TRAILS FOR CLIMATE DISCLOSURE:
A REGULATORY REVIEW
EXECUTIVE SUMMARY

A growing interest in climate-related transparency in financial markets is driven by three potential policy objectives. These three objectives each imply a different scope in terms of covered entities:

<table>
<thead>
<tr>
<th>Objective</th>
<th>Primary User(s)</th>
<th>Supported Decisions</th>
</tr>
</thead>
<tbody>
<tr>
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This growing interest is reflected in a range of national and international regulatory initiatives examining different FI climate transparency models. Notable examples include France’s pioneering Article 173 reporting requirements and the Financial Stability Board’s Task Force on Climate-Related Financial Disclosures (TCFD). The different transparency options (or a combination of these) can be summarized as follows, in each case with the option of reporting directly to policymakers / regulators or the public:

- **Asset disclosure**: Transparency on the assets of the reporting entity (e.g. power plants for companies, holdings data of FIs);
- **Quantitative KPIs** related to climate risk or ‘climate alignment’
- **Qualitative data** on investment and risk management strategy and actions taken (e.g. buy/sell decisions, proxy voting records).

Role models and pilot initiatives exist for each of these models, and given the early stage, each has important tradeoffs, strengths and weaknesses. The four key measures of success for each model are the materiality of the reporting for the users, the comparability of reporting, the political viability, and the costs (either for the regulator or the reporting entity) (see next page).

Given these tradeoffs, the optimal model is likely country/situation specific. At the same time, some level of international coordination on developing a disclosure / transparency standard will likely facilitate the flow of information across borders.
### SUMMARY OF CHARACTERISTICS OF DIFFERENT FI CLIMATE TRANSPARENCY MODELS

<table>
<thead>
<tr>
<th></th>
<th>Materiality (p. 13)</th>
<th>Comparability (p. 15)</th>
<th>Political Viability (p. 19)</th>
<th>Cost for FIs (p. 17)</th>
<th>Cost for regulators (p. 17)</th>
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<tbody>
<tr>
<td><strong>Holdings reporting to regulator</strong></td>
<td>High (given option for third party actors to run analysis)</td>
<td>High (given existing accounting standards on holdings reporting)</td>
<td>Reporting requirements of this kind exist in most if not all jurisdictions // Some political acceptability questions in the case of regulators disclosure of climate-related KPIs by entity</td>
<td>Limited to no costs, given existing reporting requirements</td>
<td>Depends on scope of regulatory analysis</td>
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<tr>
<td><strong>Holdings reporting to public</strong></td>
<td></td>
<td></td>
<td>Applied in Sweden for public pension funds and USA for insurance companies // Some question marks around FI confidentiality</td>
<td></td>
<td>NB: Data and model costs can be as low as EUR 100,000 pa for an assessment of corporate bonds and listed equity exposure of all regulated entities.</td>
</tr>
<tr>
<td><strong>KPI &amp; qualitative reporting to regulator</strong></td>
<td>Depends on the choice of indicator and comparability</td>
<td>Comparability only ensured if reporting is associated with open-source accounting and reporting standards / guidance on models, model parameters, and data inputs // Non-open source, proprietary standards will create a competitive bias</td>
<td>Medium to high (depends on jurisdiction and scope of reporting)</td>
<td>Medium to High depending on scope of reporting (est. ~EUR 10,000-50,000 for a medium-sized investor)</td>
<td>Resources needed to ‘digest’ reports (potentially higher than internal analysis but depends on scope and consistency of reporting)</td>
</tr>
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<td><strong>KPI &amp; qualitative reporting to public</strong></td>
<td></td>
<td></td>
<td>Low to medium (depends on jurisdiction and scope of reporting) // Many institutional investors have supported regulatory intervention in France</td>
<td></td>
<td>Same as above, although may require additional time to gather and process reports if not reported to regulator directly</td>
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INTRODUCTION

Growing interest in climate transparency. As evidenced by over 400 public climate commitments from financial institutions (NAZCA 2016), the Paris climate agreement has increased interest in how the financial sector can contribute to global climate policy goals. In part due to the Paris Agreement, concern has simultaneously grown over climate-related financial risks. These two developments have collectively led to considerable interest in climate-related financial disclosure, an interest spearheaded by the FSB Task Force on Climate-related Financial Disclosures (TCFD).

Issuer vs. financial institution (FI) climate transparency. Climate-related transparency are most often discussed in the context of issuers (e.g. companies) publicly disclosing material information to their investors. Yet discussions of systemic risk and the need to systematically track financial flows in support of climate goals (Art 2.1(c) of the Paris Agreement) instead require transparency from financial institutions, to either their regulators, their investors/the public, or both. France has led the way on such financial institution climate transparency, with the pioneering public disclosure requirements of the Energy Transition Law Article 173-VI (Treasury 2015). Other countries are taking notice, discussing whether such requirements should be extended beyond France.

Regulatory options. This document discusses the regulatory options for regulators and policymakers interested in fostering climate transparency from financial institutions through a series of interwoven questions and an overview of existing practices in this emerging field. The layout of the document is shown below, starting with high level questions, followed by an overview of transparency models, a discussion of practical questions associated with these models, and finally conclusions.

1. What are the objectives of climate transparency?
2. Who should report?
3. How does reporting work?
4. Which reporting channels should be used?
5. How can comparability be achieved?
6. How much will reporting cost?
7. What can be learned from existing practices?
8. What Impact can we expect?
From a policymakers or regulators perspective, climate transparency in financial markets can have three key objectives:

1. **Monitor risk.** As the European Systemic Risk Board (ESRB 2016) and Bank of England (BOE 2015) have pointed out, climate change and the energy transition may be associated with financial stability concerns under at least two scenarios, either a delayed transition resulting in large losses from physical climate events (flooding, drought, etc.) or a late but high speed ‘last ditch effort’ energy transition resulting in fast repricing of both physical and financial assets. Regulators seeking to avoid such outcomes can monitor capital allocation relative to climate scenarios through FI transparency, observing liquidity, reserves, risk management, etc. of regulated entities.

2. **Monitor alignment.** Climate policy-makers seek to ensure that financial flows are aligned with climate mitigation goals. This goal is specifically called out in the Paris Agreement (Article 2.1(c)), which calls for “making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development”. This goal is similar to the first goal, as it monitors system trends via entity-level transparency, but the primary user (environmental policymakers) and intent are different due to the different mandates of financial supervisors vs. climate policymakers. This monitoring can help inform on the extent to which long-term climate policy signals are integrated by private sector actors and the potential need for policy ‘ratcheting’.

3. **Inform consumer choices.** Retail and institutional investors are interested in climate-related issues, including climate-related financial risk. There is thus a market efficiency argument for ensuring that investors are given adequate information from financial institutions on climate-related issues to support their investment decisions.

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</table>
2. WHO SHOULD REPORT?
The question of who should report depends to a significant degree on the user and their use case:

- **Financial supervisory authorities** can seek transparency from all or a subset of their regulated entities. Several important questions are related to specific entities. For instance, an important issue for the regulation of asset managers is the ‘ownership of risk’, since asset managers don’t own the risks in their portfolio directly. Regulatory oversight of public financial institutions will differ across countries.

- **Climate policymakers** seeking to measure alignment with 2°C climate goals will generally be most concerned with financial markets overall rather than individual entities. They may however seek to push for FI reporting in order to drive climate-related target setting. The French ET Law (see pg 19) reflects this objective, as investors are required to set targets. If this is pursued, the reporting framework should cover all types of financial institutions, including banks.

- **Retail investors** will in most cases invest in fund products and thus would be looking for reporting and transparency on specific funds rather than the institutions as a whole. There may be exceptions of course for those trying to avoid institutions with institutional challenges. This relates to a question of broader public accountability. Such disclosure on funds will generally be distinct from regulations around institutions.

- **Institutional investors** will be interested in reporting from listed financial institutions and those issuing bonds. Asset owners may also seek funds disclosure although their bargaining power will likely ensure this without regulatory intervention. For institutional investors, linking this reporting to a broader reporting by companies is critical.

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<thead>
<tr>
<th>USERS</th>
<th>Investment products</th>
<th>Financial institutions</th>
<th>Financial markets</th>
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<td></td>
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<td>Asset managers</td>
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<td>Financial Supervisory authorities</td>
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<td>Climate policymakers</td>
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<td>Retail investors</td>
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<td>Institutional investors</td>
<td>✔️</td>
<td>✔️</td>
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* Listed investment products **Largely already provided through voluntary mechanisms *** In its capacity as intermediary
3. HOW DOES REPORTING WORK?
Quantitative financial institution climate transparency can be achieved through two different models: disclosure of holdings vs. disclosure of KPIs. Additionally, for some objectives qualitative disclosure on actions may also be appropriate:

**Disclosure of holdings.** In this model, FIs disclose their holdings (used as an umbrella term here to represent financial assets and transactions) to regulators or to the public. Third-party actors can then perform the type of analysis they would like to perform based on their own individual use case (e.g. financial risk, 2°C alignment, etc.).

**Disclosure of quantitative KPIs.** In this model, FIs perform stress tests and estimate performance metrics (KPIs) internally, disclosing the results of such tests to the regulator and possibly the public, depending on policy design. These could be either risk or climate goal related.

**Disclosure of Actions and strategy.** Along with either disclosure of holdings or KPIs, FIs can report on actions taken to manage its climate-related risks (e.g. engagement with investees) or climate objectives (e.g. benchmarking/target setting).

The predominant transparency model today is focused on public reporting of KPIs and actions. A companion report to this one discusses current best practices in existing investor climate-related reporting (2dii 2016), classified in three categories:

- **Risk-related reporting:** reporting on the results of scenario analyses and portfolio risk assessments
- **Alignment with climate goals:** reporting on the alignment of the portfolio with climate objectives (e.g. 2°C)
- **Proxy metrics:** simple KPIs acting as a proxy of climate-related risk or alignment (e.g. carbon footprint, green ratios)

All of the existing KPIs for risk, alignment, and proxy metrics have important pros and cons related to asset class coverage, commercial availability, cost, and methodological issues (see table, following pg.). Further sections discuss the pros and cons of this overall approach in the context of other potential models for transparency.
4. WHICH REPORTING CHANNEL SHOULD BE USED?
FI climate transparency can be achieved through different models. The primary distinction for quantitative disclosures is which party performs the analysis, converting holdings data into KPIs. The following schematic summarizes four different potential reporting channels for quantitative indicators and assessments. Qualitative actions disclosure can follow any of the discussed models. Crucially, these models may not be mutually exclusive, with certain elements analyzed by the FI and other elements analyzed by the regulator.

1. **Holdings Reporting to Regulator.** In this model FIs report their holdings to regulators, who perform any necessary analysis internally. By itself it cannot inform decision-making by investors, since nothing is disclosed to the public. However, regulators can disclose the results of their analyses (in whole or in part) to the public. The political viability of this model seems to be high given existing practices.

2. **Holdings Reporting to Public.** In this model FIs disclose their holdings directly to the public (and thus to the regulator as well). This allows anyone (regulators, FIs, NGOs, researchers) to assess climate-related risk or climate goal alignment with their preferred techniques and metrics. This model exists in Sweden for public pension funds and the United States for insurance companies and mutual funds, but raises some questions around confidentiality concerns and thus its political viability across all types of investors and markets.

3. **KPI Reporting to Regulator.** In this model, FIs perform risk or alignment analysis themselves, reporting on the results to regulators. As in Model 1 above, results/KPIs of all or some analyses can optionally be disclosed to the public. The political viability here is uncertain, since this model hasn’t been tested in a climate context (its role model being traditional stress-tests).

4. **KPI Reporting to the Public.** In this model (the primary model used today), FIs directly perform analysis and disclose results/KPIs to the public through financial and nonfinancial reporting. FIs can be free to either disclose whatever information they find most material or be guided by established reporting paradigms (e.g. SASB, CDP). This model has been supported by many French investors when it was introduced in France in 2015 and has seen further public support by other investors in other geographies. The political viability here however is clearly country specific.
5. HOW CAN COMPARABILITY BE ENSURED?
Comparing different actors and aggregating information across actors are required for usability. Comparability between quantitative reporting/disclosures will only be achieved when several conditions are met:

- **Comparability for holdings reporting**: Given existing accounting standards for holdings data and associated infrastructure (e.g. unique identifiers for shares, etc.), holdings reporting ensures comparability of assessments. If holdings are disclosed publicly, different assessments can of course be made by different stakeholders (e.g. different entities using different types of risk models or scenarios), but each assessment will in and of itself be comparable.

- **Comparability for KPI disclosure**: Comparability in this case requires standardized models, scenarios, and common data frameworks, including for estimation of missing values (e.g. GHG emissions data for non-reporters). Given the lack of standards and proliferation of approaches, this will be difficult to achieve using a KPI disclosure model in today’s market without specifying a certain approach. However, if a specific approach is chosen, it may create a competitive bias unless this approach is open source.

**Cost vs. comparability.** A trade-off may exist between fully comparable reporting/disclosure and regulatory burden for FIs. Voluntary/flexible guidance may be more cost-effective, allowing FIs to choose the KPIs they deem material, but this will lead to less comparable/aggregable results. In addition, the French law has demonstrated that voluntary flexible guidance comes with significant transaction costs related to identifying appropriate reporting options. These may be one-off however
6. HOW MUCH WILL REPORTING COST?
Cost of analysis. Implementation cost is important in any regulatory design. For FIs, the most cost-intensive step is the conversion of holdings data into KPIs, as this requires (either internal or contracted access to) i) time to run the analysis; ii) data subscriptions to link holdings to risk exposures (e.g. asset ownership data, financial data, scenario data); and iii) modeling tools, which may be proprietary in some cases (e.g. value at risk models, 2°C alignment models, etc.).

How expensive is reporting? Ultimate costs will differ based on the type of analysis and the coverage of financial assets. We have previously estimated that a mid-sized asset manager reporting on risks and climate alignment for corporate bonds and listed equity will likely pay around EUR 10,000 – 50,000 in the current market, although that represents a ballpark estimate based on current metrics. For a regulator, internalizing the same assessment for all regulated entities invested in these asset classes can rely on automated open-source software and likely requires data purchases of around EUR 100,000 per annum. The application of the model is then similarly low cost once built into a software (as is the case for the 2°C Investing initiative capital misallocation test). Building new models however can obviously be very expensive.

Who bears the cost? Depending on who performs the analysis, costs are either centralized to one entity (e.g. financial regulator) or distributed across entities. While centralized costs are likely to be lower given economies of scale, the costs of a ‘distributed’ approach can, however, be reduced when standards and models allow for an automation of the assessment.
7. WHAT CAN BE LEARNED FROM EXISTING PRACTICES?
Existing and proposed practices show a diversity of approaches to FI climate transparency. The following summarizes the existing approaches to regulation that have been implemented or are under discussion.

**Holdings reporting to regulators.** Most countries require some form of holdings reporting by regulated entities to financial regulators, in particular following the global financial crisis. However, to date to the authors’ knowledge no country has used this model to achieve systematic FI climate transparency.

**Holdings disclosure to the public.** Sweden requires public pension funds to disclose their holdings to the public, allowing beneficiaries and civil society actors to make their own assessments. In the United States, mutual funds and institutional investors as well insurance companies have to report at least on some of their holdings publicly as part of the Securities Exchange Act and the Schedule D regulation. This data has been used by public actors, like the institutional investor group Ceres in the United States (Ceres 2016) and WWF in Sweden (WWF 2014). It is unclear to what extent financial analysts have used this information.

**Voluntary KPI analysis by investors and meta-analysis for regulators.** This option is currently being explored in Switzerland. In this case, a free and open-source tool could be used to allow regulated entities to do their assessment. Policymakers and regulators could then receive an overview of meta-results, distributions, and trends. The advantage of this model is that it leads investors to more directly engage with the results. It also may help to promote climate target setting by financial institutions related to KPIs. Actual target setting / action by financial institutions is less intuitive when it comes to simple holdings reporting.

**KPI disclosure to the public.** In the first instance of mandated climate transparency, Art. 173 of the French Energy Transition Law requires climate- and ESG-related disclosure by all institutional investors above a certain size. Required disclosure types are outlined in reporting guidelines (published in December 2015; Treasury 2015), and relate to both climate-related risks and contribution to climate goals. Given evolving practices in the field, the guidelines do not specify the exact model and scenarios to be used, though do give example KPIs for each type of disclosure. Here too, one key advantage is the element of reporting on strategies (e.g. target setting) and the extent to which financial institutions engage with this issue internally.
Who should ensure comparability? Reporting of holdings, particularly publicly, will not always be viable due to political acceptability and other constraints. Thus in many cases it will be important to ensure comparability of reported KPIs and their related taxonomies and calculation methodologies. An important question is then who should perform such standardization. Several options exist within the financial regulation and non-financial reporting worlds. These could be pursued independently or complementary:

Option 1: Industry coordination. As an example, in Sweden the public pension funds (AP funds) and industry trade groups are coordinating on their public climate-related disclosures, in part due to pressure from government.

Option 2: Government guidance (voluntary or mandatory). In both France and Switzerland the governments have provided / plan to provide guidance on potentially relevant KPIs and accounting frameworks.

Option 3: International standardization. A third option would be the creation of an international standard for FI climate disclosure. To date no international standard specific to climate exists, though guidance from standards organizations does (GHGP/UNEP FI/2dii 2015).

Need for international harmonization. Financial flows and risk cross national policy borders, and thus there are important advantages to harmonizing FI climate reporting internationally. This said, differences in policy objectives and intent may make such standardization challenging.

Avoiding lock-in. While comparability is highly important, achieving it in the very near term could have downsides. Given that approaches for all the objectives above are still in development, standardizing too soon may risk ‘locking in’ a suboptimal approach, scenario, or data source. A holdings reporting model could have advantages here, since switching practices internally by the regulator may be easier than requiring new disclosures as metrics progress.
8. WHAT IMPACT CAN WE EXPECT?
**Impact channels of disclosure.** Disclosure has become a ‘hot’ topic in policy circles. One key question in this context is what kind of impact can be expected from disclosure. While there is a lot of pressure from civil society on improving transparency and disclosure, the evidence on the effectiveness of disclosure without complementary policy measures is unclear—the mantra ‘what gets measured gets managed’ cannot possibly be true under all circumstances. Anecdotal evidence on behavioural changes are difficult to isolate vis-à-vis counterfactuals around what would have happened if no disclosure existed. Further, while changes in companies’ business strategies can be considered to have direct impact on the ground, the same is not necessarily true for financial institutions.

**Do they measure? Do they manage?** Ultimately, the real world impact of transparency in financial markets relates to the decisions that are made using this information by the three key stakeholders above: financial regulators, climate policymakers, and investors. The impact of transparency with each of these actors can be conceptualized through three key steps:

1. **Is the information tracked by the target audience?** The first step is the information reaching the target audience in some form—indeed, this represents the proximate goal of transparency; ensuring the potential use of the information. The next question is then whether it is in some way recorded or accounted by the target stakeholder. If information is available but not tracked, the minimal condition for impact is already not met.

2. **Are decisions affected?** Second, transparency can drive impact only when the target audience uses the information in its decisions. Such use may or may not have an “impact” in the sense that a decision is altered. For example, transparency could show to regulators and policymakers that transition risk is limited and financial markets already bet on a 2°C pathway. In this case, climate transparency may not change decisions, although it would have arguably still fulfill its purpose. Should the information be actionable, the next question becomes whether actors can be expected to act on it. Importantly, this requires not only the information, but also the capability to make use of the information, including data management systems and decision support tools. One challenge here is the ‘tragedy of the horizon’, as long-term risks may not be managed by investors (or policymakers) with short-term horizons. Thus, additional policy intervention may be required beyond just transparency, ensuring incentives are aligned to the long-term (fiduciary duty, etc.).

3. **Does this impact the real economy?** This still leaves the final question of how decision-making in financial markets impacts the real economy, a question of interest to climate policymakers although perhaps less so for financial regulators. Here, the academic and ‘grey’ literature is sorely lacking, with more research needed, in particular on the questions of impact on climate goals.
SUMMARY: REACHING THE PEAK
Connecting back to the objective. It is important to connect these different models back to the different regulatory objectives discussed above, as each will have different relevance for accomplishing the different objectives. In particular:

• **The reporting channel (transparency vs. disclosure):** If the goal of climate transparency is primarily to inform climate policy-makers or financial regulators—and not the general public—the reporting channel may be run directly to the respective authority without disclosing the information publicly. Specifically, consumer information clearly relies on public disclosure.

• **The types of data and indicators:** Depending on the objective, the emphasis will rest to a larger degree on ‘risk’ or ‘climate goal’ indicators, although there may be some overlap.

• **The regulatory design process:** Further, the regulatory design process will be driven by objectives and intended users. Regulators that primarily see the private sector as a user should emphasize disclosure standards and processes led by industry initiatives, such as the FSB Task Force. Public sector usage may necessitate an open, multi-stakeholder standardization process. Internal usage may require no further regulatory design at all depending on existing regulatory reporting.

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The potential for synergy. Further, it is critical to note that despite the clear difference between final policy objectives, a significant potential for synergy exists by utilizing FI climate transparency to accomplish both financial policy goals (consumer protection and financial stability) and climate policy goals (reducing GHG emissions in the economy). As shown below, since generally climate / environmental policymakers will not have regulatory remit over financial institutions, achieving this synergy requires one of two models:

1. Direct coordination between financial and climate policymakers to ensure KPIs obtained or created are relevant for both financial and climate policy objectives
2. Full public disclosure of holdings or KPIs relevant to climate alignment, such that climate policymakers and other external stakeholders (e.g. researchers, civil society, etc.) can use this information.

Such cooperation may be relatively new to both financial and climate / environmental policymakers but it is essential to achieving the full potential of FI climate transparency. Encouraging initiatives are already visible in some countries.

Option 1: Policy coordination. Transparency is directly coordinated such that holdings are available to both financial and climate policymakers or KPIs are developed to support both financial policy (supervision, capital requirements calculation) and climate policy (carbon pricing, technology subsidies, etc.)

Option 2: Public disclosure and KPI creation. In this option, holdings or KPIs are disclosed publicly, either directly by the FI or by the financial regulator. In the first case, external entities create KPIs to track alignment or create retail product scores, satisfying both alignment tracking and consumer choice goals. In the latter case, the same process is intermediated by the financial regulator, informing decisions by all three groups (financial regulators, climate policymakers, and investors).
KEY CONCLUSIONS

With the increased focus on climate-related financial risk and the recent French Article 173 requirements, FI climate disclosure is on the agenda and momentum is building. The current experience and options analysis discussed here suggests the following:

1. **Design to the objective.** FI climate transparency can have risk, climate policy, and consumer choice objectives, with different users including policy makers, regulators, and the public at large. The choice of transparency model (raw data or KPIs; mandatory or voluntary; level of detail of guidance), covered entities, and required content should match the logic of the policy goal—minimizing risk or ensuring climate-related financial flows.

2. **Consider how climate transparency can fit into existing regulatory reporting.** Both the regulatory burden and political acceptability issues related to FI climate transparency can be improved by utilizing existing holdings reporting where it exists. This model has advantages in economies of scale/regulatory burden and comparability between regulated entities, while allowing for evolving methods and practices. However, to meet climate policy goal tracking and consumer choice objectives, such data must also be released to the public, either in raw form or through comparable and easily understandable KPIs.

3. **Ensure comparability but avoid competitive bias.** For entities, asset classes, or countries where holdings disclosure is not feasible, regulators should strive for comparable outcomes through detailed calculation guidance (for entities to calculate KPIs), updated regularly to account for evolving practices. It is crucial that such guidance have a thorough understanding of best practice in the market to ensure as much comparability as possible without creating a competitive bias toward one or more service providers.

4. **International coordination and monitoring.** There is a clear policy case to monitor results, from both a financial regulator or climate policy-maker perspective, and for both groups to work together to design transparency that meets both objectives. A particular goal here would be coordination on a mechanism aggregating market trends across countries, coupled with national monitoring of regulated entities. Further, it is critical to note that despite the clear difference between final policy objectives, a significant potential for synergy exists by utilizing FI climate transparency to accomplish both financial policy goals (consumer protection and financial stability) and climate policy goals (reducing GHG emissions in the economy).
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<th>Asset class</th>
<th>Pro</th>
<th>Con</th>
<th>Next steps</th>
<th>Cost</th>
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<tbody>
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<td><strong>Climate goal alignment</strong></td>
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<tr>
<td>Forecast capital plans</td>
<td>✔️</td>
<td>Listed equity; corporate bonds</td>
<td>Based on actual data</td>
<td>Only for some sectors &amp; asset classes</td>
<td>Future emissions; other asset classes</td>
<td>Currently free</td>
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<td>Voluntary corporate targets</td>
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<td>Listed equity; corporate bonds</td>
<td>Applicable to more sectors than capital plans; Based on ‘Science-based targets’</td>
<td>Limited to companies w/ targets</td>
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<td>Extrapolation</td>
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<td>Past trends poor proxy</td>
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<td>Top-down analysis</td>
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<td>Comprehensive, highly developed</td>
<td>Proprietary methodology</td>
<td>Standardized scenarios (ET Risk)</td>
<td>EUR +20,000</td>
</tr>
<tr>
<td>Sector level analysis</td>
<td>✔️</td>
<td>Cross-asset</td>
<td>Simple, low-cost; can be done in-house</td>
<td>Doesn’t capture intra-sector trends</td>
<td>Standardized scenarios &amp; development of new bottom-up models (ET Risk)</td>
<td>Free</td>
</tr>
<tr>
<td>Security level analysis</td>
<td></td>
<td>Listed equity; corporate bonds</td>
<td>Highest granularity ensures highest ‘accuracy’</td>
<td>Bespoke; potentially expensive</td>
<td>-</td>
<td>Costs vary</td>
</tr>
<tr>
<td><strong>Proxy climate metrics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Backward carbon footprint</td>
<td>✔️</td>
<td>Listed equity; sovereign &amp; corporate bonds; alternatives</td>
<td>Can be used for all sectors and asset classes</td>
<td>Can be misleading, only illustrative; in some cases lack of transparency on methodology</td>
<td>Growing Scope 3 estimates</td>
<td>Est. EUR 20,000 – 50,000 w/ some metrics free through Bloomberg</td>
</tr>
<tr>
<td>Avoided emissions</td>
<td>✔️</td>
<td>Listed equity; project finance</td>
<td>Ability to measure ‘green’ using GHG</td>
<td></td>
<td>Expansion of coverage</td>
<td>-</td>
</tr>
<tr>
<td>Green / brown</td>
<td>✔️</td>
<td>Listed equity; corporate bonds</td>
<td>Cross-sector coverage</td>
<td></td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>
ABOUT 2° INVESTING INITIATIVE

The 2° Investing Initiative [2°ii] is a multi-stakeholder think tank working to align the financial sector with 2°C climate goals. We are the leading research organization on climate-related metrics for investors. Our research work seeks to align investment processes of financial institutions with climate goals; develop the metrics and tools to measure the climate friendliness of financial institutions; and mobilize regulatory and policy incentives to shift capital to energy transition financing. The association was founded in 2012 and has offices in Paris, London, Berlin, and New York City.

Authors: Christopher Weber, Jakob Thomä

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