



Understanding climate change drivers as a prerequisite to develop a financial system strategy for mitigation and adaptation

As is now widely known, the most relevant driver of climate change (leading to the increase of average temperature in the planet) are Green House Gases (GHG) emissions, being carbonic gas the main one. However, in order to **reduce the concentration of GHG in the atmosphere**, it's necessary to address not only the sources of emission (reducing the emissions), but also the sources of capture (preserving them). Focussing only in the reduction of emissions while at the same time continue to destroy the sources of carbon capture is like to intend increasing the profits of a company by only increasing sales, and ignoring the fact that expenses are increasing proportionally more, because efficiency is low.

In order to include all the relevant factors in climate change mitigation, it's essential to address **not only GHG emissions**, but also the natural sources of climate regulation, either through **carbon capture** (forests, wetlands, mangroves and oceans) or through other climate balance functions, such as the influence that forests produce in the **rainfall regime**¹. So, actually, climate is not only about GHG concentration...

Conversely, with regards to climate change adaptation, natural assets are able to provide a lot of **resilience to extreme weather events** – for example, forests with regards to landslides caused by storms in hills, and mangroves, that act as storm buffers for coastal communities².

Also, given the fact that climate change increases significantly water risks, any factor that affects **freshwater availability** (and hence also human health and food security) might be included in the concept of climate change relevant issue.

So, it's possible to distinguish, first, three main climate change relevant drivers:

- a) **GHG emissions** (deriving both from fossil fuels use and deforestation, responsible alone for 25% of GHG emissions);
- b) **carbon sequestration reduction** derived from nature degradation/destruction (oceans, forests, wetlands, mangroves, grasslands, savannas, etc);
- c) **decrease in rainfalls** caused by deforestation.

Despite the production and use of fossil fuels receives most of the attention when dealing with climate change mitigation, it's important to observe that the preservation and restoration of forests affects it in all three ways and also avoid negative impacts

¹ See, for example, this study analysing the effects of Amazon deforestation, a pattern that might be valid for other tropical forests globally:

https://d2ouvy59p0dg6k.cloudfront.net/downloads/the_future_climate_of_amazonia_report.pdf

² See, for example: <https://www.conservation.org/act/share-the-facts-about-mangroves>



from extreme weather events (such as storms). And other ecosystems are also relevant because they capture carbon (mangroves, for example, capture 4 times more carbon than forests and wetlands have been considered the most powerful carbon sinks³, even more than mangroves), while some also increase the resilience to extreme weather events (again, mangroves).

Secondly, there are relevant **climate change adaptation factors**, that might affect the intensity of climate change effects (these effects include more floods in certain places and more droughts in others, decrease in food production due to extreme weather events, destruction of infrastructure and subsequent disruption of supply-chains), being water scarcity one of the most relevant ones⁴:

- a) freshwater excessive use (a relevant input for many industries) or rivers pollution increase the **severity of water stress**;
- b) the preservation of mangroves and forests increase the **resilience to extreme weather events**;
- c) some agriculture techniques (like monoculture) increase the **risks of soil erosion**, while others (such as cultures rotation) decrease.

Furthermore, the preservation and restoration of ecosystems brings the additional advantage of conserving biodiversity, an environmental risk that has increasingly been recognized as urgent and largely relevant, leading to the creation of the Taskforce on Nature-related Financial Disclosures (TNFD)⁵.

Finally, it's important to say that climate change adaptation needs to receive as much attention as mitigation, once, as insurers already know, it's no longer a future phenomenon – the frequency and intensity of extreme weather events are already increasing every year in the last decade due to the temperature increase and sea-level rises (and subsequent terrestrial land reductions) have happened all over the world in coastal areas.

³ See, for example: <https://www.ramsar.org/news/wetlands-crucial-in-addressing-climate-change-0> and also: <https://royalsocietypublishing.org/doi/10.1098/rsfs.2019.0129>

⁴ See, for example, the case of Brazil, where droughts respond per more than 90% of the climate change related events, according to the [World Bank country profile](#).

⁵ See more information on: <tnfd.info>



Q1. Has the Committee appropriately captured the necessary requirements for the effective management of climate-related financial risks and the related supervision? Are there any aspects that the Committee could consider further or that would benefit from additional guidance from the Committee?

As there is a significant delay in scientific climate knowledge to be integrated in the financial system mainstream, any practitioner in the field is aware that the main focus has been given to GHG emissions reduction, without similar concerns (at least not with same intensity) regarding the preservation of natural sources of climate regulation (such as carbon capture, but also beyond).

Furthermore, preserving natural ecosystems also benefits biodiversity, which has been identified by [World Economic Forum Risk Reports](#) in all recent years as one of the top risks to the world economy, along with climate risks and other risks. In terms of severity, and for a horizon of 10 years, biodiversity risks is included in the top 3 risks, along with climate action failure and extreme weather events. Last year, two panels of scientists, the one of the UN Climate Change Convention (IPCC), and the one of the UN Convention on Biodiversity (IPBES), have published for the first time a joint [IPCC-IPBES report](#) on the integration of climate and biodiversity issues, demonstrating how these two crisis need to be tackled together, both because of the risks of a separate approach (for example, renewable energies infrastructures that lead to more ecosystems destruction and therefore reinforces climate change or at least does not mitigate it) and because of the enormous potential synergies – this [UNEP-WCMC report published in 2020](#) illustrates that it's possible to associate carbon stocks areas with priority areas for biodiversity conservation targets, making it cheaper and faster to mitigate climate change and ecosystems degradation.

This all leads to the conclusion that, as BIS is recommending for the first time the integration of any type of environmental risks in supervisory frameworks, there is an immense opportunity to address both issues together, rather than fostering a climate-only risk approach, which might even reinforce the ecosystem crisis, whose urgency is being increasingly recognised by pioneer financial regulators, such as the DNB and Banque de France, who published seminal reports on biodiversity risks in financial institutions portfolios ⁶.

As pollution and poor efficiency in the use of natural assets (and raw materials) are also both drivers of ecosystems degradation and biodiversity loss, the inclusion of this perspective brings the opportunity to encompass the whole environmental agenda, without waiting until it is too late for the financial system to act with impact.

⁶ The Dutch report was published in June 2020: <https://www.dnb.nl/media/4c3fgawd/indebted-to-nature.pdf> and the French in August 2021: <https://publications.banque-france.fr/en/silent-spring-financial-system-exploring-biodiversity-related-financial-risks-france>



Q2. Do you have any comments on the individual principles and supporting commentary?

The principles are very well structured, what is missing is additional contents guidance. The only exception, that deserves an initial comment because it provides the kind of incentive that goes exactly in the opposite direction of risk mitigation: it's the mention to the use of proxies, when comparable climate-related data are not available (Principle 7, item 29). Actually, non-disclosure can only be caused by one of two reasons: 1) the company doesn't even measure the indicator, which means a very poor governance; 2) the performance is poor (under average) and therefore it decides not to disclose (also because capital markets regulation do not define minimal/mandatory information). This should never lead to considering the average of the market players that disclose relevant information – first of all, because it does not encourage disclosure of accurate data, bringing a big opportunity of being a free-rider; second, because it leads to underestimation of actual information. So, I suggest the following wording:

“Where reliable or comparable climate-related data are not available, banks should assign the lowest possible rating, never using proxies because this procedure provides the wrong type of incentive, making poor performers not to disclose when they know they will be assigned the market average”.

Also, a suggestion that is very simple and would mean the right type of incentive is to add, to the examples already included on Principle 8, item 34 (“shorter-tenor lending, lower loan-to-value limits or discounted asset valuations”), the following: *“higher interest rates or additional guarantees.”*

Hence, considering the considerations made on the first 2 pages of this document, a suggestion of a more comprehensive framework, that would affect Principles 3, 6, 7 and 8, is presented below.

Considering the best interests of banks who want to align their portfolios with climate change mitigation and adaptation goals, we suggest a triple approach:

- a) objective data on risk magnitude;
- b) mitigatory actions taken by corporations to mitigate those risks, regarding both climate change mitigation and adaptation;
- c) climate opportunities.

For the three dimensions, information encompassing both the corporation in the bank portfolio and its value-chain must be disclosed.

So, the disclosure requirements should include the following topics:

1) Location of operations:

When considering environmental risks and impacts, information on the location of operational activities (of course this concept excludes offices and stores) is essential to



understand the magnitude of the corporations' activities risks. In terms of climate change, it has a lot of uses:

- a) level of exposure to extreme weather events;
- b) level of exposure to sea-level rise (if any);
- c) level of exposure to water risks;
- d) regarding transition risks, level of exposure to expected regulatory changes in the places of operation (either countries or subnational entities, in case the latter have jurisdiction on energy issues).

So, the most essential information to be required is geo-referenced information on the companies environmentally-relevant operations – an information that could not be simpler to disclose (especially regarding item “c”). And the information needs to be linked to the volume of production and turnover of the company.

Besides the usefulness of this information in terms of climate risks, for banks, knowing the location of the operations also helps to assess if they are close to biodiversity hotspots, environmentally protected areas, tribal people or other vulnerable communities, and potential mitigatory actions taken by the company.

2) Value-chain information:

On many industries, such as food and beverages, pulp and paper (both with very high deforestation risks), metals manufacturing, etc, the most relevant environmental risks and impacts come from the supply-chain, not from the company itself. Hence, it's essential to require that companies disclose how they manage supply-chain risks, or even customer risks, as in the case of traders that sell agriculture inputs to soy producers, such as Bunge, Cargill and others. For the same reasons described above, geo-referenced information on the value-chain should be provided as much as possible.

3) Data on production and KPIs

Beyond compliance with environmental regulations and initiatives/investments in improving environmental performance, banks need objective data to assess the **efficiency** of the companies in terms of use of energy and water (once climate change increases the frequency and severity of draughts, leading to increasing water stress). For the same reason, it's necessary to assess the volume and treatment given to effluents emissions (if any), once they affect the availability of water for both food production and human use (which compete with the use of water per corporations and might be prioritised by water regulators over industrial/mining use when there is no availability for all the competing demands).



So, first of all, corporations must be required to disclose data on their production – units produced, not only turnover. With this information, banks will also want to assess:

- **energy** (both electricity and fuels) **mix** (percentage of coal, oil, gas, nuclear, water, solar, wind, biomass produced or used);
- GHG emissions (scopes 1, 2 and 3);
- energy use (which will lead to energy efficiency when compared to production);
- water use (which will lead to water efficiency when compared to production);
- percentage of water reused or recycled;
- types and quantities of water discharges and data on treatment and outcomes (quality of water discharges);
- impacts on biodiversity (if any);
- environmental criteria adopted in the value-chain (suppliers and customers);
- impacts of biodiversity loss on vulnerable communities.

Industry-specific KPIs

Industry-specific KPIs are certainly needed with regards to any type of environmental risks – energy and water use varies according to the industry, raw materials as well, waste, effluents and air emissions too, also location of operations.

For example, requiring the same level of disclosure in terms of energy mix from industries that produce their own energy and industries that use energy provided by public utilities does not make any sense. The same can be said from industries that use water in its production process or as an input/raw material compared to industries (as most industries in the services sector) that do not use it at all (having only a consumption similar to domestic use).

The weight of energy use varies across industries, the locational flexibility too, the possibilities of improvement of effluents treatment or water efficiency as well.

So, industry KPIs are actually essential, as recognized by SASB, TCFD, German environmental disclosures guidance⁷ and a number of other standards.

In terms of climate, the main industries that need specific standards are the ones to which TCFD developed them, considering both physical and transition risks. With regards to the financial sector, they must be required to disclose exactly the same KPIs

⁷ Ministry of Environment, Industry-specific KPIs for ESG disclosure, 2016:

https://www.sd-m.de/files/SD-KPI_Standard_2016-2021.pdf



information for these industries if they are part of their lending/investments/insurance portfolio. Financial institutions must also be required to disclose, at portfolio-level:

- industry composition (with percentage for each one);
- location of operations of financed/invested companies;
- GHG emissions;
- deforestation risks;
- Risks of degradation of wetlands, mangroves and oceans;
- energy mix;
- energy and water efficiency (comparing portfolio's companies with their respective industry average);
- value-chain risks (for all industries where they are relevant, especially with regards to deforestation and other ecosystems degradation risks);
- water risks;
- location of real estate collaterals, in order to allow assessment of climate physical risks;
- energy efficiency of real estate collaterals, in order to allow assessment of climate transition risks (loss of market value).

4) Mitigatory actions and climate opportunities (positive impacts)

On these two topics, there should not be an exhaustive list of information to be disclosed, but a few requirements should be made:

- need of quantitative data on the investments and outcomes of mitigatory actions (as well as any qualitative data), whenever feasible, such as: exact area of forest restoration and method used (planting or natural regeneration); GHG emissions reduction; reduction in water or energy use; amount of renewable energy proportion increased (percentage of energy mix and kwh); CapEx or research and development on energy efficiency, renewable energies, water efficiency; deforestation risk management in the supply-chain; etc
- clear description of quantitative data on climate opportunities – for example, if it's a product that improves energy efficiency: number of units produced; percentage in the sales (units and turnover) compared to similar products that do not have the same feature; actual positive impacts achieved.

It's worth to mention that there are several synergies regarding climate change and biodiversity loss mitigation. A few relevant studies/reports are:

- **IPCC special report on Climate Change and Land Use, 2019:**
<https://www.ipcc.ch/srccl/>
- **“Global trends in carbon sinks and their relationships with CO₂ and temperature”:**
<https://www.nature.com/articles/s41558-018-0367-7>



- “Forests, atmospheric water and an uncertain future: the new biology of the global water cycle”: <https://forestecosyst.springeropen.com/articles/0.1186/s40663-018-0138-y>
- “National mitigation potential from natural climate solutions in the tropics”: <https://royalsocietypublishing.org/doi/10.1098/rstb.2019.0126>
- WBCSD, <https://www.wbcsd.org/Programs/Climate-and-Energy/Climate/Natural-Climate-Solutions/Resources/Natural-climate-solutions-the-business-perspective>
- UNEP/WCMC, “Strengthening synergies: how action to achieve post-2020 global biodiversity conservation targets can contribute to mitigating climate change”: <https://www.unep-wcmc.org/resources-and-data/strengthening-synergies>
- Finance for Biodiversity, “The climate-nature nexus: implications for the financial sector”: <https://www.f4b-initiative.net/post/the-climate-nature-nexus-implications-for-the-financial-sector>
- UNEP/World Economic Forum, “The State of Finance for Nature”: <https://www.unep.org/resources/state-finance-nature>
- IPBES/IPCC workshop report, **Biodiversity and Climate Change**: https://www.ipbes.net/sites/default/files/2021-06/20210609_workshop_report_embargo_3pm_CEST_10_june_0.pdf

Q3. How could the transmission of environmental risks to banks’ risk profiles be taken into account when considering the potential application of these principles to broader environmental risks in the future? Which key aspects should be considered?

I strongly suggest that other environmental risks are already integrated into these Principles and a robust strategy to do that is described in the answer to Question 2.