and nature is absolutely evident. Indigenous communities are protecting biodiversity and the ecosystem in their territories more effectively than in protected areas. Investors have a key role to play with respect to climate or biodiversity protection, and also in ensuring that the rights of indigenous peoples are respected during project design and during implementation.

Finally, it should be mentioned that systems are important for monitoring compliance and assurance. Systems could be replicated outside the REDD+ framework, where, in addition to GHG emissions, compliance with social safeguards is reported and monitored.

Paulina Campos Monteros, Director of the Biodiversity Program GIZ Mexico

In Mexico, as in other countries, water pollution due to unsustainable agricultural practices and land use change is one of the main causes of land degradation. It can take up to hundreds of years to recover centimeters of soil. The interrelationship between water and soil is critical to the economic development and health of communities at the local level, but also has a regional and global impact.

Tackling these issues is complicated and collaboration between diverse actors from different sectors is needed. One example is the cooperation of GIZ, on behalf of the Federal Ministry of Cooperation and Development in Germany, AB InBev, one of the largest brewers and water-stressed states in Mexico, namely Zacatecas and Hidalgo, where the company operates. This initiative is called "Aguas Firmes" and has been developed with the aim of promoting sustainable agricultural and conservation practices, as well as addressing the interrelation between water and soil.

First, the project has focused on investing in nature-based solutions in aquifers, working together with local communities, increasing water infiltration, and reducing soil erosion. It supports producers on the supply chains, but also farmers outside the supply chains who are important actors in the region, and who are also water users, to make the transition to more sustainable farming practices. In most cases, farmers don't have access to loans, or they don't understand the credit application processes which are also very complex. Financing is addressed in two ways; one is by helping farmers with the paperwork and follow up with the bank for the whole application process to improve access to credits. The second is by creating a mutual fund for first losses, which will allow farmers access to these credits, and at the same time, reduce the risk for banks.

In this way, banks pay directly to the farmers, who are investing in irrigation and technology change. The project also focuses on providing incentives for loan repayment to ensure the sustainability of these mechanisms. These types of mechanisms are, of course, not entirely new. IFAD has been doing similar financial schemes at the subnational level to support farmers, but this time it has been in such an arrangement with a private partner.

There is also work on monitoring, evaluation of learning-by-doing, and on disclosure of social and environmental impacts using environmental and climate science. These are key demands from the financial sector.

Initiatives with the private sector have greater impact when companies have a long-term commercial interest in the region, and there is a holistic approach to addressing the issues.

Human rights also play a very important role in biodiversity conservation. And they support demands from the financial sector, such as non-discrimination, equal opportunities, participation, empowerment, transparency, and accountability. When human rights are discussed in biodiversity conservation, also one needs to focus both on the rights of individuals like the right to a clean and safe environment, but also on the collective rights, particularly for indigenous communities which have to be consulted on matters that affect their land or territories. And in some countries, there must also be free, prior and informed consent.

It is necessary for communities to have knowledge about these rights and to have mechanisms for dialogue and conflict resolution, to be able to ensure that their interests are represented in, so that they can articulate their views and have a dialogue with the private sector, with State institutions and among themselves.

When planning projects, one needs to be aware of the different logic and time frame that some of these projects will have, so that they may require extra time. Additionally, capacity building must be considered to encourage communities to have science-based information and informed decisions at the local level about the risks and opportunities.

Keynote speaker Pavan Sukhdev, president, WWF

There is a growing recognition and awareness that biodiversity and its loss are, alongside with climate change, a huge threat to human well-being, and that these threats must be addressed together to ensure global financial stability.

We welcome the NGFS Glasgow Declaration at COP 26 which recognizes the interconnection between nature loss and climate change, cross-cutting issues related to conservation and restoration of forests and other critical ecosystems, as well as the transition to a more sustainable agricultural and land use approach.

In the search for an alternative economic path there are risks and costs but also opportunities. The so-called inclusive green economy, and recent estimates by the World Economic Forum suggest that a sustainable transition in the basic, food, land use and oceans, infrastructure, construction, energy, and extractives sectors would require capital investment of about $2.7 trillion dollars annually and could generate something like $10 trillion dollars in annual business opportunities, as well as nearly 400 million jobs by 2030. In other words, improving the livelihoods and profits, and the resilience of communities around the world is a very feasible opportunity that lies before us if we can invest in nature.

What does it mean to invest in nature? It means, investing in landscapes and oceans, but it also means investing in food systems, which is about putting nature to work, providing improved food for all of us, as well as decent work and wages and better benefits for farmers.

The NGO[illegible] known as Grains suggests that if we look at our food systems holistically, that includes the deforestation that takes place in order to grow the land and the livestock meat and palm oil to generate our food, plus the transportation of these commodities around the world, and then account for the food waste, which is almost a third of the food we grow, and the greenhouse gas emissions from that food waste; the food systems collectively account for about 46 to 56% of our total greenhouse gas emissions. That's a lot more than the 23% that we keep referring to as greenhouse gas emissions from farming, but it's not just the food system, it's the whole value chain that we need to think about.

In other words, if we want to mitigate climate change, the food system is where we need to pay attention and bring efforts. If we were to achieve that through agroecological means and through ways to improve smallholder farms, that means increased income and profits for over a billion smallholder farmers. So, it's actually an adaptation measure because it's allowing those who are most susceptible to climate change to really protect themselves.

[illegible] Home. (2022). Grain.org. https://grain.org/

Investing in nature is not just a matter of applying more financial capital. It is also about political capital, in other words, policy changes. Policy reforms are absolutely essential and must be accompanied by financial investments. This means, for example, that we must focus on the negative externalities of conventional agriculture and manage them down. We must focus on perverse subsidies, which must be disclosed, transparently tracked and phased out. Incorporating externalities in management at the macro or micro level is truly a concern that cannot be denied or delayed.

And this is a truth understood by some asset managers and by most private equities and has been slowly seeping into the thinking of corporations, large and small. Internalization of negative externalities can occur in probably three different ways: by design, by decree, or by disaster.

- Internalization by disaster: This is what happened to BP in the Gulf of Mexico in 2010, the attempt to save costs due to the avoidance of a certain pressure-activated device led to the known oil disaster, which then, in turn, led within a month to the wiping out something like $70 billion of the company's market capitalization, the firing of its CEO and reputation. To this day, more than a decade later, huge fines are incurred by the company through settlements and litigation.

- Internalization by decree: It is essentially what happened to the sugar-sweetened beverage industry in the UK. When a few years ago, the Chancellor of the Exchequer decided to impose a sugar tax on the grounds of the costs it generated for the national health service and productivity.

- Internalization by design: That means working in large communities, working with financial regulators, working with central banks, working with accountancy bodies, and seeing what can be done to change the way we measure corporate performance, motivate, and manage the C-suite to include not only shareholder profits, but also stakeholder impacts. In other words, broaden the lens of performance to include externalities. This type of internalization by design would give markets the opportunity to respond by punishing misallocation of capital.

Redesigning corporate performance to include impacts on natural, human, and social capital, as well as introducing new reporting and disclosure standards is really a critical piece of the puzzle when we talk about changing the direction of the economy.

A way forward is emerging, and at the Glasgow COP the creation of the ISSB, the International Sustainability Standards Board, created by the International Financial Reporting Systems Foundation will be a standardized way of capturing the impacts of a company's operations on its stakeholders. It is revealing that the world's foremost provider of financial accounting standards is now engaged in looking at sustainability standards for the private sector.

This will define whether there is a fundamental and necessary change in the way corporate performance is measured, and in society's ability to manage negative externalities.

The economy of the future is starting to come into view. We've seen a recent estimate from GIIN, the Global Impact Investment Network, which estimates that the product markets for sustainable agriculture, forestry and fisheries, and ecotourism, carbon credits, biodiversity, water, and offset markets and so on, all collectively have a market potential of over $520 billion. The economy of the future will also place a strong emphasis on risk management because we face significant risks, which are increasing with climate change.

The economy of the future could be about energy efficiency, about renewable energy, about resource efficiency. Our economic dependencies on nature translate into financial gains and losses, and entire businesses are emerging from managing these risks and managing these transitions, from providing data to advising and assisting the transition. Another point about the economics of the future is to look at profit opportunities. Gains, of course, come from efficient use of natural resources, from energy efficiency, from material efficiency, but also from avoiding losses, from avoiding the inputs and social costs that are associated with unsustainable practices and avoiding those social costs.

So, what should we do?

- We really need to start tackling climate change and biodiversity together. It is recommended that disclosure of nature's risks and impacts be encouraged. You can't manage what you don't measure, and you need to have a better view of the pressure points in any supply chain, and this requires a common framework. TCFD provided one on the climate side, TNFD will hopefully provide one towards nature.
- Exposure to biodiversity loss must be assessed and actors should understand the systemic impact of biodiversity loss on the real economy.
- The development of science-based taxonomies is required. These will make a positive contribution to nature, to signal to investors where efforts should be directed.
- It must be recognized that investments in natural capital are most urgently needed in emerging markets and economies. And we must seek to align the mandates of international financial institutions with a global post-2020 biodiversity framework and mobilize private finance through blended finance mechanisms in these markets and economies.

Let's look at monetary policies as part of the toolkit. They can support an economy that is positive for man and nature using monetary policy operations, such as asset purchase programs as well as targeted financing, refinancing operations, tailoring a collateral framework to integrate environmental risks. Central banks have a key role to play by setting an example in managing their own portfolio and sending the right incentives to financial market actors. And our objectives must be translated into milestones.

Panel 6: Financing of marine and coastal resources: success cases and opportunities

What are the main impact-investment opportunities associated with the restoration and preservation of marine and coastal resources? How can we scale-up successful innovative investments? Is a governance of the commons necessary?

Moderator Marcos Mancini, senior advisor, UNDP Finance Sector Hub

Panel participants

- Mariuz Calvet, director of Sustainability and Responsible Investment, Banorte
- Karin Berardo, director, Sustainable Debt, The Nature Conservancy
- Trip O'Shea, investment director, Sustainable Ocean Fund, Mirova Natural Capital
- Marisa Drew, chief sustainability officer, Credit Suisse

Panel 6: Financing of marine and coastal resources: success cases and opportunities

This panel was focused on the characteristics of marine and coastal resources, and the sharing of experiences about conservation efforts and more sustainable ways to benefit from its ecosystem services. Some takeaways were the following:

· The exploitation of marine resources and its ownership rights creates different challenges, particularly on how to manage these resources. Despite the major role of governments in the ownership and ordering of these resources' exploitation, there are still challenges due to the inadequate planification and monitoring of applicable policies that cause biodiversity losses.

Karin Berardo, Director, Sustainable Debt, NatureVest, The Nature Conservancy (TNC)

In many cases, the oceans are federal resources or open access resources. We have a consistent chronic problem around the world of inadequate resource mapping, planning and evaluation as well as challenges in monitoring and enforcement of existing policies. This has led to unmitigated externalities, which have extreme impacts on biodiversity and climate, which has also led to economic loss and lost opportunities.

Looking just at the case of Mexico, we see that the fishing sector employs more than 300,000 people, including coastal communities and small-scale fishermen, as well as industrial fishing, so it has a huge impact on local communities. At the same time, the lack of policy coordination has led to the overexploitation of fishery stocks by 43%, also illegal and irregular fishing practices account for up to 56% of Mexico's fishing activities. So, in the fishing sector alone, there is a critical lost opportunity along with the depletion of biodiversity and ecosystem resources.

On another note, natural disasters have generated in Mexico millions of dollars in losses in Mexico, in addition to the loss of mangroves and coral reefs, for example.

By eroding biodiversity and eroding natural capital, we are creating significant financial risk around the world. TNC studies have found that for every dollar spent on protected area management, we can achieve up to $52 in benefits. However, despite that opportunity, we are more than $50 million per year short just to manage and enforce existing protected areas; that's not counting new protected areas that the government and community believe might be useful in reaching the 30% protected area goal by 2030 recently agreed by at the CBD COP15. If you look at this around the world, we see similar types of challenges; in many cases that financing gap is significantly higher, and again, this is just a small microcosm of all the funding needs that would be needed to create a sustainable and healthy blue economy.

So how do we create impact investment opportunities in territorial seas, the exclusive economic zones, where externalities have led to these deep degradations? We need to clarify use rights, we need valuation mechanisms, viable activities. To protect areas we need metrics, which are specific to marine protected areas for species diversification, species stock health for fish, corals and mangroves. It's not just about climate, it's not just about greenhouse gases, it's about getting to the right metrics for biodiversity and, in this case, for ocean health. Additionally, we need sustainable financing mechanisms to effectively manage protected areas while creating opportunities for a viable blue economy.

How can we build a sustainable blue economy market? What we really need is to attract private investment for nature-based solutions, without exacerbating inequality and risk. To do this, we need "clear rules of the game", we need policies, we need them to be enforced, and we need to make sure that these policies are set in an inclusive way that includes stakeholder engagement in a way that manages a just transition while protecting our extremely fragile biodiversity resources.

Private sector activity in the blue economy, investments and global portfolios around the world have traditionally focused on ports, shipping, transportation, fisheries, oil, gas, mining, and so on. What we need to do is to re-center biodiversity and sustainable oceans into the blue economy framework and into investments through policies and support for market developments that allow the opportunity for greater private investment. We need the public sector to create the "rules of the game" and the frameworks to move forward.

We need clear marine spatial planning of exclusive economic zones and the territorial sea; this process requires broad consultation and engagement with stakeholders and a well-managed process prioritizes conservation and protection areas as well as areas useful for economic activity. We need to define access rights, concession management regimes and establish marine protected areas. We also need to build capacity for this transition to a more sustainable framework and transition finance.

If we're asking communities to respect a no-take zone and shift to sustainable ecotourism, for example, then there are transition payments that are necessary, there are types of incentives that are necessary to manage that transition, but how do you pay for all these things? In some of the case studies sovereign debt has been a key part, whether it's through debt-for-nature swaps, sovereign green bonds, sovereign sustainability-linked bonds.

How do we see the entry of the private sector into new markets and the first deals? They are difficult, they take a long time, they cost a lot and the deal sizes are small and they have to be very innovative.

With respect to success stories, in the case of Belize it was very important to have good relationships with the ministries of environment, economy and finance in the government, as well as to work with scientific evidence.

The importance of credit enhancement should not be underestimated. If they could not go to market with a AAA rating, they would not be able to create the monetary value to reinvest in conservation. This is a major challenge.

Another issue is insurance, and specifically reef insurance. TNC has worked to deploy and mobilize resources after a catastrophic event to restore and reconnect parts of the reef that have been damaged. There are also interesting questions about who has insurance rights - who has the right to insure a coral reef? Whether it is the government, the private sector or the coastal landowner who has the right to contract is under consideration.

Marisa Drew, chief sustainability officer, Credit Suisse

Innovation at the beginning is always small and complicated. The work that Credit Suisse has been doing, and often in partnership with other organizations (like TNC and NatureVest), as a large financial services organization, is to do things at a larger scale. However, the building of any market has to start small. So, it has been given the freedom and time to break down some obstacles and let capital flow where it had not flowed before and then be replicated.

You can do catalytic investment in the early stages and if you can get companies to a stage where the traditional institutional investor can come in, we can all take advantage of. There is a question here which is do institutional investors really believe that oceans are investable? If they do, then why is it that so little is invested in? The answer is that there are no structures in place to give certainty to investors.

Regarding some experiences from the point of view of debt issuance, there is the debt-for-nature swap and the Belize blue bond. And in the case of Seychelles there was an experimental version in 2014 in terms of capital markets. In 2021 you have an island nation that was suffering under a debt burden with compliance issues, and with a post COVID situation. The problem was exacerbated because they rely heavily on tourism for the country's revenue streams. The proposal was to restructure the debt with the precondition that a portion of the proceeds from that restructuring and the actual capture of the discount would be used and reinvested in marine conservation. TNC prompted discussions with the government. There was also support from the U.S. government to provide credit support and obtain an AA rating. The government, a sovereign bank, an NGO, a private bank, and a multilateral development bank were all aligned on a single mission. It took time, but now there is an extraordinary amount of money that will go to marine conservation, which will be overseen by NatureVest and The Nature Conservancy.

Another point is that if you don't address climate change, you can't address no poverty, and then there are the environmental consequences and the consequences for people's livelihoods. It is about reframing the narrative that if the mandate as a multi-development bank, is no poverty, then you must address climate change. If you ask people not to fish in marine protected areas, how do you compensate them for that green agenda? You have to figure out how to subsidize that loss of activity for a period of time. There are many wonderful case studies where, when you protect those coastal resources, fish stocks come back with a multiplier effect. The point here is that fishermen need to be included in the equation.

On the issue of governance, the Glasgow Finance Alliance for Net Zero (GFANZ) is a great example. If we all come together and say these are the things that we need to see from our policy makers, the behavior of regulators can be influenced. Another way is by providing capital, for example, by funding companies that are in the business of creating technological breakthroughs.

With respect to data, it is necessary to help fund pilot projects in order to be able to collect the right data and aggregate it, taking into account privacy protection and at the same time, be able to have sufficient transparency and disclosure.

Trip O'Shea, investment director, Sustainable Ocean Fund, Mirova Natural Capital

Mirova has the Sustainable Ocean Fund, a $132 million fund that invests in early-stage catalytic opportunities. Many of the opportunities are at a very early stage, at least the most commercially interesting ones. Encourage Capital has worked together with TNC and NatureVest and looked at developing investment models around wild capture fisheries and have developed financing models along these lines. When it comes to purely nature-based solutions, there are issues with resource tenure and ownership. If they don't have the rules of the game, it's a problem for everyone, but, in the oceans, it's especially true because species move across jurisdictions and on the high seas. This is a kind of perfect storm of challenges.

Some positive examples are as follows: investments in marine protected areas (MPAs) are often small, with high transaction costs and intensive development, so they are not yet commercial. There are also opportunities in technologies and financial instruments that can catalyze these changes and frameworks. Platforms are being developed to collect data, but it remains a challenge in the absence of a regulatory framework. In the absence of such a framework, we are looking to invest in solutions that unlock a broader set of options for the market.

We invest in a range of assets in "circular economy" (fisheries, agriculture, algae farming) that includes many nature-based solutions, and this must at some point consider the value chain and here technology is a key piece. It is important to see where the friction points are, which are the key leverage points within that system.

Another challenge is that people need to make the externalities visible and how it benefits their lives. You can have a macro benefit to society, and the ocean can be worth billions of dollars, but if people don't see it, it will be very difficult to achieve.

Finally, on information and data, it is very important the issue of privacy and how governments answer questions such as "who collects the data? who does it belong to? There has to be a good design from a political and ethical point of view.

Mariuz Calvet, director of Sustainability and Responsible Investment, Banorte

At Banorte and in Mexico in general, we understand the need to scale up the financing around conservation and to direct the capital flows in ways that sovereigns, investors, banks, insurers are encouraged towards the nature positive.

Banco de Mexico developed a diagnostic on how financial institutions (investors, banks, and insurers), manage environmental and climate risks in their financing decisions. It ended up with very precise recommendations that set the path forward. Also, there was the creation of a Sustainable Finance Committee that has different working groups in terms of finance mobilization, taxonomy, disclosure, among others. There is a lot going on in Mexico and financial institutions have to find ways and partnerships to build the capabilities around this.

One of the main challenges facing the biodiversity agenda continues to be inadequate understanding, capacity, and the use of financial solutions for conservation, especially in the marine and coastal space. Banorte partnered with WWF and the National Commission on Biodiversity in Mexico to have a platform to determine exactly where they are going to fund and identify the potential biodiversity risks at that location.

Another example of Banorte was the continuation of parametric insurance to reduce the risk to marine and coastal resources. This is in Quintana Roo, which is one of the regions with the greatest biodiversity and where part of the Mesoamerican reef is located. The parametric insurance was built around a measurable index based on predefined triggers or parameters and payment mechanisms on how to pay for damages, where the location and size of the polygon is clearly identified. The polygon was defined with the support of TNC and the percentage of the sum insured increases or decreases depending on the wind speed of the hurricane. There is a similar development being made in the State of Yucatan.

Conference closing dialogue

- Rafael del Villar, director, Environmental and Social Risk Analysis and Policies, Banco de Mexico
- Alba Aguilar, general director, Green Finance Advisory Council, Mexico
- Juan Carlos Belausteguigoitia, president, TCFD Consortium

Diagnosis

The conservation story is about winning the battles but losing the war. But why are we losing the war?

- About 50% of the world's GDP depends directly or indirectly on nature.
- According to the Living Planet Index, biodiversity has been declining at a very fast rate, and worldwide we have lost about 70% of the biodiversity measured since 1970.
- We now have a very clear understanding and knowledge about the importance of nature and the unsustainable use we are putting it to; we now also have a lot of visibility, at least the decision makers in the world are fully aware or partially aware of it, however, this does not seem to be enough.
- The depletion of natural capital entails significant foreseen and unforeseen risks, which also represent a risk also for economic and financial stability.

Conditions for nature preservation

- The biodiversity ecosystem services loss hits the poor hardest; we cannot ask people living in abject poverty to preserve ecosystems, they have to survive first. It is important that all projects have the participation of the communities.
- The importance of indigenous communities, where 40% of their forests are in their hands, must be made visible. Ensuring that indigenous communities also benefit from nature conservation is not only a matter of justice and an ethical precondition, but also a matter of policy effectiveness.
- Losing biodiversity means losing economic resilience and it involves many risks.
- To attain healthier ecosystems, we must work on human impact. Climate change is a key factor.
- We need appropriate frameworks, policies and incentives to change the behavior of economic agents towards nature. There are many isolated projects, but not nearly enough of what the world needs to stop the degradation of nature.
- We need to introduce major changes in incentives to impact economic, consumption and production decisions.
- Creation of political capital for conserving and investing in nature is necessary. Creating awareness on the risks and opportunities associated with nature is a step in the right direction.
- Significantly more work needs to be done on developing metrics, data, and information to scale financing.

Challenges and opportunities

- The idea that we must stop growing or developing in order to protect nature is not correct. But there is a need to move from a destructive economy to a regenerative economy. There are many examples of how society can make these two objectives compatible.
- We do not have to think of economic development and nature protection as opposites. The only way to have high economic growth and development is to address the risks associated with the depletion of natural capital.
- There are enormous opportunities in nature-based solutions, conservation, restoration and sustainable management practices in agriculture, forestry, and blue carbon.
- We need to learn more about the importance of ecosystems and share all this knowledge with decision makers and policy makers.
- It is important to base decisions on science and have good communication with all stakeholders about the rationale and benefits of integrating biodiversity risks into investment processes.
- Standardized and comparable data is needed to have useful disclosure for investment decisions. We need more quantitative and qualitative data of ecosystems and in their relationship with climate change.
- Also needed are "rules of the games", taxonomies and clear criteria.
- Finally, it is crucial to identify investment externalities as well as investment opportunities to galvanize stakeholders.

The role of the financial sector

- There are limits to finance. Nature negative government subsidies (biodiversity destruction and land degradation) in agriculture, are many times greater than public money in support for biodiversity and conservation.
- The value of natural capital and ecosystem services must be recognized. There is a need to complement GDP measures, which means, of course, including the services provided by nature.
- The issue of international sustainability standards was emphasized very strongly, and the importance of internalization by design, which was thpreferred means of internalization.
- Data is essential for any economic or financial analysis or decision making, and financial institutions can help provide it.
- Banks need all large companies to make good disclosure on climate risks and biodiversity impacts. Private sector money, and co-financiers, need to go to positive businesses paying special attention to capital impacts and negative externalities.
- There are important financial innovations occurring such as the parametric insurance of the Mesoamerican coral reef or debt for nature swaps. Much financial innovation and appropriate policy changes are still needed to move towards a regenerative economy.
- We also have the possibility of making funds and other investment vehicles that combine sustainable risk capital with commercial aspects, with returns, with special attention to climate change, conservation, and sustainable management.

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