

NGFS

Note on the dashboard on scaling up green finance and data gaps

Technical document

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According to its mandate, the NGFS WS3 sub-group on market dynamics focuses on monitoring conditions in the banking, capital markets, and institutional investment segments of financial markets. It further examines the market infrastructure and key factors supporting the development of green finance as well as green financial innovation at a more general level, which are less explored by existing analyses. The sub-group approached the task of measuring progress in green finance using a dashboard based on a set of ideal indicators that make it possible to track and understand the greening of national financial systems. This publication consists of two groups of indicators: one group for which data are readily available, the dashboard; and a second group of indicators that are considered desirable but for which data are not yet available, the data gaps.

The dashboard visualises the indicators that are currently available. Possible sources of data were identified, at least partially, for 21 indicators. This publication should not be regarded as the final word on the indicators deemed relevant for monitoring the scaling-up of green finance. Rather, it is a first attempt to catalogue desirable series that allow the evolution of a phenomenon to be analysed over time (rather than its absolute level). Furthermore, while the dashboard is presented at an aggregate level, it is intended for use at the jurisdictional level. To this end, the metadata describe the country coverage and provide sources where these data and further breakdowns can be found.

The data gaps relate to “must-have” indicators for which sources have not yet been identified. This is the case for nine additional indicators. The present note begins by summarising the developments currently shown by the data. It then discusses strategies for identifying data sources targeted in particular at external stakeholders – i.e. it formulates key takeaways for potential further work within and outside the NGFS. The note concludes by looking from a more technical perspective at the data gaps identified while the dashboard was under development, including the drawbacks of some of the indicators included therein.

This note follows the structure of the dashboard and breaks the data gaps down into six categories (see the dashboard overview in the Annex):

- *real economy*, assessing the impact of green finance developments on the real economy;
- *reporting*, evaluating transparency in relation to the environment and sustainability;
- *risk*, identifying and managing climate-related financial transition and physical risks;
- *mobilisation*, measuring capital flows that provide opportunities for greening the economy;
- *regulation*, describing the state of national and regional regulation on green finance; and
- *global initiatives*, mapping the adoption of commitments and voluntary principles.

1. Summary of indicator developments¹

Real economy

- In absolute terms, global ¹*carbon emissions* have more than doubled since the 1970s. On the other hand, the intensity, measured as CO₂ emissions per US\$ of GDP, has decreased by 50% over the same period.
- To reduce carbon emissions, 58 ²*carbon pricing initiatives* have been implemented since 1990. These initiatives cover 45 national and 33 sub-national jurisdictions, and 16% of global emissions as of 2020. The single largest scheme, the EU Emissions Trading System, contributes one-quarter to that total.
- ³*Renewable energy consumption* shows mixed regional trends worldwide over the past 25 years. While its share increased in Europe & Central Asia and North America, it decreased particularly in East Asia & Pacific, Middle East & North Africa and South Asia.

¹ Note that the individual indicators are written in italics and numbered within each category by a preceding superscript.

- ⁴*Environmentally related tax revenue* increased from US\$400 billion in 1994 to over US\$1 trillion annually since 2010, with marked variations between regions and countries in terms of the percentage of total tax revenue or GDP.
- As to ⁵*fossil fuel subsidies*, the data indicate a decrease in the second decade of the century, albeit with some volatility. Subsidies with respect to oil and natural gas accounted for roughly two-thirds of the total. At an individual country level in 2019, subsidy rates can be as high as almost 100% and make up almost one-fifth of GDP.
- At the same time, ⁶*environmentally motivated subsidies* have increased steadily since the 1990s, mostly through grants. However, these aggregates cannot be meaningfully enriched with the above information on environmentally harmful subsidies since the two databases do not contain the same countries.
- ⁷*National expenditure on environmental protection* in the euro area, on the other hand, increased between 2004 and 2017. Note, however, that the database appears to be incomplete for most of these years.
- ²*Net forest depletion* as a percentage of GNI is not significant in nearly all the regions, though at an aggregate level, not necessarily the country level. Data for Sub-Saharan Africa, however, show that the harvest rate is increasingly exceeding the rate of natural growth, albeit with strong fluctuations.
- An increasing trend is observable in ³*economic losses from climate-related extremes*. While the monetary values are extremely volatile, the number of global disasters is clearly pointing upwards.
- Data on the trajectory of ⁴*vulnerability to climate change and readiness to improve resilience* indicate that overall readiness to improve resilience increased between 1995 and 2018. Despite this positive development, the regions that rank among those most vulnerable to climate change are still the least ready, e.g. South Asia and Sub-Saharan Africa.

Reporting

- Non-financial reporting has become increasingly commonplace in recent years. As a result, the number of ¹*companies and other organisations committed to supporting the Task Force on Climate-related Financial Disclosures (TCFD)* has reached over 1,600 globally, including 1,490 companies, of which more than 750 are financial institutions.
- In 2020, ²*TCFD-aligned market capitalisation and total assets* (of financial institutions) amounted to US\$15 trillion and US\$155 trillion, respectively.
- The ¹*total volume of green bonds issued* since inception of the market in 2007 surpassed the €900 billion mark in 2020, with one-quarter of this amount being issued in 2019 and again in 2020. As at end-2020, green bonds worth €760 billion were outstanding.
- An issuer breakdown of green bonds shows that issuance by ²*governments and supnationals* exceeds that by ³*financial institutions* and ⁴*utilities and power generation companies*, although other non-financial corporations (included in the total) have caught up recently as well. While Europe dominates the issuance of green bonds among all issuer segments, this is particularly pronounced for government bonds. Especially financial institutions in Asia and utilities and power generation companies (and other non-financial corporations) in North America account for a large share of global green bond issuance.

Risk

- ¹*Natural resources rents* as a percentage of GDP have been highly volatile since the 1970s, partly on account of the mechanical effect of swings in global oil prices. In the Middle East & North Africa, in particular, the total is dominated by fossil fuel (mostly oil) rents.
- Against the backdrop of the COVID-19 pandemic, the ⁵*volume of social bonds issued* reached €140 billion in 2020; this is more than three times total issuance in the years up to 2019. European government bonds were mainly behind this development. Outstanding social bonds amounted to €173 billion at the end of 2020.

- Overall, ⁶*total global climate finance flows* increased steadily between 2013-14 and 2017-18, rising by approximately US\$100 billion on a biennial average. Splitting this into private and public actors reveals that every dollar of public money mobilises more than one dollar of private capital.

Regulation

- The number of ¹*responsible investment-related policy instruments*, as identified by the PRI Association across 84 economies, increased strongly between 2002 and 2020. Up until 2002, fewer than 100 instruments had been introduced to support, encourage or require investors to consider long-term value drivers. By 2020, this number had increased to more than 550. Roughly two-thirds of the total can be attributed to Europe, where the number of instruments has increased more than nine-fold since 2002.

Global initiatives

- The number of ¹*Principles for Responsible Investment signatories* has increased steadily since their launch in 2006. By 2020, more than 3,000 financial institutions with over US\$100 trillion in assets under management from 80 different countries had signed the PRI. Other voluntary principles financial institutions have adopted include the Equator Principles, the Principles for Responsible Banking, the Principles for Sustainable Insurance, the Net-Zero Asset Owner Alliance, Climate Action 100+ and the Poseidon Principles.

In summary, many indicators show that being more environmentally friendly is a growing trend. Yet for all these welcome developments, green finance still has a great deal of upside potential.

2. Key takeaways for potential further work

Closing the data gaps outlined in this note might call for a long-term approach. The lack of statistics concerns a wide range of very different information systems. It may be the case that national financial regulators (central banks and supervisors), standard-setting bodies or international organisations are best prepared to tackle the challenges that lie ahead of us. Since potential initiatives to close the data gaps and remedy the constraints outlined in this note would be very topic-specific, only a more general discussion and suggestions are provided.

Regarding the limitations in the *Real economy* and, to some extent, *Risk* categories, one approach might be to expand the existing statistical frameworks, including their gradual implementation in further jurisdictions. Developing experimental estimates and data collection exercises with a view to producing otherwise unavailable indicators might be considered a supplementary course of action. Beyond country coverage, challenges in this domain include the timeliness, frequency, and breakdown of results as well as the scope of estimates.

For the indicators unavailable in the *Reporting*, *Risk*, and to some extent, *Mobilisation* categories, in particular those concerned with (total assets of) financial institutions, surveys could be conducted e.g. by supervisors. Questions directly addressing the missing information could be used to fill these gaps. Alternatively, additions to non-financial reporting requirements could be pushed for, e.g. for bank loans. In general, this should be pursued in a way that avoids overburdening emerging market economies and developing countries in particular, in an effort to preserve a level playing field. The same holds true for the outstanding issues mentioned in the *Regulation* and *Global (local) initiatives* categories, though the addressees would be different, e.g. central banks and governments.

As to some of the indicators in the *Risk* and, in particular, *Mobilisation* categories, relying (more) on commercial data providers should be considered a viable option, at least in the short to medium term. For example, with respect to the materialisation of physical risk in the case of non-financial assets and the mobilisation of capital in the form of green bonds, commercial sources have a rich body

of granular and timely information which is also used heavily in the financial industry. Data on market capitalisation and total assets could also be used to supplement the indicators in the *Reporting* and *Global initiatives* categories. On the other hand, this information might be available directly from these sources, even if it is not made public.

An extensive review is currently underway in the new transversal workstream on bridging the data gaps.

Their mandate includes identifying data items, sources and limitations as well as data gaps. In the course of their work, some of the issues addressed here could be considered and moved ahead – with the eventual aim of external stakeholders bridging the data gaps. To this end, it will further be necessary to make databases fit for purpose, particularly those at international organisations. They would also be best equipped to take up the development of an interactive, living and breathing dashboard. Together with the NGFS, particularly the data gaps workstream, and national authorities, further work is encouraged. Ways of making more data available and accessible need to be developed – most importantly for the data gaps identified here.

3. Data gaps identified by the NGFS²

Real economy

Comparable data across jurisdictions on ¹carbon emissions are available for CO₂ emissions only. The other greenhouse gases covered by the Kyoto Protocol (CH₄, N₂O, HFCs, PFCs, SF₆, and NF₃) are not reported to the same extent. The prices of different ²carbon pricing initiatives and in different years are not necessarily comparable. There are differences in the number of sectors covered and allocation methods applied, specific exemptions, and different compensation methods. The timeliness of ³renewable energy consumption is somewhat limited, the latest observation available being for the year 2015. Most of the summary statistics on ⁴environmentally related tax revenue are flagged as estimated values and/or incomplete data. The database on ⁵fossil fuel subsidies covers only 42 countries. The database on ⁶environmentally motivated subsidies covers just 29 selected

countries, of which 27 are OECD members, and appears to be incomplete, in particular at the current end but also at the beginning. In addition, these aggregates cannot be usefully complemented with information on environmentally harmful subsidies since the two databases do not contain the same countries. The database on ⁷national expenditure on environmental protection covers 27 countries (all OECD members), of which 17 are euro area Member States, and observations are in national currency. Moreover, the source appears to be incomplete, except for the years 2014 to 2017.

Reporting

The number of ¹companies and other organisations committed to supporting TCFD does not match those with TCFD-aligned reporting. While the information on supporters is readily available, disclosures and reporting are not systematically collected. In addition, it was not possible to obtain data on ²TCFD-aligned market capitalisation and total assets (of financial institutions) as a consistent time series at this juncture. This indicator is reported at irregular intervals from status reports and press releases.

Two further indicators were highlighted as a data gap. First, the ³total assets of financial institutions reporting on (their strategy for achieving) alignment of their portfolio with the Paris Agreement. This should be further classified into e.g. ^{3.1}banks, ^{3.2}asset managers and asset owners, and ^{3.3}insurers. Looking forward, alignment with the Sustainable Development Goals may become the next stage of expansion. Second, the ⁴total assets of asset managers reporting on shareholder engagement on climate issues and proxy voting. Likewise, this indicator could be extended to cover the full environmental domain or even ESG aspects in the future.

Risk

A partial assessment of an economy's transition risk can be made using ¹natural resources rents. However, this indicator does not include industries more exposed to the transition process to a low-carbon economy; by the same token, non-fossil fuel rents do not necessarily constitute a transition risk. There is a need to further evaluate emissions-based measures to assess transition risk, e.g. of vulnerable sectors. Thus, ²net forest depletion is included as an additional indicator to the one on rents. Specific attention is paid to deforestation

² An overview of the full dashboard including the data gaps can be found in the Annex.

as a nature-related measure, connected with climate and biodiversity implications. On the physical risk side, ³*economic losses from climate-related extremes* show the impact of natural disasters. The semi-public source, however, appears to be incomplete, in particular regarding insured losses, and unbalanced in coverage; most importantly, estimates for damage are missing. The question is whether commercial sources would allow for a more targeted analysis and whether aggregate information can be made publicly available. The trajectory of ⁴*vulnerability to climate change and readiness to improve resilience* has been selected as a further measure of risk. This is a composite index that claims to reduce complex relationships to a supposedly simple measure, although raw data and scores are readily available for all sub-indices, and the index methodology is documented in a technical report.

Data gaps identified in this category concern two indicators. First, ⁵*total assets of financial institutions that have established a governance structure with board accountability on green finance*. This indicator needs to be broken down further into e.g. ^{5.1}*banks*, ^{5.2}*asset managers*, and ^{5.3}*asset owners*. Second, ⁶*total assets of financial institutions that have processes in place to filter, evaluate, condition, or reject clients and projects based on climate criteria*. The classification here should be the same, i.e. ^{6.1}*banks*, ^{6.2}*asset managers*, and ^{6.3}*asset owners*. Both of these data gaps could be expanded to include ESG issues once this information becomes available.

Mobilisation

The ¹*total volumes of green bonds issued and maturing*, by ²*governments and supranationals*, by ³*financial institutions*, and by ⁴*utilities and power generation companies* are derived from granular, i.e. bond-level, information using Bloomberg. Publication of these data is based on an agreement with the commercial provider for selected aggregates. Bloomberg tags bonds with a green label when an issuer self-labels its bond as green, or identifies it as a bond issue geared towards environmental sustainability. This labelling is not perfectly aligned with the Green Bond Principles of the International Capital Market Association. As to the ⁵*volumes of social bonds issued and maturing*, this category gained importance in 2020 due to some capital being shifted from green to social bonds against the backdrop of the COVID-19 pandemic. Focusing only on the green bonds market would have been misleading. Additionally, ⁶*total global climate finance flows* are published by the Climate Policy Initiative (an independent, not-for-profit

organisation). Despite recent improvements in data coverage, gaps and methodological limitations still persist.

On the other hand, there are several data gaps in this category. First, ⁷*total assets of financial institutions that have set a public net-zero pathway*. The classification for this indicator would be e.g. ^{7.1}*banks*, ^{7.2}*asset managers*, and ^{7.3}*pension funds*. Second, ⁸*green sovereign debt* was requested. Third, ⁹*green bank loans* – broken down by *performing* and *non-performing* – were called for. Fourth, the lack of information on ¹⁰*market capitalisation of green equity and fixed income indices* was highlighted. Fifth, sources appear to be limited for ¹¹*total assets of green funds*.

Regulation

¹*Responsible investment-related policy instruments*, as identified by the PRI Association across the world's 50 largest economies, shows the number of regulations that support, encourage or require investors to consider long-term value drivers.

Further considerations that came up in the review process of the dashboard include the number of jurisdictions that have a green (or sustainable) finance strategy, green taxonomy initiatives, a green bond standard, and a green monetary policy. A repository of such binary indicators is considered helpful information in tracking progress on regulatory activities.

Global initiatives

Financial institutions have adopted voluntary principles other than the ¹*Principles for Responsible Investment*. These include the *Equator Principles*, the *Principles for Responsible Banking*, the *Principles for Sustainable Insurance*, the *Net-Zero Asset Owner Alliance*, *Climate Action 100+*, and the *Poseidon Principles*. While information is readily available on financial institutions that have adopted voluntary principles, it is not possible to obtain the total assets for all principles at this juncture. In addition, some initiatives are rather new, and it is unclear how to include them if there is no history.

One indication of a country's green progress may be closely related to more local initiatives, such as alignment with Nationally Determined Contributions. Therefore, looking forward, it may be useful to consider how this could be captured at the jurisdictional level to complement the initiatives at the global level.

Annex: dashboard and data gaps

Dashboard on scaling up green finance	Real economy (7/7)	<ul style="list-style-type: none"> ¹Carbon emissions ²Carbon pricing initiatives ³Renewable energy consumption ⁴Environmentally related tax revenue ⁵Fossil fuel subsidies ⁶Environmentally motivated subsidies ⁷National expenditure on environmental protection
	Reporting (2/4)	<ul style="list-style-type: none"> ¹Companies and other organisations committed to supporting TCFD ²TCFD-aligned market capitalisation and total assets ³Total assets of financial institutions reporting on (their strategy for achieving) alignment of their portfolio with the Paris Agreement* (^{3.1}banks, ^{3.2}asset managers and asset owners, ^{3.3}insurers) ⁴Total assets of asset managers reporting on shareholder engagement on climate issues and proxy voting*
	Risk (4/6)	<ul style="list-style-type: none"> ¹Natural resources rents ²Net forest depletion ³Economic losses from climate-related extremes ⁴Vulnerability to climate change and readiness to improve resilience ⁵Total assets of financial institutions that have established a governance structure with board accountability on green finance* (^{5.1}banks, ^{5.2}asset managers, ^{5.3}asset owners) ⁶Total assets of financial institutions that have processes in place to filter, evaluate, condition, or reject clients and projects based on climate criteria* (^{6.1}banks, ^{6.2}asset managers, ^{6.3}asset owners)
	Mobilisation (6/11)	<ul style="list-style-type: none"> ¹Volumes of green bonds issued and maturing: Total ²Volumes of green bonds issued and maturing: Governments and supranationals ³Volumes of green bonds issued and maturing: Financial institutions ⁴Volumes of green bonds issued and maturing: Utilities and power generation companies ⁵Volumes of social bonds issued and maturing: Total ⁶Total global climate finance flows ⁷Total assets of financial institutions that have set a public net-zero pathway* (^{7.1}banks, ^{7.2}asset managers, ^{7.3}pension funds) ⁸Green sovereign debt* ⁹Green bank loans* ¹⁰Market capitalisation of green equity and fixed income indices* ¹¹Total assets of green funds*
	Regulation (1/1)	<ul style="list-style-type: none"> ¹Responsible investment-related policy instruments
	Global initiatives (1/1)	<ul style="list-style-type: none"> ¹Principles for Responsible Investment signatories

* Indicator not available as yet.

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