ALIGNING PORTFOLIOS FOR ONE PLANET (AP1P PROJECT)

PROPOSAL FOR A CONCEPTUAL FRAMEWORK

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TABLE OF CONTENT

1. Executive Summary 3
2. The case for Aligning Portfolios for One Planet 6
3. Identifying "science-based" sustainability targets 9
3.1. Planetary Boundaries 10
3.2. Global Commons 13
3.3. The Sustainable Development Goals (SDGs) 14
3.4. Linking sustainability targets to WWF Global Goals 17
4. Assessing financial portfolios: existing methodologies, tools and future opportunities 19
5. A Conceptual Framework for Aligning Portfolios for One Planet 28
6. Recommendations for WWF, key stakeholders and further research 36
7. Appendix 41
7.1. Scientific literature references 41
7.2. Assessment methodologies reviewed 42

1. Executive Summary

The finance industry is becoming increasingly aware that building a sustainable economy is an imperative, which implies that we must respect the physical conditions for life and well-being on Planet Earth. Climate Change is one such "planetary boundary", but it's not the only natural system which provides the foundation for societal and economic well-being.

WWF is organized around six Global Goals for Forests, Wildlife, Freshwater, Oceans, Climate & Energy and Food. In its Finance Strategy the overall objective is "to encourage a meaningful shift in Finance", defined as "one that is in accordance with best available science and international agreements,[1] and drives change at speed and scale." Aligning financial portfolios with science is imperative to achieve this change, and is defined by the following characteristics:

- Science-based
- Quantitative measurement
- Outcome oriented (e.g. impact, contribution to a goal)
- Absolute performance (vs. relative performance benchmarking)
- Forward-looking
- Time-bound (in relation to scientific scenarios and/or political goals).

Hence, the work on portfolio alignment, starting with climate, lays the foundation for systemic change that will serve all Global Goals by making science-alignment for financial portfolios a new norm for financial regulation and responsible investing, including mainstream finance.

Such financial portfolio alignment will aim to measure its performance in relation to science-based sustainability objectives, through the analysis of its underlying assets and their positive or negative contribution to these objectives. This will be key to drive capital towards the solutions which can enable and contribute to the transition. Based on our comprehensive research, climate change appears to be the environmental topic for which the most comprehensive financial portfolios assessment methodologies currently exist. When considering other Global Goals like Forest or Freshwater, only partial assessments are available.

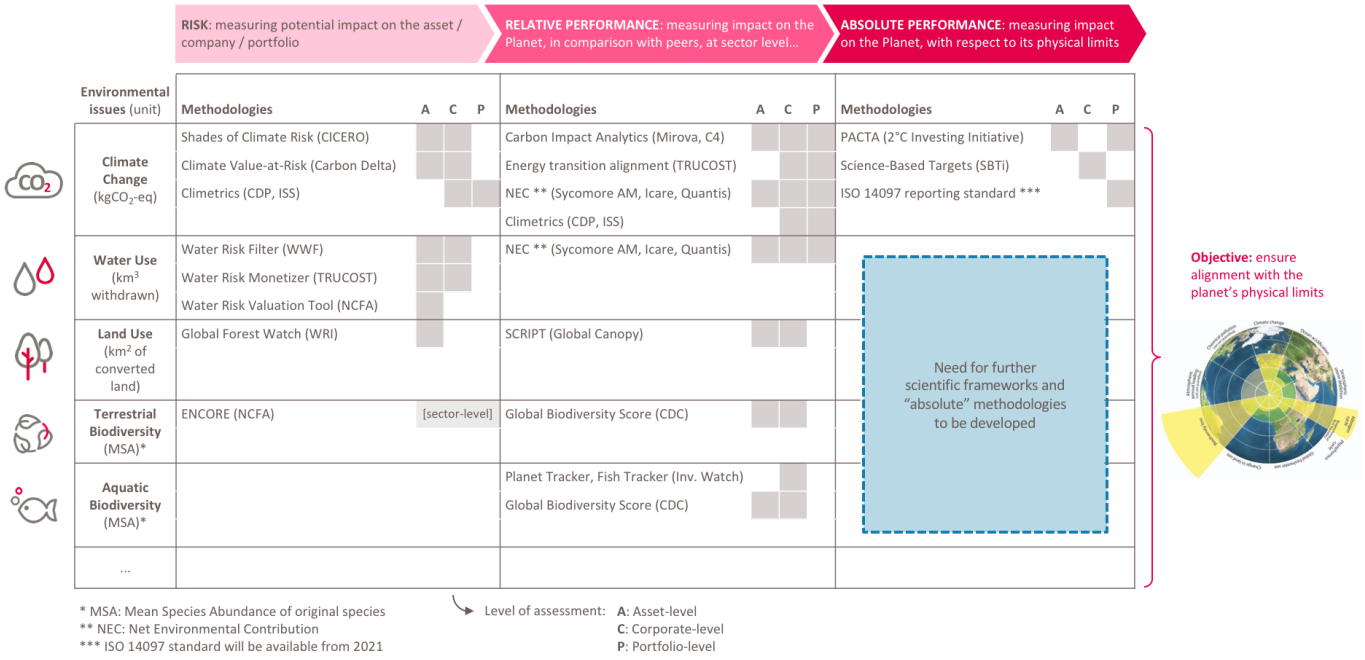
The proposed Conceptual Framework for Aligning Portfolios for One Planet provides a structured approach to help financial regulators and institutions to evaluate and apply methodologies to assess (a) environmental **impacts (risks) on financial portfolios** and (b) **financial portfolios' impacts on the planet or the environment**[2]. The Framework focus on:

[1] International Agreements relevant to WWF Goals include, for example: Agenda 2030; the Paris Climate Agreement (UNFCCC); UN Convention on Biological Diversity; UN Convention to Combat Desertification.

[2] This two-fold impact is referred to as "double materiality" in the European Commission's "Guidelines on non-financial reporting: Supplement on reporting climate-related information" (2019)

- environmental indicators available to assess investments level of sustainability in "absolute" terms,
- existing financial portfolio assessment methodologies and tools available for this purpose,
- identifying needs for further developments to enable portfolio alignment across sustainability topics.

Several targets or indicators and assessment tools are already available and more or less well developed. However, when it comes to systematically monitoring and directing capital to measurably achieve a comprehensive scope of science-based sustainability goals, the toolbox still lacks a significant part of fit-for-purpose targets as well as assessment methodologies.



AP1P Conceptual Framework – Opportunities for assessing financial portfolios or companies' sustainability relative and absolute performance, in relation to key environmental issues

In order to *shift the trillions*, different approaches can be envisioned to quantify absolute sustainability performance e.g. trajectories or dashboards. However, using the currently available tools poses several challenges e.g. issue coverage, data quality and availability etc.

This framework is developed to enable financial institutions and regulators to assess portfolio's positive and negative contribution to the systemic transition that is needed. **Asset owners** with long-term liabilities have a key role in driving demand for data and tools related to portfolio alignment. **Financial regulators and supervisory agencies** are equally crucial stakeholders to require and facilitate such developments. **Service providers** have an instrumental leveraging

capacity in providing decision-useful information that integrate companies' contribution to sustainability targets.

While there is a clear need for further development of the AP1P Framework, there is a just as clear need for the alignment of financial portfolios with science-based sustainability goals. We therefor call for action from key stakeholders:

- Academics and scientific community: develop and refine comprehensive "science-based" targets also beyond climate change, to inform the definition and priorities for the future of sustainability in finance (for analysis and decision-making purposes).
- Certification bodies, rating agencies, data providers and other third parties: drive the transformation of investment practices, by developing robust assessment methodologies and tools for absolute alignment with science-based sustainability goals.
- Financial institutions: help develop, test and ultimately integrate frameworks like AP1P, and demonstrate the financial performance related to such type of analysis e.g. based on current scenario analysis development to enable forward looking assessments of risk exposure as well as contribution to sustainability goals.
- Regulators: promote the portfolio alignment approach by requiring disclosure from market participants that enables financial supervisors to monitor financial markets positive or negative contribution to global sustainability goals.

2. The case for Aligning Portfolios for One Planet

"Climate stability is in the long run one of the determinants for financial stability."
François Villeroy de Galhaus, Governor, Banque de France

Investors nowadays increasingly recognize that building a sustainable economy and future is an imperative, which implies that we must respect the physical conditions for life and well-being on Planet Earth. Climate Change is one such "planetary boundary", and consequently Climate Change strategies are now more scrutinized for the purpose of a transition to a low carbon economy. But climate is not the only natural system which provides the foundation for societal and economic well-being.

WWF is organized around six Global Goals for Forests, Wildlife, Freshwater, Oceans, Climate & Energy and Food. In its Finance Strategy the overall objective is "to encourage a meaningful shift in Finance", defined as "one that is in accordance with best available science and international agreements,[3] and drives change at speed and scale." A vital step to achieving *a meaningful shift* in Finance is getting acceptance for portfolio alignment as a matter of principle for all the Global Goals. In this context, "portfolio alignment" is defined by certain characteristics:

- Science-based
- Quantitative
- Outcome oriented (e.g. impact, contribution to a goal)
- Absolute performance (vs. relative performance benchmarking)
- Forward-looking
- Time-bound (in relation to scientific scenarios and/or political goals).

In short, the work on portfolio alignment starting with climate lays the foundation for systemic change that will serve all Global Goals by making science-alignment for financial portfolios a new norm for financial regulation and responsible investing.

Indeed, the vast majority of today's ESG and responsible investment practices enable "more sustainable" investment decisions, and in this sense, they are crucial to transform conventional finance practices. However, given current practices they primarily provide a peer ranking based on relative performance – more often than not, they do not ensure in absolute terms that such decisions are in line with the physical limits of the planet.

Our Theory of Change

As part of WWF Finance Practice's research and development efforts, the project Aligning Portfolios for One Planet (AP1P) targets an audience having the power to trigger this important and necessary change – mainly: financial institutions, service providers (e.g. rating agencies,

[3] International Agreements relevant to WWF Goals include, for example: Agenda 2030; the Paris Climate Agreement (UNFCCC); UN Convention on Biological Diversity; UN Convention to Combat Desertification.

benchmark providers, proxy voting advisors, brokers), and regulators. These actors have a unique position to incorporate portfolio alignment criteria in their decision-making, and ultimately have an influence at company-level (although companies are not considered as direct stakeholders of the present framework). In that perspective, the engagement for portfolio alignment should not only focus on niche ESG and SRI funds, it must mobilize mainstream finance.

To mobilize key stakeholders in this context, WWF's role consists in driving thought leadership and enabling the development and implementation of data and tools for the alignment of portfolios with the outcomes necessary for sustainable development.

The objective of the AP1P project is to build the bridge between science-based definitions of sustainability and financial portfolio assessment methodologies, so that this concept can be fully integrated in financial institutions' and regulators' decision-making process for financing and investments. The benefits identified for each key stakeholder are summarized in **Figure 1** below.

Who?	Regulators	Service providers (rating agencies…)	Financial institutions
Benefit of applying Conceptual Framework to align activities with planetary boundaries	+ Bring stability on material risks linked to environmental issues + Sustain long-term developments and serve public interest + Opportunity to position as a leader in Sustainable Finance	+ Meet clients' demand for new robust methodologies + Need for "science-based" targets on relevant sustainability issues + Build on methodologies integrating further criteria (beyond Climate Change)	+ Convey the need for "portfolio alignment", to sustain a long-term stability to the fund + Address the need for alternative "absolute" assessment methodologies + Understand their current investments' environmental risks and impacts on reducing environmental deterioration

Figure 1: Key stakeholders for the project "Aligning Portfolios for One Planet"

More specifically, this project pushes such thinking beyond Climate Change, which is already subject to many financial and corporate initiatives (and although the climate toolbox is not fully complete yet): what else has been developed to set and manage sustainability targets for financial portfolios? What is in the pipeline, and what is missing?

Social aspects are currently not directly included in the suggested framework which focuses on environmental issues. Nevertheless, social issues are essential, mandatorily included in WWF's conservation work, and eventually closely linked to environment. In this context, preserving the environment by respecting the limits of the planet should be also be envisioned through the

objective of preserving a common good and human well-being. From a methodological perspective, although aligning with social targets could be envisioned as well, the required methodologies and tools would differ from the methodological approaches that help defining "science-based" environmental targets.

Following an extensive literature and methodology review (Scoping Study), this paper aims to propose a conceptual framework for aligning portfolios with science-based sustainability objective as the second step of the AP1P project, as illustrated below:

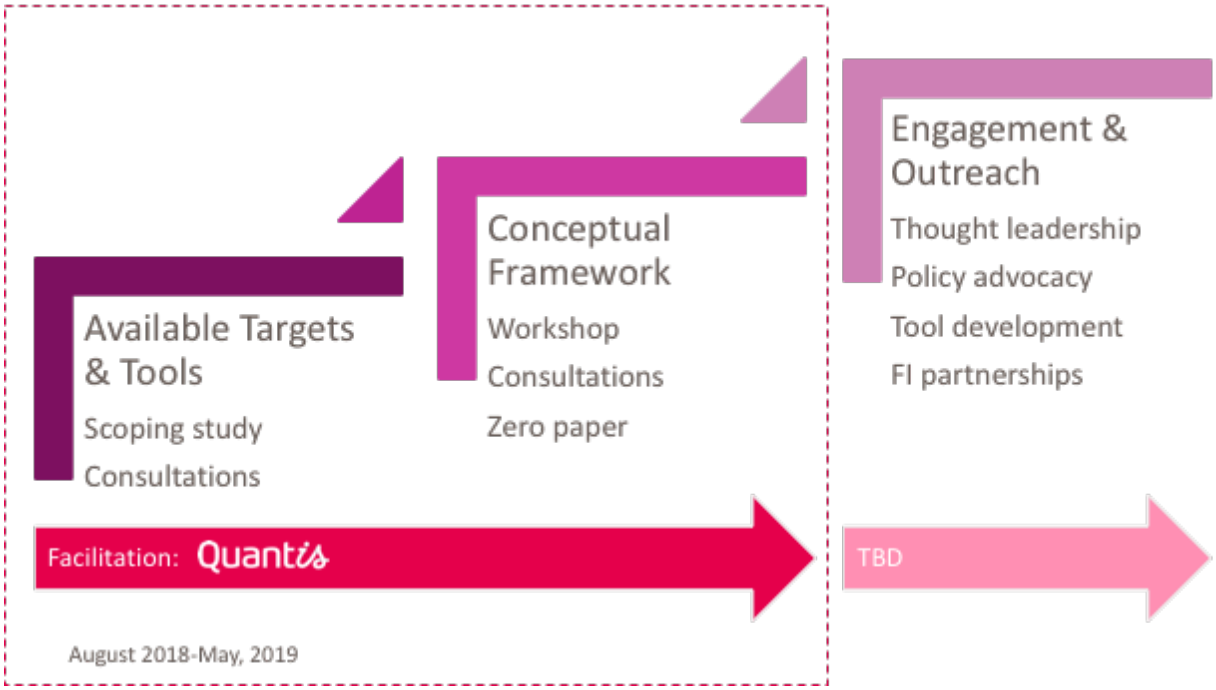


Figure 2: Key elements and steps of the AP1P project

3. Identifying “science-based” sustainability targets

“Science-based” sustainability targets are defined as targets that integrate the concept of environmental limits of the planet, as they “recognize the need to measure and reduce human impact in relation to the absolute boundaries of the Earth system”[4].

For each Earth system process[5], an extensive scientific literature has been analyzed[6] to understand and evaluate the maturity of the scientific framework. Regarding their applicability to corporate evaluation, methodologies integrating “science-based” sustainability targets have been referenced.

This analysis has been conducted with the objective of:

- Identifying objectives, metrics and indicators that can express what “sustainability” means in absolute terms for various areas of concern.
- Identifying current and future levels of impact, as well as environmental urgencies.
- Listing what is available in terms of methodologies for evaluation of companies and countries’ absolute impact in relation these targets (rather than relative performance, e.g. vs. peers in a given sector).

As detailed in the table below, climate change is currently the only environmental issue that can be evaluated against an absolute definition for sustainability, while methodologies for freshwater are under development and being tested.

[4] See Metabolic, *One Planet Approaches*, Nov. 2017.
[5] Rockström et al. 2009, https://www.ecologyandsociety.org/vol14/iss2/art32/
[6] List of reviewed targets and methodologies, see Appendix.

Table 1: Overview of Planetary Boundaries scientific framework and corporate evaluation

Environmental Indicators	Planetary Boundaries - Scientific framework	Planetary Boundaries - Corporate evaluation
Climate Change		SBTi delivers methodologies based on +1.5°C and +2°C compliance
Freshwater Use		Methodologies currently tested
Biogeochemical Flows		Need for a quantitative methodology
Land Use		Need for a quantitative methodology
Biodiversity		Need for a quantitative methodology + Data
Ocean Acidification		Need for a quantitative methodology + Data

Good coverage
Sufficient coverage
Unsufficient coverage

It is crucial to have absolute reference points for which current and future performance can be measured quantitatively. Indeed, it allows the computation of a quantitative reduction target that integrates Planetary Boundaries in its assessment. This path is a way of obtaining absolute sustainability. Unfortunately, as described in the legend of the figure above, several Planetary Boundaries indicators have a lack of coverage and thus maturity. The absence of maturity prevents the possibility to develop absolute targets at a corporate level on these indicators.

Several frameworks defining sustainability targets already exist, such as the concept of "Planetary Boundaries", or the UN Sustainable Development Goals (SDGs). The WWF strategy and organization are structured around six Global Goals that can be connected to these frameworks.

3.1. Planetary Boundaries

The capacity of the planet to sustain various types of environmental damage has physical boundaries, and some of these physical boundaries have already been transgressed - meaning that crossing this limit leads to irreversible consequences.

Rockström identified these physical barriers in 2009, proposing the following indicators:

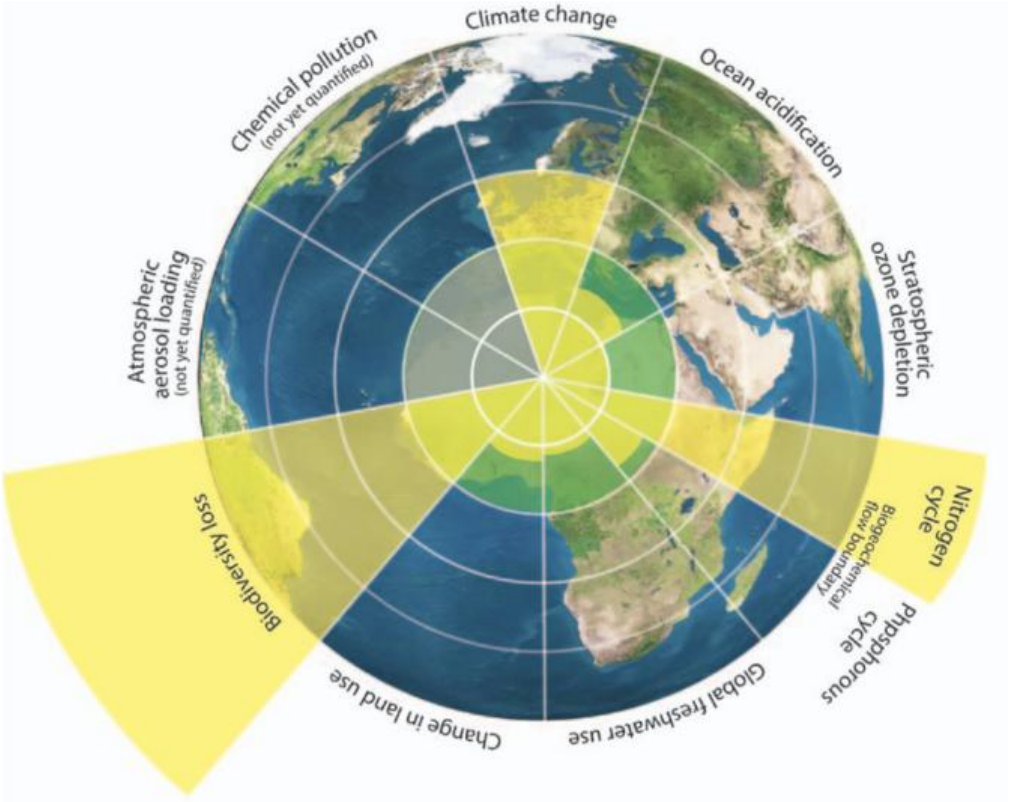


Figure 3: Illustration of the nine planetary boundaries (with the safe operating system in green), according to Rockström et al. 2009[7]

It is a complex subject given that each boundary should refer to the appropriate geographical and temporal scale, and given the interdependency between several boundaries.

The Planetary Boundary thinking relies on four main concepts, allowing definition of "absolute sustainable targets" that can potentially be applied to organizations and companies:

- The threshold of a boundary represents the limit not to be transgressed. Such a transgression of this limit would lead to irreversible damage on this environment-related boundary.
- The carrying capacity refers to the planetary allowance on a boundary. It can precisely be defined as "the maximum sustained environmental interference a natural system can withstand without experiencing negative changes in structure or functioning that are difficult or impossible to revert".
- The current level represents the current status of a specific indicator in comparison to its threshold. If the current level is exceeding the threshold, then it can lead to irreversible damage on the issue on which the boundary has been transgressed.

[7] Rockström et al. (2009), "Planetary Boundaries: Exploring the Safe Operating Space for Humanity"

- **The fair share** refers to the allowed emissions per entity (country, company, capita…) in consideration of the threshold, carrying capacity and current level.

Each boundary is calculated thanks to a **control variable** that makes the measurements possible. In some cases, a boundary has several variables of control, but they can however be aggregated in one (e.g. CO_2-equivalent for climate change).

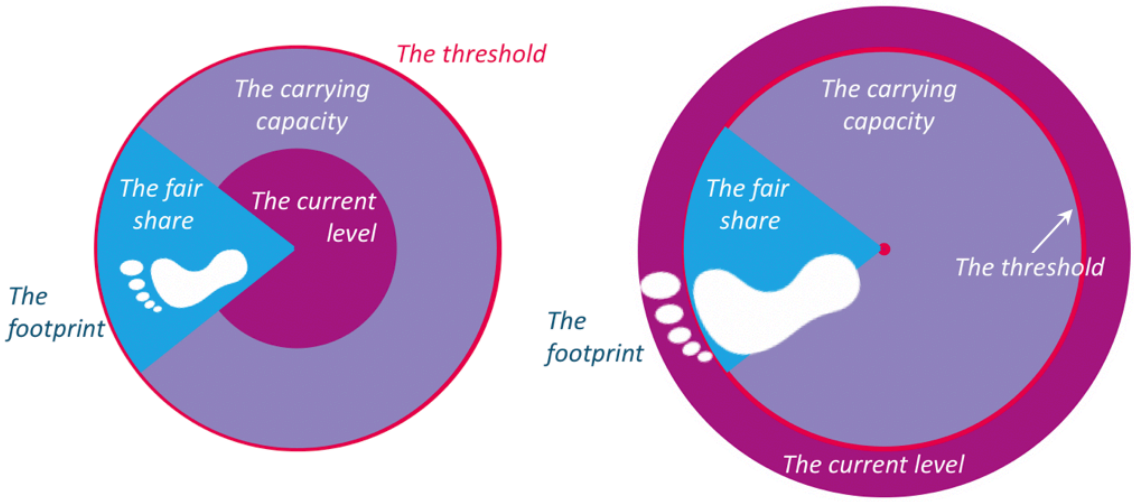


Figure 4: Healthy environment (left) and Unhealthy environment (right), represented according to the different Planetary Boundaries concepts

Applied to a concrete and well-known issue such as climate change, target setting with Planetary Boundaries considerations requires to take the following into account.

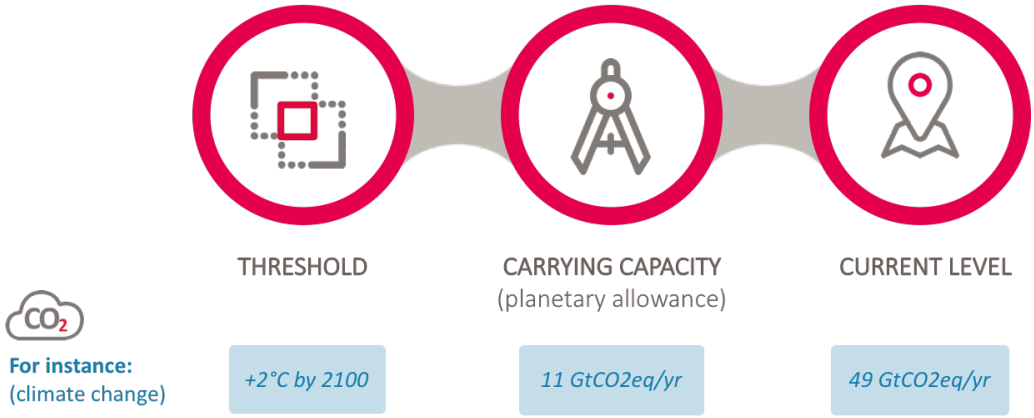


Figure 4': Planetary Boundaries concepts applied to climate change

How do these concepts apply for company assessment?

Integrating the Planetary Boundaries concept in a portfolio assessment methodology makes it possible to assess a company's "absolute" sustainability performance. For instance, comparing

water footprint from one company to another will lead to a relative assessment. Defining an absolute water target would help to understand if the company is aligned with its "allowed budget", in a specific location and during a specific period. This is a forward-looking and outcome-oriented approach which would enable an assessment of a company's performance or target in relation to an environmental issue can be considered as "sufficient".

To date, climate change is the only indicator for which a robust Planetary Boundary framework has already been defined in terms of threshold, carrying capacity and current level quantification.

For other environmental impacts or thresholds, today no methodologies or validation bodies (such as, for climate change, the SBTi - Science-Based Targets Initiative) exist. It is worth noting that research is ongoing, to build the bridge between the Planetary Boundaries concepts, the business world and finance. For instance, Butz et al. (2018)[8] explore how "to define a boundary-compatible investment universe and analyze the environmental compatibility of companies". In addition, a framework for "truly sustainable" water consumption is currently being developed, in order to define such reduction targets at corporate level[9] [10].

3.2. Global Commons

The Global Commons initiative has been launched in 2018 by several NGOs (such as CDP, We Mean Business, WRI...) and is currently working to define the methodology and approaches needed to set Science-Based Targets beyond carbon (i.e. for other Planetary Boundaries). It has managed to gather many partners, including NGOs (WWF, IUCN, The Nature Conservancy), academics (PIK, ETH Zurich) and consultants (e.g. Quantis), invited to join to the different working groups that have been established.

The Science-Based Targets network (SBTn) is part of the Global Commons and has established five issue hubs: Water, Biodiversity, Oceans, Cities and Land. The SBTn goal is to develop "truly" sustainable targets that integrates Planetary Boundaries, for each hub. On that basis, this will ultimately allow to develop target-setting tools at corporate and portfolio levels.

[8] Butz, C., Liechti, J., Bodin, J., & Cornell, S. E. (2018). Towards defining an environmental investment universe within planetary boundaries. Sustainability science, 13(4), 1031-1044.

[9] See WRI, Mars Inc., *From doing better to doing enough: Anchoring corporate sustainability targets in science* Working Paper (2016), and Clift et al., *The Challenges of Applying Planetary Boundaries as a Basis for Strategic Decision - Making in Companies with Global Supply Chains* (2017).

[10] See *Exploring the case for corporate Context-Based Water Targets*, April 2017: www.ceowatermandate.org/files/context-based-targets.pdf

3.3. The Sustainable Development Goals (SDGs)

The 2030 Agenda for Sustainable Development was adopted by world leaders on the occasion of the UN Summit in September 2015. It includes the 17 Sustainable Development Goals (SDGs), which were officially launched the 1st of January 2016:

Figure 5: The 17 UN Sustainable Development Goals

The United Nations recognize that "The new Goals are unique in that they call for action by all countries, poor, rich and middle-income to promote prosperity while protecting the planet. […] Implementation and success will rely on countries' own sustainable development policies, plans and programmes, and will be led by countries". The SDGs are therefore meant to be "a compass for aligning countries' plans with their global commitments".

Beyond nations and public stakeholders, the SDGs are also seen today as the reference sustainability framework by many other stakeholders, including financial investors.

However, the main challenge for companies (or investors) aiming to contribute to the SDGs framework is to associate each goal to quantitative KPI and targets, as the SDGs remain mostly qualitative or relative targets, and often do not have a scope that makes them applicable at company level.

E.g. SDG 3 "Water and Sanitation":

- Target 6.3. By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally
- Target 6.4. By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity
- Target 6.6. By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

Indeed, the Sustainable Development Goals were reviewed by the International Council for Science (ICSU) and the International Social Science Council (ISSC) in order to evaluate the degree of scientific data underpinning these targets[11]. It was assessed that 29 % of the SDGs' targets were well developed from a scientific point of view. Another 54% of the SDGs rely on some level of scientific evidence which could be more specific.

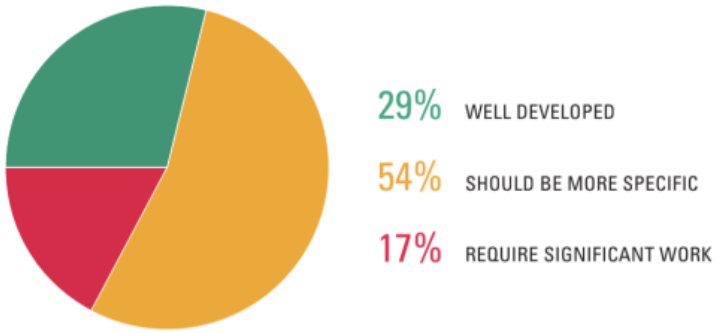


Figure 6: *Analysis of scientific basis for the Sustainable Development Goals, according to the ICSU and the ISSC.*

Even though work needs to be done regarding the scientific basis and metrics for some of the SDG targets, a large part of it could be assessed quantitatively by the many business and finance actors who recognize it as a global point of reference for sustainability.

To illustrate how SDGs can be based more on science, see the following examples.

E.g.[5]

- SDG 7. "Ensure access to affordable, reliable, sustainable and modern energy for all":

7.2 Double the share of sustainably produced renewable energy in the global energy mix by 2030. Hence, a more quantifiable approach would improve measurability and make possible the alignment with the findings of the Sustainable Energy for All (SE4All) Global Action Agenda.

7.3 Double the global annual rate of improvements in energy intensity of GDP, to 2.9 % per year.

- SDG 13. "Take urgent action to combat climate change and its impact":

The current state of science behind SDG 13 is thoroughly summarized in the recently published IPCC 5th Assessment Report (AR5). AR5 notes that the impacts of climate change constitute a major risk for all dimensions of sustainable development.

It is hence necessary to rely on quantified assessment and data when understanding what has already been done and what should be done in the future.

For example, SDG 13.2. recommends to delete "national" scale given it appears to narrow to fight climate change and that different scales, such as cross-national or sub-national could be more relevant.

- SDG 14. "Conserve and sustainably use the oceans, seas and marine resources for sustainable development":

[11] ICSU, ISSC (2015): Review of the Sustainable Development Goals: The Science Perspective.

Conserving at least 30% of coastal and marine seas by 2020. Todays' stated quantity is insufficient (10%). Reaching the 30% conservation can be achieved thanks to spatial as well as other management measures. I t also extends the target in line with what is being expected for terrestrial ecosystems.

Moreover, the University of Cambridge Institute for Sustainability Leadership (CISL) report "In search of impact, measuring the full value of capital"[12] showcases the fact that Sustainable Development Goals are a relevant set of indicators to be considered for a financial institution in its decision-making process. In the report, CISL presents six ideal, **absolute performance metrics** with respect to SDGs and suggest some interim **relative performance metrics** for how to start measuring relative to a benchmark, e.g. a financial index:

Theme	What is the ideal measure? *Absolute performance with respect to SDGs* *Whole value chain focus*	What can be measured today? *Relative performance with respect to benchmark* *Operational focus (value chains not appraised)*
Basic needs	Total revenue from products and services addressing the basic needs of low-income groups[6], adjusted by PPP-weighted International Poverty Line[6] Unit: US$	Total revenue from goods and services from clothing, communications, education, energy, finance, food, healthcare, housing, sanitation, transport and water (see Annex A) Unit: US$
Wellbeing	Total tax contribution[7] (comprising taxes on profits, people, production, property and environment but not sales) by country, adjusted by national corruption[8] and spending effectiveness Unit: US$	Total tax contribution Unit: US$
Decent work	Total number of open-ended employment contracts excluding jobs below 60 per cent median wage (living wage) and jobs in poor working conditions (health & safety, discrimination, rights of association), adjusted by national employment rate[9] Unit: number of jobs	Total number of employees based on full time equivalent (FTE) workers[10] Unit: number of FTEs
Resource security	Hard commodities: Virgin material content of end products (adjusted by scarcity) plus waste lost to the environment (adjusted by toxicity) Soft commodities: Non sustainably certified content of end products plus waste not specifically returned to nature Unit: metric tonnes (t)	Total net waste (total waste arising – total waste recycled) Unit: metric tonnes (t)
Healthy ecosystems	Area of land utilised by an asset in degraded form Unit: hectares (ha)	Fresh water use (surface water plus groundwater plus municipal water) Unit: cubic metres (m^3)
Climate stability	Alignment to future warming scenario based on consumption of global carbon budget Unit: degrees Celsius (°C)	Total greenhouse gas (GHG) emissions (Scope 1 and 2) Unit: tonnes (t) carbon dioxide equivalent (CO_2e)

Figure 7: Ideal and base metrics at a glance (CISL, 2019)

As quoted in the report, "Our ideal metrics are designed to assess absolute performance with reference to the SDGs. […] Gauging whether a certain level of impact is consistent with the SDGs is clearly challenging, particularly with social themes such as wellbeing or decent work where it is difficult to say what is 'sufficient' or 'good enough' to contribute fairly to global ambitions. Yet those are precisely the judgements which need to be made in order to assess

[12] Cambridge Institute for Sustainability Leadership: In search of Impact – Measuring the full value of capital: Update: The Cambridge Impact Framework

SDG alignment. Environmental themes are more straightforward to analyse since it is possible to assess whether an asset is sustainable in scientific terms based on its degree of degradation or restoration of land, climate burden, and so on."

3.4. Linking sustainability targets to WWF Global Goals

WWF's conservation work is organized to deliver outcome towards six "Global Goals" (Wildlife, Oceans, Forest, Freshwater, Climate & Energy and Food), with three cross-cutting drivers (Governance, Market and Finance).

The WWF Global Goals can be linked, or translated, to different science-based sustainability targets frameworks. For instance, it is possible to identify the following links with the Sustainable Development Goals. Please note that this linkage is not meant to indicate a hierarchy or preference for one or the other framework, only to illustrate a cross-reference for use within WWF as well as with partners and stakeholders beyond WWF.

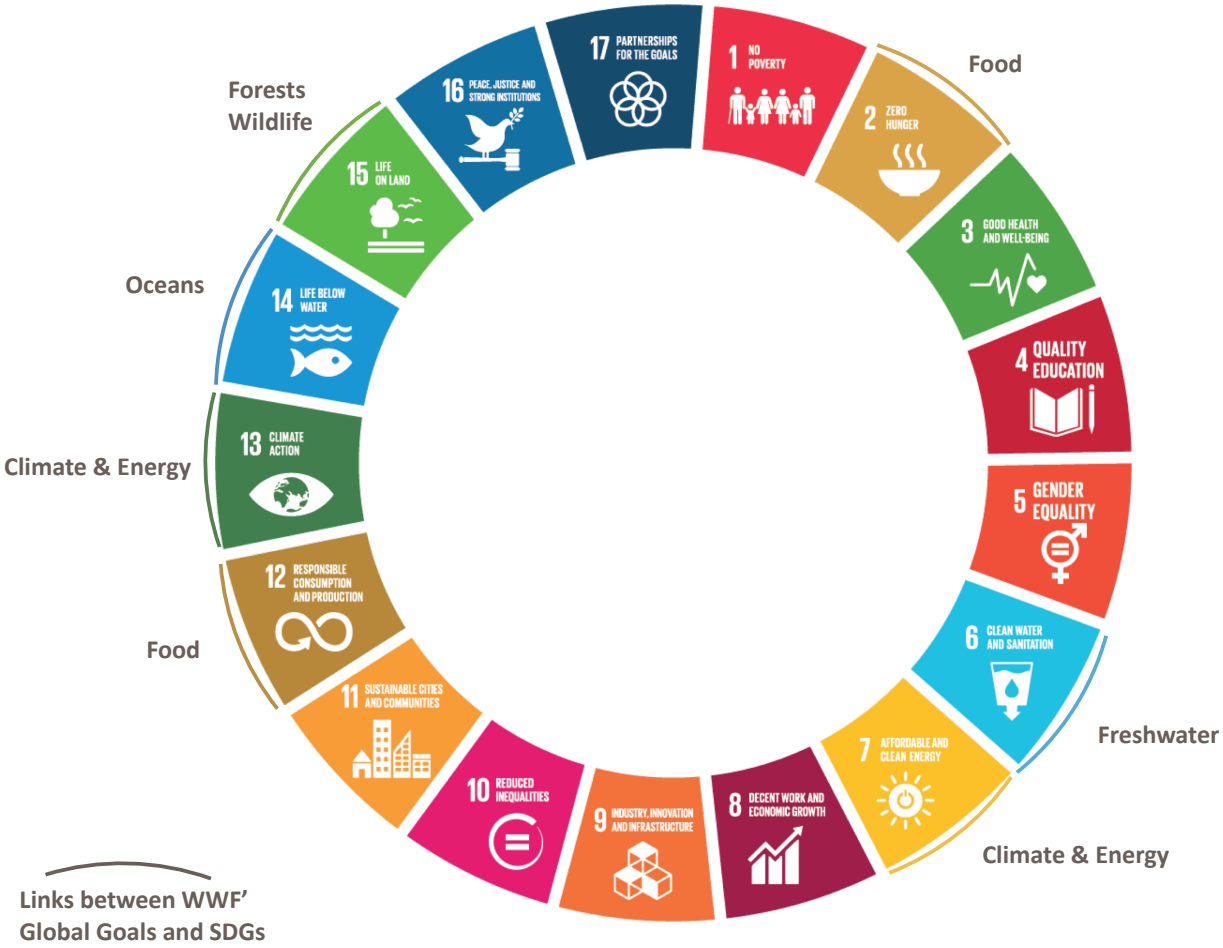


Figure 8: WWF Global Goals and links to the SDGs

The example below illustrates the link between SDG sub-targets and the "Food" Global Goal:

E.g. **WWF Global Goal (by 2030)**

- 50% of the area under agriculture and aquaculture is sustainably managed, with no new habitat conversion in all food producing areas.
- Halve per capita global food waste and reduce post-harvest loss.
- 50% of food consumption is in line with WHO/FAO dietary guidelines, in target countries.

Sustainable development Goals

« Zero Hunger » (2nd SDG)

2.4. By 2030, ensure sustainable implement resilient agricultural practices (…)

« Responsible consumption and production » (12th SDG)

12.3. By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.

The interrelation between these different frameworks can also be envisioned between Planetary Boundaries (PBs) and Sustainable Development Goals (SDGs). Notably, a study[13] co-authored by the Stockholm Resilience Center has focused on assessing the ambition of the SDGs relatively to the 9 PBs, and identifying what additional measures may be necessary to achieve the SDGs. Though the model developed relies on many assumptions, this study demonstrates that "it is possible to build a global system model and use it to analyze future achievement of SDGs within PBs".

[13] Randers, J., Rockström, J., Stoknes, P. E., Goluke, U., Collste, D., & Cornell, S. (2018, October 15). Achieving the 17 sustainable development goals within 9 planetary boundaries.

4. Assessing financial portfolios: existing methodologies, tools and future opportunities

An environmental assessment of financial portfolios aims to measure its performance in relation to science-based sustainability objectives (as outlined in Chapter 2), through the analysis of its underlying assets and their positive or negative contribution to these objectives.

An inventory and review of such methodologies has been conducted, with the objectives of:

- listing the relevant financial portfolios assessment methodologies and tools, related to the environmental objectives behind the six WWF Global Goals;
- providing a description of the methodologies and tools' content, strengths and weaknesses in light of the AP1P project objective, and their potential fit in a comprehensive conceptual framework for aligning portfolios across the Global Goals;
- identifying key elements that remain uncovered by these methodologies, and would require further developments in the future.

For each Global Goal, a wide range of existing methodologies, tools and databases have been analyzed[14]. The scope of this analysis is not exhaustive, as it focuses on methodologies having the greatest potential to assess financial portfolios contribution to "absolute", science-based sustainability targets. Other initiatives, methodologies, tools, etc. are nevertheless recognized to have immediate benefits, either for other purposes (e.g. assessing how a portfolio is exposed to sustainability risks or its impact relative to peers), or to trigger action on certain environmental issues beyond climate, while awaiting the development of "absolute" science-based assessment methodologies.

Climate change appears to be the only environmental topic for which relatively comprehensive financial portfolios assessment methodologies currently exist, with a reasonable level of granularity and precision - at least for key high carbon sectors. When considering other Global Goals, some aspects can be analyzed enabling a first helpful, however partial assessment (for Freshwater, Forests, Oceans for instance):

Table 2: Overview of analyzed financial portfolios assessment methodologies and tools

	Databases		Methodology / Tool		Maturity
Forests	• WRI Global Forest Watch	• Asset (commodities)	• SCRIPT Portfolio risk tool (Global Canopy)	• Asset (commodities) + Corporate	Need for a quantitative methodology + Data
Wildlife	• WWF-Sight	• Portfolio	• ENCORE (Natural Capital Finance Alliance) => Qualitative, "natural capital" approach • Global Biodiversity Score (CDC Biodiversité) => Quantitative	• Sector • Asset + Corporate	Need for data, quantitative methodology being tested
Food	• GMAP (Global Map of Environmental and Social Risks in Agro-Commodity Production) * • Planet Tracker, Fish Tracker (Investor Watch)	• Asset (commodities) • Corporate			Need for a quantitative methodology + Data
Climate & Energy	IPCC, IEA, national databases (DEFRA, Base Carbone…), etc.	Asset + Corporate	• Shades of Climate Risk (CICERO) * • Climate Value-at-Risk (Carbon Delta) * • Carbon Impact Analytics (Mirova, Carbone 4) • ISO 14097 reporting standard • PACTA (2°C Investing Initiative) • Energy transition alignment (Trucost) • Climetrics (CDP, ISS) * • Net Environmental Contribution (Sycomore AM, Icare, Quantis)	• Asset + Corp. • Asset + Corp. • Asset + Corp. + Portfolio • Portfolio • Asset + Portfolio • Corp. + Portfolio • Corp. + Portfolio • Asset + Corp. + Portfolio	Quantitative and "absolute" methodologies exist
Oceans	• Planet Tracker, Fish Tracker (Investor Watch)	• Corporate			Need for a methodology
Fresh-water	Aqueduct, AWARE, etc.		• Water Risk Monetizer (Trucost) * • Water Risk Filter (WWF) * • Water Risk Valuation Tool (NCFA) * • Net Environmental Contribution (Sycomore AM, Icare, Quantis)	• Asset + Corporate • Asset + Corporate • Corporate • Asset + Corp. + Portfolio	Need for an "absolute" quantitative methodology

* Risk assessment

It is important to note that:

- the panel of methodologies and tools identified here is not exhaustive[15]: it focuses on quantitative (when applicable, "science-based") metrics rather than qualitative ESG criteria;
- these tools are quite heterogenous: they can be databases, methodologies or webtools, as well as assessment tools or target-setting tools, so that their purpose (and user-friendliness) may differ greatly from one to another;
- assessment methodologies and tools are a first step: beyond them, financial institutions also need tools that allow to set concrete actions and measure impact of such actions - this further stage is, for now, beyond the scope of the present framework.

Hence, a detailed analysis of these methodologies and tools was carried out, to understand to what extent they can be applied for the purpose of aligning portfolios for one planet. For each of them, the type and level of assessment were specified:

[15] See also WWF, *Resilient and Sustainable Portfolios: a framework for responsible investment*, April 2019, http://awsassets.panda.org/downloads/wwf_sustainable_finance_report.pdf

WWF Global Goals and available tools	Pros	Cons	Available resources and methodologies coverage (corporate applicability)	Level of assessment
FORESTS • 2 methodologies analyzed • not directly applicable for corporate assessment				
SCRIPT Portfolio risk tool (Global Canopy)	- Helps companies/investors understand exposure to deforestation risk - Applies to any sector linked to deforestation	- Qualitative rating based on companies' deforestation policy assessment, no quantitative assessment	Deforestation risks associated with financing companies in soft commodity supply chains, allows comparability for stock picking/company engagement	Asset and company level (Deforestation risks associated with financing companies in soft commodity supply chains).
WRI Global Forest Watch	- Geography-specific deforestation data - Correlation to specific geographies / commodities - Increase transparency for companies' supplier engagement	- No supply chain visibility from an investor perspective - Not directly applicable to a company database	Deforestation risks based on geographical mapping (satellite data). Applicable to companies on their own supply chain.	Asset level (commodities: deforestation risks based on a geographical mapping).
WILDLIFE • 3 methodologies analyzed[16] • not directly applicable for corporate assessment				
ENCORE	- Applicable to all material sectors - Goes "beyond carbon" as it evaluates ecosystems services and natural capital assets' contribution to a production process	- Centered on risks for the activity itself, not on sustainability targets - Qualitative rating, not directly usable for activities' impacts quantification	ENCORE provides a wide overview of subsectors' dependency to ecosystem services and natural capital assets. It qualifies subsectors' risk exposure but does not incorporate sustainability targets, such as planetary boundaries, as a parameter.	Sector level (Natural Capital Opportunities, Risks and Exposure).

[16] For a more detailed review of such methodologies on the Biodiversity topic, the EU Business @ Biodiversity Platform (EU B@B Platform) conducted an assessment of a sample of biodiversity accounting approaches, developed for or by businesses and financial institutions. See EU Business @ Biodiversity Platform, "Critical Assessment of Biodiversity Accounting Approaches for Businesses and Financial Institutions", update report 1, 19 November 2018. See also ACTIAM, ASN Bank, CDC Biodiversité, *Common ground in biodiversity footprint methodologies for the financial sector*, 2018

WWF Global Goals and available tools	Pros	Cons	Available resources and methodologies coverage (corporate applicability)	Level of assessment
WWF-SIGHT	- Combination of environmental spatial data with GIS functionality - Allows a precise monitoring of environmental risks/impacts at local to global level - For specific activities (oil & gas) allows a spatial data-based assessment of a company's environmental exposure	- Limited by spatial data availability - Data confidentiality	WWF SIGHT provides an aggregation of the environmentally relevant spatial data which, when combined with company's sites and suppliers' locations (as for O&G assets) allows a precise quantification of environmental impacts, which should be used for a comparison to sustainability targets.	Environmental exposure at portfolio level (Species distribution, WWF priority ecoregions...).
Global Biodiversity Score (CDC Biodiversité)	- The GBS provides a synthetic vision of the biodiversity footprint of economic activities - The methodology is quantitative, comprehensive (covers all industry sectors and all countries), scientifically robust and consensus-based (based on models and tools such as GLOBIO or Exiobase)	- The methodology is still being developed, and its operational relevance is currently being tested - Biodiversity footprint does not take into account a notion of "science-based" sustainability target or boundary	The GBS is suitable for calculating the footprint of a financial asset portfolio and for corporate level assessments. It uses km^2.MSA (mean species abundance: a 100% ratio indicates an intact ecosystem while damages caused by an increase of pressures bring the MSA progressively to 0% when all originally occurring species are extinct in the ecosystem).	Corporate level.
FOOD • 2 methodologies analyzed • enable partial corporate assessment				
Planet Tracker, Fish Tracker	- Quantitative assessment of the exposure to	- Only covers a fraction of the goal	Companies database to establish the environmental limits of their fishery activity,	Company level (applicable to

WWF Global Goals and available tools	Pros	Cons	Available resources and methodologies coverage (corporate applicability)	Level of assessment
(Investor Watch)	overfishing across the largest publicly listed companies	- Limited company disclosure	by geography, species, ecosystem and fishing method Note: The Fish Tracker initiative is part "Planet Tracker". Additional projects, using the same or similar methodology to Carbon Tracker, are planned for forests, agriculture (beef, soy and palm oil) and water.	equity and corporate bonds).
GMAP (Global Map of Environmental and Social Risks in Agro-Commodity Production)	- Rely on public data from reputable international and local sources such as International Labor Organisation and the Food and Agriculture Organisation	- Only focused on risks	GMAP is an online tool developed by International Finance Corporation and WWF. It analyzes environmental and social data agro-commodity production in emerging markets. It assesses a risk score on about 250 combinations with countries and agro-commodities in question.	Asset level (agro-commodities).
CLIMATE & ENERGY • 8 methodologies analyzed • enable full corporate assessment and partial portfolio assessment				
Shades of Climate Risk (Center for International Climate Research)	- Categorizes climate change risk according to timeframe and probability	- Limited granularity of climate risk categories for investors	This tool evaluates companies' exposure to the consequences of climate change	Corporate, asset level.
Carbon Delta	- Applies to any sector - Wide company database available	- Focused on GHG - Focused on transition risk for companies (no integration of	Evaluates companies' Value at Risk due to climate change. It doesn't have a direct applicability in a sustainability targets-based approach	Climate risks in financial markets, corporate level.

WWF Global Goals and available tools	Pros	Cons	Available resources and methodologies coverage (corporate applicability)	Level of assessment
		sustainability targets)		
Carbon Impact Analytics (Mirova and Carbone 4)	- Includes a 2°C scenario - Applies to any sector	- Covers also companies that don't report their carbon footprint	Carbon Impact Analytics is designed to cover stocks and bonds of any listed company (even those not reporting their carbon footprint). Climate Impact Analytics enable to report on carbon impact and pilot investment strategies.	Asset, corporate or portfolio level.
ISO 14097 reporting standard *(will be available from 2021)*	- Applies to any sector	- Harmonization of risk assessment / quantification and reporting practices in the field of portfolios' climate change performance programmed for 2020	Quantification/reporting norm for portfolios' climate change impact. The standard will allow financial institutions to assess and disclose the impact of their portfolio on the achievement of the well below 2°C alignment (currently under discussion)	Portfolio level.
PACTA tool (2°C Investing Initiative)	- Robust metric-based approach (high granularity) - Prospective approach, comparison to 2°C scenarios for the most carbon intensive sectors (utilities, oil & gas)	- Limited sector coverage - Alignment only available on a sectorial basis (not for the full portfolio) - Limited to corporate assets (equities and bonds) - Limited to carbon	Measures financial portfolio alignment with well below 2°C decarbonization pathways. Underlying database (installed/projected capacity for utilities, car production for automobile manufacturers etc.) could feed a sustainability targets-based approach	Asset and portfolio level.
Energy transition alignment (Trucost)	- Alignment in terms of "green/brown" activities - Metrics that provide more insight on climate risk	- Covers only utilities and mining sectors	Measures portfolio alignment with a 2°C scenario for utility assets, compared to IEA scenarios	Company level (corporate equities and bonds).

WWF Global Goals and available tools	Pros	Cons	Available resources and methodologies coverage (corporate applicability)	Level of assessment
ISS and CDP Climetrics (The Climate Rating for Funds)	- Measure and rank the climate risk and opportunities of a fund	- Doesn't consider the ambition and impact reduction of a target	Measures corporate climate risks	Company and portfolio level (Climate risks and opportunities).
Net Environmental Contribution (Sycomore Asset Management, Icare & Consult and Quantis)	- Integrates several environmental issues (such as climate, water, biodiversity and air quality) - Applicable to any sector	- Limited by company disclosure on several relevant environmental parameters - Companies' performance is compared to market average rather than alignment with sustainability targets.	Applies to corporate assets (equities and bonds), potentially extended to sovereign. Quantifying companies' alignment with the ongoing energy and ecological transition, based on publicly available information. It does not incorporate sustainability targets, such as planetary boundaries, as a parameter	Asset, company and portfolio level.
OCEANS • 1 methodology analyzed • enables partial corporate assessment				
Planet Tracker/Fish Tracker (Investor Watch)	- Quantitative assessment of the exposure to overfishing across the largest publicly listed companies	- Only covers a fraction of the goal - Limited company disclosure	Companiy database to establish the environmental limits of their fishery activity, by geography, species, ecosystem and fishing method Note: The Fish Tracker initiative is part "Planet Tracker". Additional projects, using the same or similar methodology to Carbon Tracker, are planned for forests, agriculture (beef, soy and palm oil) and water.	Company level (applicable to equity and corporate bonds).

WWF Global Goals and available tools	Pros	Cons	Available resources and methodologies coverage (corporate applicability)	Level of assessment
FRESHWATER • 4 methodologies analyzed • not directly applicable for corporate assessment				
Water Risk Monetizer (Trucost)	- Evaluates and monetizes water-related business risks	- Focused on water price and water supply and discharge security - Focused on business risk, no integration of sustainability targets	Even though the methodology is easily applicable to a wide company database, revenue at risk do not have a direct link to sustainability targets.	Assessment at site/company level, applicable to all corporate assets.
Water Risk Filter	- Spatial mapping of water-related risks (water stress, regulatory risks…) - Applicable to company assets based on location - Prospective data (projected changes)	- Requires a database of companies' locations to be applicable at company level - Relies on "local boundaries" rather than global sustainability targets	Should be combined with a database of companies' locations to evaluate alignment with sustainability targets on freshwater use	Assessment at site/company level, applicable to all corporate assets.
Water Risk Valuation Tool	- Makes the link between corporate environmental risk and financial value - Assess the variation in exposure to water scarcity	- Do not measure any impact on the planet	Applicable to corporate assessment but do not deliver any methodology	Corporate level.
Net Environmental Contribution (Sycomore Asset Management, Icare &	- Integrates several environmental issues (such as climate, water, biodiversity and air quality) - Applicable to any economic activity	- Limited by company disclosure on several relevant environmental parameters	Applies to corporate assets (equities and bonds), potentially extended to sovereign. Quantifying companies' alignment with the ongoing energy and ecological transition, based on publicly	Asset, company and portfolio level.

WWF Global Goals and available tools	Pros	Cons	Available resources and methodologies coverage (corporate applicability)	Level of assessment
Consult and Quantis)		- Companies' performance is compared to market average rather than alignment with sustainability targets.	available information. It does not incorporate sustainability targets, such as planetary boundaries, as a parameter.	

5. A Conceptual Framework for Aligning Portfolios for One Planet

Based on targets and definitions for science-based sustainability, and tools for assessing financial portfolios against such targets, a Conceptual Framework is proposed to support financial institutions in Aligning Portfolios for One Planet.

WHAT does this framework recommend?

The purpose of this Conceptual Framework is to identify:

(i) according to which environmental indicators and corresponding targets financial investments can be considered as "absolutely" sustainable (vs. "relatively", i.e. "more sustainable than…"),

(ii) the existing financial portfolio assessment methodologies and tools that can help evaluate them, and

(iii) the further developments that are needed to complete and implement the Conceptual Framework.

Several targets or indicators as well as assessment tools are already available, in one shape or another, more or less well developed. However, when it comes to systematically monitoring and directing capital to measurably achieve science-based sustainability targets, the toolbox is to a large extent empty. In other words, **however committed an investor or government might be, decision-makers are unable to confidently ensure that the investments they do set them on the right course and at a sufficient pace towards their desired destination.**

This framework outlines what exists today in terms of methodologies to measure whether an investment impacts on the portfolio or on the planet, or both. It remains challenging to determine and define what an absolute science-based target should be for other ecological systems than climate.

Setting a target comes with many challenges, such as: who defines the target? Is data, with required level of granularity, available to set this target? It should also be noted that the growing quantity and complexity of data made available is often not directly used by financial institutions, and that beyond corporate reporting analysis, investors can play a meaningful role by asking the right questions to companies as well as to data providers.

The figure below illustrates the proposed Conceptual Framework for Aligning Portfolios for One Planet (being able to assess financial portfolios' "absolute" environmental performance thanks to science-based sustainability targets) with respect to existing methodology, enabling evaluation of:

- Environmental **impacts on financial portfolios**: risk assessment methodologies (a non-exhaustive list is provided on a range of environmental subsystems);

- **Financial portfolios' impacts on the planet or the environment**[17]: today, mainly "relative" assessment methodologies to assess "contributions" or "reductions" are available, as illustrated below. Only the SBTi[18] and PACTA allows performance assessment in relation to science-based scenarios, on Climate Change.

This global picture showcases the different levels of assessment of the panel of analyzed methodologies and tools: environmental impacts on financial portfolios, relative and absolute assessment of portfolios' impact on the planet.

Regarding climate change, whether it measures a company's or portfolio's impact on the planet, PACTA is currently the only online, free of charge tool enabling an absolute assessment, as it "allows investors to see the gap between their existing portfolio and Below 2 Degrees Scenario (B2DS)". An "absolute" target setting tool exists for companies (SBTi), but a target setting tool for investors does not exist yet.[19]

On the other hand, this figure shows that several methodologies are currently available to measure relative assessments and take action today on many environmental issues. It is necessary to point out that even if absolute targets are not available today on several issues, other tools enable to act in the meantime.

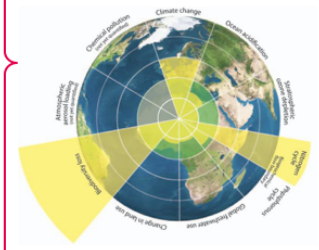
[17] This two-fold impact is referred to as "double materiality" in the European Commission's "Guidelines on non-financial reporting: Supplement on reporting climate-related information" (2019)
[18] NB that SBTi is not primarily to be used for assessing financial portfolios, but for setting targets, which in turn can be assessed.
[19] The project Science-Based Targets for Financial Institutions is planned to provide the first methodologies in 2020.

RISK: measuring potential impact on the asset / company / portfolio → **RELATIVE PERFORMANCE**: measuring impact on the Planet, in comparison with peers, at sector level… → **ABSOLUTE PERFORMANCE**: measuring impact on the Planet, with respect to its physical limits

Environmental issues (unit)	Methodologies	A	C	P	Methodologies	A	C	P	Methodologies	A	C	P
Climate Change ($kgCO_2$-eq)	Shades of Climate Risk (CICERO)	■	■		Carbon Impact Analytics (Mirova, C4)	■	■	■	PACTA (2°C Investing Initiative)	■		■
	Climate Value-at-Risk (Carbon Delta)	■	■		Energy transition alignment (TRUCOST)		■	■	Science-Based Targets (SBTi)		■	
	Climetrics (CDP, ISS)		■	■	NEC ** (Sycomore AM, Icare, Quantis)	■	■	■	ISO 14097 reporting standard ***			■
					Climetrics (CDP, ISS)		■	■				
Water Use (km^3 withdrawn)	Water Risk Filter (WWF)	■	■		NEC ** (Sycomore AM, Icare, Quantis)	■	■	■				
	Water Risk Monetizer (TRUCOST)	■	■									
	Water Risk Valuation Tool (NCFA)	■										
Land Use (km^2 of converted land)	Global Forest Watch (WRI)	■			SCRIPT (Global Canopy)	■	■					
Terrestrial Biodiversity (MSA)*	ENCORE (NCFA)	[sector-level]			Global Biodiversity Score (CDC)	■	■					
Aquatic Biodiversity (MSA)*					Planet Tracker, Fish Tracker (Inv. Watch)		■					
					Global Biodiversity Score (CDC)	■	■					
…												

Need for further scientific frameworks and "absolute" methodologies to be developed

Objective: ensure alignment with the planet's physical limits



* MSA: Mean Species Abundance of original species
** NEC: Net Environmental Contribution
*** ISO 14097 standard will be available from 2021

Level of assessment: **A**: Asset-level, **C**: Corporate-level, **P**: Portfolio-level

Figure 9: AP1P Conceptual Framework – opportunities for assessing financial portfolios or companies' sustainability relative and absolute performance, in relation to key environmental issues

How can the Conceptual Framework and related tools be used?

In order for effectively shifting capital from unsustainable to sustainable activities and assets, a wide spectrum of information, data and environmental knowledge must be utilized and an absolute performance assessment will determine a given investment or portfolio's contribution – positive or negative – in relation to a science-based target (e.g. "safe operating space" vs. "at risk" trajectories", leading to exceed sustainability thresholds).

Different approaches can be envisioned to quantify absolute sustainability performance. For instance, a multi-tier decision tree can allow one to define logical steps to manage the complexity and applicability to diverse markets, regulations, portfolios, sectors, and companies. The assessments of financial portfolios and their results should enable indication of the transition from a current (unsustainable) state to a future desired (sustainable) position. The figure below illustrates how a decision tree can be based on based on both qualitative and quantitative information, and lead to an environmental score enabling decision-making.

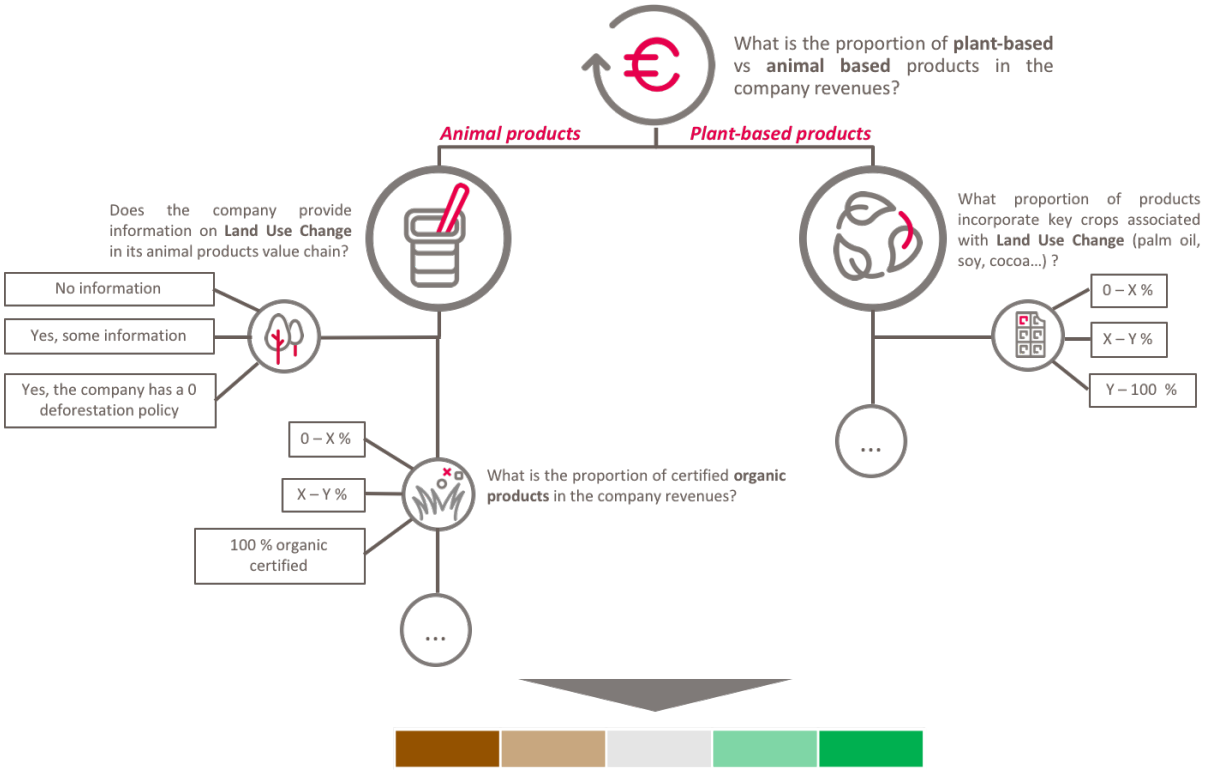
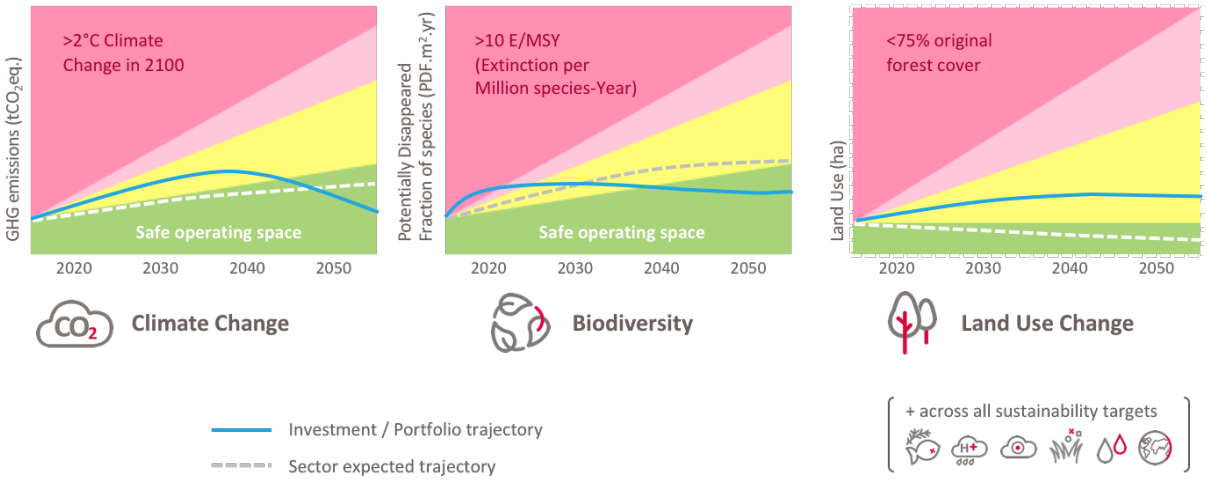


Figure 10: Example of multi-tier decision tree: evaluation of key parameters, leading to an environmental score, for the Food and Beverage sector

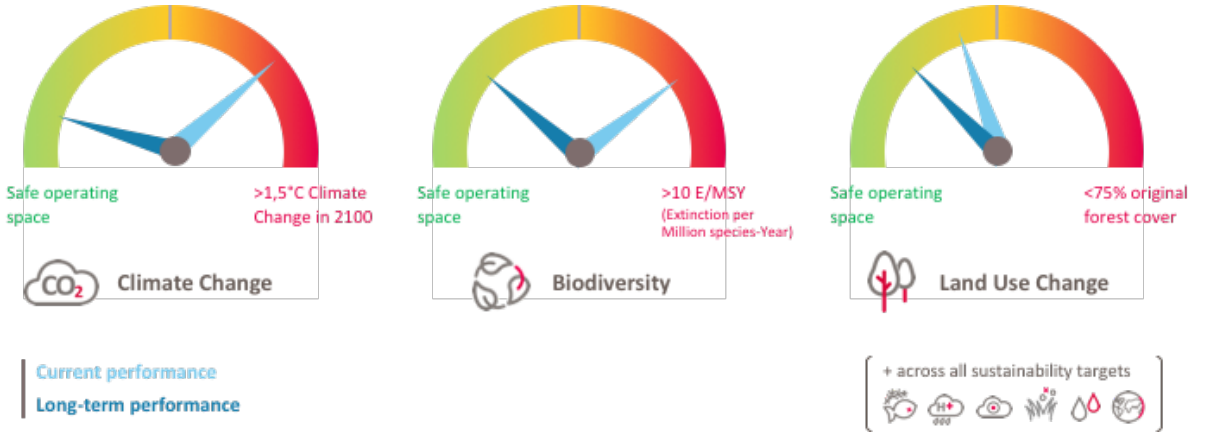
To capture how an absolute sustainability performance can be indicated, several types of representations can be potentially envisioned, for instance[20]:

[20] Trajectories and Dashboard are examples of possible future representations of "absolute" sustainability performance.

"Trajectories": a temporal representation would enable one to visualize the expected evolution of environmental impacts, and to determine if and when such an investment could be considered as "sustainable":



"Dashboard": investment decision-making can be facilitated by a summary representation of the current and expected environmental performance. Indeed, given the diversity of environmental issues to take into account, such a framework will necessarily include multiple tools, tailored for different targets and purposes. Hence, it will produce a range of different outputs, which could not be aggregated into one single metric. According to this information, each investor may set specific internal investment rules:



Such a detailed and exhaustive analysis of portfolios' alignment with sustainability targets would however require substantial scientific, methodological and data development.

In the short-term, many limitations can indeed be identified, and require methodological adaptations to obtain first results:

Identified limitations	Potential adaptation of the framework
Environmental issues coverage: some targets in the SDGs and Planetary Boundaries frameworks are not yet completely defined (e.g. Chemical Pollution)	Limit the analysis to environmental indicators that are relevant for the assessed activities / sectors, that are methodologically mature or that can be evaluated through other existing methodologies - even though not "absolute" ones (e.g. existing policies and regulations setting pollution thresholds for Chemical Pollution)
Data availability and granularity: for instance, most environmental issues need to be assessed at local scale (e.g. Freshwater Use, Biochemical Flows, Biodiversity, Land Use...)	Rely on a coarser model, based on global data
Company data availability: information directly reported by companies may not be sufficient to evaluate their current environmental performance, across all analyzed indicators	Define a classification of activities, products, etc. and search for complementary sources of data such as industry associations and satellite imaging, in order to evaluate the company's performance on the basis of the global contributions of each type of activity. For a long-term adaptation it is certain that there is a need develop methodologies that are not dependent of corporate reporting
Company future performance: a long-term strategy may have not been defined by the company over all relevant environmental indicators	Limit the analysis to the company's current environmental performance
Defining the fair share: several ways of assessing the emission or consumption "budget" for a company exist (see Figure 11 below). However, defining which fair share should be applied to a given company or activity can raise ethical and political questions, that go beyond the scope of the present conceptual framework.	Determining what should be the possible approach(es) to define the fair share remains an open topic.

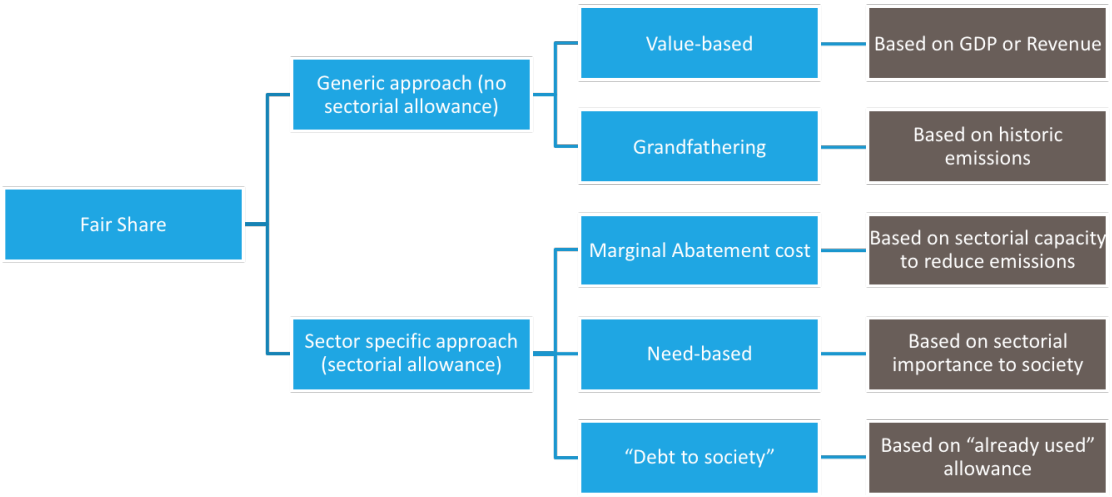


Figure 11: Possible "fair share" approaches

Given these potential limitations to set a global framework, a first possible assessment could be based on the company/portfolio's profile in terms of activities (rather than primary company data), and provide an evaluation on a limited range of indicators.

WHO should use this framework?

The framework is developed to enable financial institutions and regulators to assess their contribution to the systemic transition that is needed. Hence, to achieve "truly" sustainable investment decisions, financial institutions should be equipped with a comprehensive "environmental performance toolbox" to evaluate corporations or assets performance, according to a range of relevant sustainability indicators. Given the often long-term horizons provided by science-based sustainability targets (e.g. 2030 or 2050), asset owners with long-term liabilities have a key role in driving demand for data and tools related to portfolio alignment. Financial regulators and supervisory agencies play an equally instrumental role to require and facilitate such developments. Furthermore, service providers have an instrumental role to play in providing decision-useful information that integrate companies' contribution to sustainability targets.

Evidently, also companies may find guidance in this framework for their reporting to the market, but financial institutions must look beyond corporate reporting only for data to inform their decision-making.

HOW to promote this approach?

The notion of "portfolio alignment" translates the idea that environmental sustainability is essential to financial long-term stability. Indeed, aligning with "science-based" sustainability targets implies respecting limits beyond which irreversible damages occur on the environment, natural resources, etc. Therefore, ensuring portfolio alignment is about ensuring the sustainability of economic activities and minimizing environmental risks on financial investments. To bring stability into finance, both regulatory and voluntary action are needed, in order to set and standardize methodologies aligned with science-based sustainability targets.

Stakeholders that have been identified as potential future users of this framework may not be familiar with the science behind all environmental issues that should be considered for portfolios alignment. Indicators or "science-based" sustainability targets we want to promote should therefore be in line with a language that can be understood by any stakeholder, from the science community to the finance industry.

As a way to do so, presenting the portfolio alignment concept as a mean to ensure alignment with SDGs can be an effective way to make our ambition understandable and appropriate to the different stakeholders at the outset. In the longer term, the targets we consider as the foundation of financial investments "aligned for one planet" should directly relate to the most recent and consensus-based targets set by environmental science and international community: Sustainable Development Goals, Global Commons hubs, etc.

6. Recommendations for WWF, key stakeholders and further research

In the perspective of developing such a framework, the main methodological gaps that remain, and that were identified in this study are:

- While there are several metrics and tools for assessing historic financial risks in relative terms, methodologies enabling corporate evaluation according to absolute, forward-looking science-based sustainability targets, e.g. the concept of Planetary Boundaries, is lacking for several environmental priorities – in other words, financial institutions as well as regulators are still unable to quantitatively assess to what extent companies and financial portfolios contribute (or not) to sustainability.
- Additional methodologies, covering other environmental issues than Climate Change, to assess financial portfolios forward-looking contribution are still needed to be developed
- For operationalization within WWF, a framework enabling translation between key target frameworks like SDGs and Planetary Boundaries indicators, and the WWF Global Goals is needed.

Such methodological developments would allow investors to assess companies' environmental performance with respect to "truly sustainable" goals.

In the long term, a comprehensive portfolio assessment framework must enable decision-making that integrate the conditions of the environmental systems which provide the foundations for economic and societal stability. To that end, all strengths are needed and even small steps are key. This is why involving various key stakeholders is a necessity:

- Academics and scientific community: develop and refine a comprehensive "science-based" targets framework. The scientific community has already understood the need to set common targets beyond climate change, and this work is clearly needed to shape the future of sustainable finance.
  In particular, WWF supports the ambition of the SBT Network to reach this objective.

- Financial institutions: help develop, test and ultimately integrate such framework in their daily activities. Several groundbreaking initiatives are already evolving, such as development of scenario analysis to enable forward looking risk assessments. This work can serve as a vital basis for extending the risk analysis also to a contribution of companies and financial portfolios contribution to sustainability targets.

- Certification bodies, rating agencies, data providers and other third parties: relying on current existing certifications (e.g. RSPO, FSC, MSC…) is an immediate first step that

helps transforming investment practices, however not sufficient to meet the "alignment" objective. Hence it is necessary to work with such certifications, and on the mid-term to develop robust and harmonized assessment methodologies and tools, data to feed such methodologies, and ensure reliability.

- **Regulators** can promote the portfolio alignment approach by using both their soft and hard power, by requesting financial institutions and actors to start engaging the industry to move in the right direction, and by developing further regulatory requirements e.g. for disclosure that integrate the "limits of the planet" notion. Going in that direction, the launch of an EU Taxonomy has the potential to define activities which can be considered as "transition aligned", if it is further developed into a full taxonomy and not only cover the "green".[21]

Developing such methodologies to provide a comprehensive "science-based" targets framework is a challenging but necessary development. To date, most methodologies referenced in Section 3 "Assessing financial portfolios: existing methodologies, tools and future opportunities" cover limited aspects of portfolios sustainability assessment (either qualitative, relative, or risk assessment). Nevertheless, we strongly recommend to work with such relative performance methodologies as a means towards the development of data and tools which enable the alignment of portfolios with the conditions for well-being within one planet. Indeed, we are running out of time and cannot spend more time before taking concrete action on any of the six WWF Global Goals. It is necessary to both take urgent action on the basis of the existing environmental targets and tools (such as Water Risk Filter, SIGHT…), while actively developing the new generation of these tools, to gradually complete the whole "science-based" targets framework.

In conclusion, the suggested strategic objectives for WWF do drive the AP1P approach next 3-5 years are:

- Creating acceptance for the need for a decision-useful framework
- Build on the existing attention to risk, expand to also assess companies and portfolios contribution to science-based sustainability targets, i.e. to securing long-term stability for the natural systems underpinning economic well-being.
- Initiate and support development of targets and tools, test and provide proof of concept
- Mobilize commitments from financial stakeholder (primarily asset owners and regulators/supervisors)
- Scale up implementation of the framework via the most effective levers, e.g. industry standards, regulation, supervision
- Track impact and shift in the real economy

[21] More information on the EU Sustainable finance webpage: https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance_en

- Use Global Goal achievement (for WWF internally) and SDG achievement (externally for all financial actors) as benchmark for corporate, financial institutions' and policy-makers performance
- Follow the Global Commons' developments, and rely on it to strengthen the potential of the AP1P Conceptual Framework.

As a key driver of the economy of the future, the finance industry needs to be involved in this momentum. In the meantime, it is recognized that there is a need to keep working with current methodologies and approaches, including risk assessment methodologies, not to slow down the shift that is happening in the financial industry.

The following roadmap is proposed to continue in that direction:

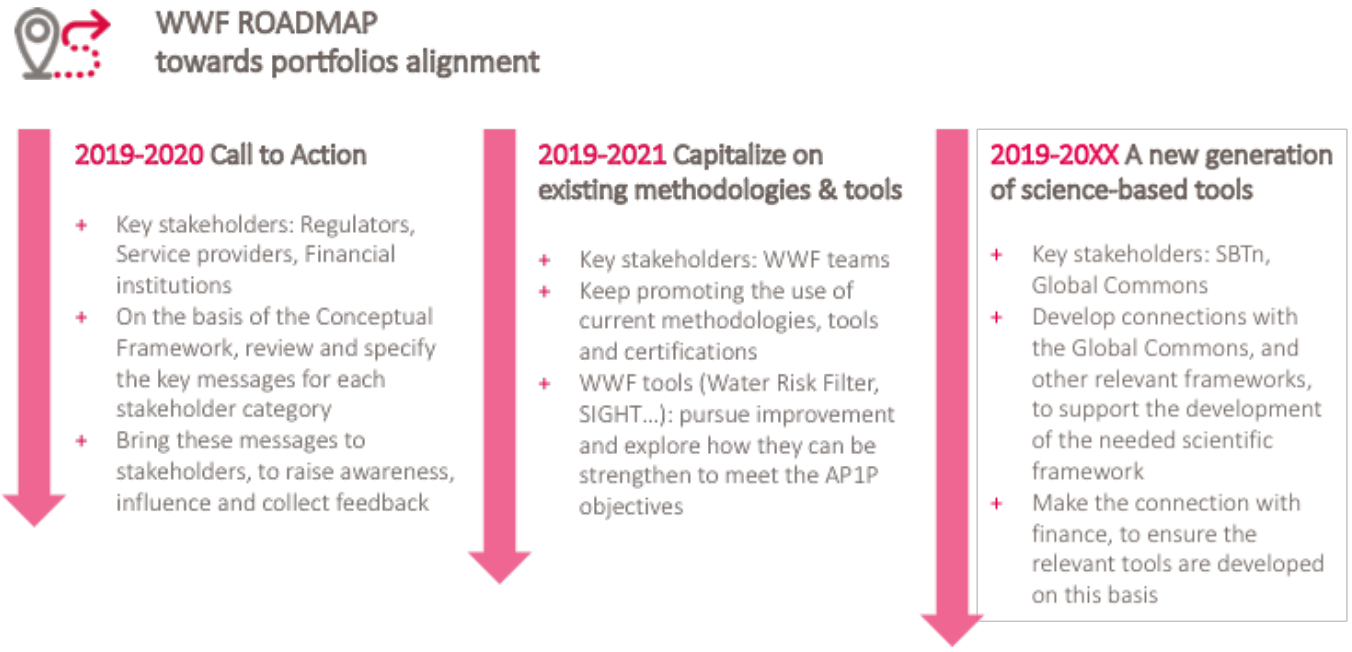


Figure 12: Building a roadmap for the AP1P project next steps

Key messages to promote the AP1P approach

+ All actors in the finance industry are affected by the environmental impacts generated by today's economy, and by the **financial risks** they represent.

+ Assessing financial portfolios' sustainability performance has become a fast-growing field of research. Today's methodologies enable one to **assess investments in a relative way, and based on a limited range of environmental issues** (Climate Change remains the main focus of environmental assessment).

+ However, such approaches usually allow one to determine if company A performs better or worse than company B, but (and with the notable exception of Climate Change) does not inform an investment's "absolute sustainability performance": is it in line with the **limits of the planet**? is a sustainability target "**less bad**", but not "**good enough**"?

  This is how we define "**portfolio alignment**".

+ In the long term, being able to evaluate portfolio alignment is a crucial need. In the mid-term, it is **an opportunity**:
  > for financial institutions, to anticipate and drive that shift,
  > for other actors and third parties (such as certification bodies, rating agencies, data providers, etc.): to provide investors with new and robust methodologies, data and tools,
  > for regulators, to use finance as a lever for action in making the transition to sustainable economies, and to position their market as a sustainable finance leader.

+ In the short term, **action is needed to develop the scientific background** of such assessment methodologies, and to implement them:
  > First, by the scientific community: beyond Climate Change, efforts are being made to develop "science-based" sustainability targets for a broader range of environmental issues, in particular through the Science-Based Targets Network (SBTn). Given that most of Planetary Boundaries are relevant at local scale, a first step should be to gather more local data in order to relate environmental impacts to the local environmental context. WWF supports this ambition, and wishes to draw the benefits of these developments to meet the finance sector's future needs.
  > Then, by the whole finance industry value chain: pursuing efforts with today's tools and approaches (relative evaluation, risk assessment, etc.) immediately helps

informed decision making as regards sustainability. To ensure the necessary reallocation of capital from unsustainable to sustainable activities, these methodologies will need to evolve to drive the alignment of portfolios with one-planet conditions. Meaning, at first, to test new approaches (in terms of portfolio assessment, data production, reporting, etc.) step-by-step and in a flexible way, to progressively encompass not only 'green' funds, but also the entire capital controlled by major and more conventional financial institutions.

+ This need for developments should not be taken as a reason, for all stakeholders, to not take any possible urgent action on any environmental issue. Time is of the essence, and while a portfolio alignment framework is still largely incomplete, there are already significant best practices to mitigate negative impacts and maximize positive impacts.

7. Appendix

7.1. Scientific literature references

This section references relevant scientific literatures that were reviewed for the conceptual framework drafting.

Rockström, "Planetary Boundaries: Exploring the Safe Operating Space for Humanity," *Ecology & Society,* vol. 14, no. 33, 2009.

Å. P. F. M. L. P. S. C. J. R. Björn Nykvist, "National Environmental Performance on Planetary Boundaries: A study for the Swedish Environmental Protection Agency," SWEDISH ENVIRONMENTAL PROTECTION AGENCY, 2013.

A. Bjørn, "Better, but good enough? Indicators for absolute environmental sustainability in a life cycle perspective," 2015.

Oscar Sabag Muñoz, Eva Gladek, Metabolic, "ONE PLANET APPROACHES Methodology Mapping and Pathways Forward," April 2017.

G. Doka, "Combining life cycle inventory results with planetary boundaries: The Planetary Boundary Allowance impact assessment method Update PBA'06," 2016.

W. Steffen, "Planetary boundaries: Guiding human development on a changing planet," *Science,* vol. 347, no. 12, pp. 736-748, 13 February 2015.

D. Gerten, "Towards a revised planetary boundary for consumptive freshwater use: role of environmental flow requirements," *Current opinion in environmental sustainability,* pp. 551-558, 2013.

Hoekstra, "Global Monthly Water Scarcity: Blue Water Footprints versus Blue Water Availability," *Plos One,* 2012.

C. Liu, "Past and future trends in grey water footprints of anthropogenic nitrogen and phosphorus inputs to major world rivers," *Ecological Indicators,* vol. 18, pp. 42-49, 2012.

M. Springmann, "Options for keeping the food system within environmental limits," *Nature,* 2018.

M. M. Mekonnen, "Global gray water footprint and water pollution levels related to anthropogenic Nitrogen Loads to Fresh Water," *Environmental Science and technology,* vol. 49, pp. 12860-12868, 2015.

FAO, "Food and Agriculture Organization of the United Nations," [Online]. Available: http://www.fao.org/home/en/.

7.2. Assessment methodologies reviewed

This section references the different targets, tools, databases and methodologies reviewed for the AP1P project. A more detailed description of different tools and methodologies is available in the AP1P scoping study document.

SCRIPT Portfolio risk tool (Global Canopy)

Authors: Global Canopy
Link: https://www.script.finance/wp-content/uploads/2018/03/PORTFOLIO-RISK-TOOL.pdf.

Global Forest Watch

Authors: World Resource institute
Link: https://www.wri.org/our-work/topics/forests.

ENCORE (Exploring Natural Capital Opportunities, Risks and Exposure)

Authors: Natural Capital Finance Alliance
Link: https://encore.naturalcapital.finance/.

WWF Sight

Authors: World Wide Fund for Nature
Link: http://wwf-sight.org/.

The Global Map of Environmental & Social Risk in Agro-commodity Production (GMAP)

Authors: International Finance Corporation
Link: https://gmaptool.org/

The Fish Tracker (Investor Watch)

Authors: The Fish Tracker Initiative
Link: http://fish-tracker.org/

Shades of Climate Risk (Center for International Climate Research)

Authors: CICERO (Center for International Climate Research)
Link: https://www.cicero.oslo.no/en/climateriskreport

Carbon Impact Analytics

Authors: Mirova, Carbone 4
Link: http://www.carbone4.com/wp-content/uploads/2016/08/CarbonImpactAnalytics.pdf

Carbon Delta

Authors: Carbon Delta

Link: https://www.carbon-delta.com/

Climetrics

Authors: ISS, CDP

Link: https://www.climetrics-rating.org/

SBT Initiative

Authors: Carbon Delta

Link: https://sciencebasedtargets.org/

ISO 14097 reporting standard

Authors: ISO Standard, AFNOR for 2°C investing initiative

Link: https://2degrees-investing.org/iso-standard-for-investment-financing-and-climate-change-iso-14097/

Paris Agreement Capital Transition Assessment tool (2°C Investing Initiative)

Authors: 2°C Investing Initiative (as part of the Sustainable Energy Investing Metrics project)

Link: https://2degrees-investing.org/pacta/

Energy transition alignment (Trucost)

Authors: Trucost

Link: https://www.trucost.com/publication/carbon-energy-transition-metrics/.

Climetrics (The Climate Rating for Funds)

Authors: The Climate Rating for Funds

Link: https://www.climetrics-rating.org/methodology.

Net Environmental Contribution (Sycomore Asset Management)

Authors: Sycomore Asset Management

Link:https://en.sycomore-am.com/files/R/E/5a452894-RESPONSIBLE_WAY_by_Sycomore_AM_N_7.pdf

Water Risk Monetizer

Authors: Trucost

Link: https://www.trucost.com/publication/risk-assessment-tool-helps-enhance-sustainability-and-business-growth-by-determining-the-financial-value-of-water/

Water Risk Filter

Authors: World Wide Fund for Nature

Link: http://waterriskfilter.panda.org/

Water Risk Valuation Tool

Authors: Natural Capital Finance Alliance

Link: https://naturalcapital.finance/water-risk-valuation-tool-case-study/

Aqueduct

Authors: World Resource Institute

Link: https://www.wri.org/our-work/project/aqueduct/

IRIS impacting metrics

Authors: Global Impact Investing Network

Link: https://iris.thegiin.org/metrics

Investing in a time of climate change, Mercer

Authors: Mercer

Link:https://www.mercer.com/content/dam/mercer/attachments/global/investments/mercer-climate-change-report-2015.pdf

Task Force on Climate-Related Financial Disclosures (TCFD), Final Report: Recommendations of the Task Force on Climate-related Financial Disclosures, June 2017

Authors: Task Force on Climate-Related Disclosures

Link: https://www.fsb-tcfd.org/publications/final-recommendations-report/#

The Portfolio Decarbonization Coalition

Authors: Portfolio Decarbonization Coalition

Link: http://unepfi.org/pdc/resources-2/

EC Blue Economy Finance

Authors: European Commission – WWF

Link: https://ec.europa.eu/maritimeaffairs/policy/sea_basins/arctic_ocean_en

C. J. Vörösmarty,1,2 et al. "Scientifically assess impacts of sustainable investments", 2018

Authors: Vörösmarty

Link: Vorosmarty_et_al_2018_Science Copy.pdf

Financing a sustainable European economy

Authors: EU High-Level Expert Group on Sustainable Finance

Link: https://ec.europa.eu/info/sites/info/files/180131-sustainable-finance-final-report_en.pdf

Natural Capital at Risk: The Top 100 Externalities of Business

Authors: Trucost

Link: https://www.trucost.com/publication/natural-capital-risk-top-100-externalities-business/