



PACTA Coordinated Projects

Briefing for Participants (Corporate Bonds & Equities Portfolios)

May 2022



The [2° Investing Initiative](#) (2DII) is an independent, non-profit think tank working to align financial markets and regulations with the Paris Agreement goals.

Globally focused with offices in Paris, New York, Berlin, London, and Brussels, 2DII coordinates some of the world's largest research projects on climate metrics in financial markets. In order to ensure our independence and the intellectual integrity of our work, we have a multi-stakeholder governance and funding structure, with representatives from a diverse array of financial institutions, regulators, policymakers, universities, and NGOs.

Learn more at 2degrees-investing.org.

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Contents

Executive Summary	5
About this document.....	5
What is PACTA?	5
What are PACTA Coordinated Projects?.....	6
FAQ.....	7
1.1. Overview of metrics for scenario analysis	9
1.2. Overview of inputs and coverage for scenario analysis	10
1.2.1. Coverage	10
1.2.2. Data Inputs	10
1.3. Current Technology Mix Exposure.....	14
1.4. 5-Year Forward-Looking Alignment Trend	15
1.5. Future technology mix	17
1.6. Company-level results	18
2.1. Overview of the metrics for stress testing	19
2.2. Overview of the metrics for stress testing.....	19
2.2.1. Coverage.....	19
2.2.2. Data Inputs.....	20
2.3. Stress Test.....	21
3.1. Overview of metrics for impact analysis	22
3.2. Climate action survey	23
3.3. What actions can I take?.....	25
4.1. Planning the participation	26
4.2. Welcome to PACTA COP	27
4.2.1. Workshops	27
4.2.2. Data preparation	29
4.2.2.1. Non-disclosure Agreement (NDA)	29
4.2.2.2. Preparing portfolio data.....	30
4.2.3. Upload your portfolio data.....	32
4.3. Accessing your results.....	38

4.3.1. Grouping your results.....	38
4.3.2. Sharing your results.....	39

Executive Summary

About this document

This note provides a technical briefing on the suite of PACTA (Paris Agreement Capital Transition Assessment) modules & analytics that can be applied by financial institutions as part of PACTA Coordinated Projects (PACTA COP). This file is addressed to financial institutions willing to participate in a PACTA COP assessment with their listed equities and corporate bonds portfolios only.

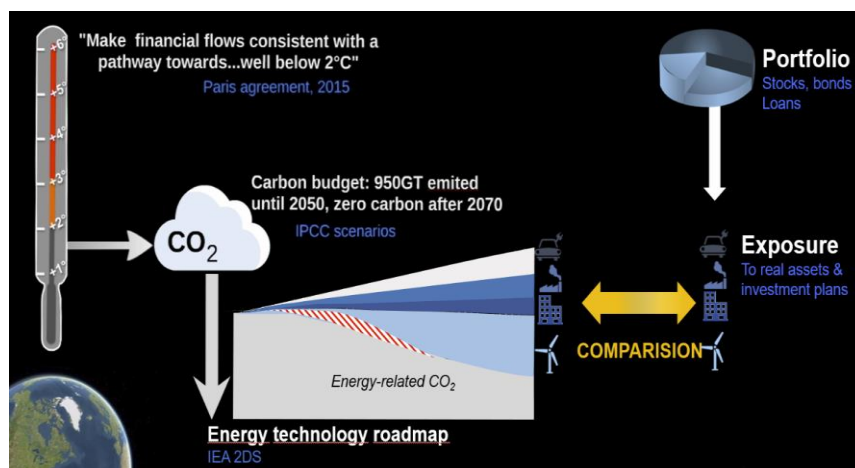
PACTA COP is a dedicated program in which 2DII works together with governments and supervisors, on an individual or collective basis, to help them apply PACTA to the portfolios of their regulated/member entities. The goal of these coordinated exercises is to measure the alignment of both the entire financial sector and the individual participating institutions. The outcome can be used by governments, supervisors, and participating financial institutions to inform their climate finance strategies. Already, 2DII has helped to run the assessments in Switzerland and Liechtenstein, Austria, Luxembourg, and Norway.

This document summarizes the project management components of the coordinated project, how they are applied, the PACTA methodology and how it can be used by financial institutions in practice. Specifically, the briefing discusses three analytical components within the PACTA framework, notably climate scenario analysis (also known as climate compatibility tests), climate stress-tests, and qualitative analysis of climate actions.

What is PACTA?

PACTA measures the alignment of corporate bonds, corporate loans, and listed equities with various climate scenarios for 8 climate-relevant sectors. PACTA compares the extent to which companies' current and planned assets, production profiles, investments, and GHG emissions are aligned with 1.5° or 2°C trajectories provided by climate scenarios. It provides sector-specific, technology-focused insights into current 5-year plans of companies allocated to the portfolio and how the portfolio stands with respect to different climate scenarios.

PACTA identifies the financial portfolio's exposure to high- and low-carbon technologies across the climate-relevant sectors. This assessment can be used to approximate the portfolio's relative exposure to the economic activities that are impacted by the transition to a low-carbon economy. The image below summarizes the process.



The results can be applied to any climate scenarios that lay out targets in production-capacity at technology level or emission-intensity units. As the choice of scenario dramatically influences results, we encourage the use of several scenarios. The current version of the PACTA analysis tool uses the IEA's World Energy Outlook, Energy Technology Perspectives, and JRC's Global Energy and Climate Outlook as a benchmark. 2DII is working to expand the list of scenario database used in the PACTA analysis tool.

What are PACTA Coordinated Projects?

PACTA COP is our dedicated program in which we work together with governments, supervisors, and industry bodies, on an individual or collective basis, to help them apply PACTA to the portfolios of financial institutions in a coordinated manner. The goal of these exercises is to measure the alignment of both the entire financial sector and the individual participating institutions. The outcome can be used by governments, supervisors, and participating financial institutions to inform their climate finance strategies. Governments, supervisors, and industry associations who have signed onto PACTA COP act as hosts of the coordinated assessments, inviting relevant financial institutions and associations to participate in the analysis on a voluntary basis. Participants then upload their equity and corporate bond portfolios to a dedicated, secure, and confidential platform, which in turn delivers individual climate alignment results with anonymized peer comparisons. Loan book portfolios are analyzed by the participating banks themselves. Financial institutions can expect three analysis outputs by participating in a PACTA COP project:

- 1 **Climate scenario analysis / Climate alignment test.** The first building block of the PACTA tool is the “climate alignment test” or climate scenario analysis. The analysis covers three components, specifically a) an analysis of the portfolio’s current exposure to climate-relevant sectors, b) an analysis of the alignment of the investment and production plans of the companies in the portfolio with global climate goals, and c) an analysis of the portfolio’s future technology exposure relative to scenarios and the market.
- 2 **Stress-testing climate-related risks.** The second component of the analysis involves a calculation of potential losses under ‘climate stress-test scenarios’, considering transition risks for power, automotive, and fossil fuel sectors. The stress-test scenarios will consider a range of public scenarios designed in partnership with financial supervisors, notably the Bank of England and the European Insurance and Occupational Pensions Authority (EIOPA).
- 3 **Qualitative analysis of climate actions.** The third analytical component is a qualitative analysis of further climate actions by financial institutions. The objective of this analysis (made through a survey) is to identify - in addition to the quantitative analysis - financial institution’s climate-relevant measures within all asset classes (beyond equities and corporate bonds) or outside asset management strategy, e.g. policy engagement. Both analyses are needed to help contextualize climate-relevant activities as well as to inform the focus of future research with respect to the effectiveness of climate-relevant measures.

As a last step, the host government, supervisor, or industry association often receives an aggregate-level report containing the results for the entire participating financial sector. The report provides a unique overview of financial institutions’ exposure to key climate-relevant sectors and their alignment with the Paris Agreement goals, aggregated by peer group. All reports, including the aggregated results and the individual reports for the participating institutions, are confidential, and there is no obligation whatsoever to publish any information. It is the decision of the government to publish the meta results and the individual participants to publish their individual results.

Already, 2DII has helped to run the assessments in Switzerland and Liechtenstein, Austria, Luxembourg, and Norway. With supervisors the methodology was applied in Sweden, USA, Peru, Colombia, and the Netherlands. The assessment was also deployed in France with Finance for Tomorrow as part of Finance ClimAct, an initiative to help implement the EU Sustainable Finance Action Plan.

FAQ

Q: Where can I find more information about the project and PACTA?

A: You can find more information about the project at www.transitionmonitor.com/pacta-cop including the briefing note and other information related to this project.

Q: How can I participate in the project?

A: If you have been invited by your government and are interested in participating in the project, please email us at pactacop@2degrees-investing.org. Industry associations, policymakers and ministries are also welcome to contact us in case they are interested to apply PACTA in their jurisdictions.

Q: How much does it cost to participate?

A: Participation is free of charge. The projects are funded through donations, research grants and memberships from a range of stakeholders, such as governmental institutions, philanthropies and international organizations.

Q: Why should I participate in the coordinated test instead of running the analysis on my own using the online tool?

A: Financial institutions can currently run the PACTA tool at www.transitionmonitor.com/participate. However, there are several benefits to participating in the coordinated projects test round, notably:

- Ability to compare results directly to your ‘peers’ in your country / financial institution group in an anonymized manner;
- Analysis of qualitative elements (e.g. climate-relevant measures beyond asset management strategies, policy engagement, etc.);
- Contribution to broader awareness-raising and dialogue with policymakers – including on facilitating the minimization of reporting burden;
- Assessment with lower participation burden, assistance from analysts and regular dedicated workshops.

Q: What is the timeline of the project?

A: Specific timelines may vary in different countries, but the overall timeline will involve the following steps:

- Project kick-off (invitations to financial institutions, welcome webinars, etc) – 1 month
- Input of the portfolio data & response to questionnaire – 2 months (institutions are given 2 months to send their portfolios, but the portfolio data preparation should take 2-3 days)
- Analysis of the portfolio data and preparation of the results – 3 months
- Participants receive automatically generated individual test reports with peer comparison at the same time; Release of country studies with aggregated data (meta-studies) and provision of results to participating financial institutions – 1 month

The project is expected to have total duration of 6-7 months, depending on the complexity of the financial system.

Q: How can I submit my portfolio for analysis?

A: For investors, you will be able to upload the listed equity and corporate bond portfolios on [the Transition Monitor Platform](#). A dedicated initiative code will be provided for each participating country and its institutions. A specific timestamp will be defined for the portfolios (i.e. portfolio position as of 31.12.2020). Portfolios should contain positions in equity and corporate bonds in a list of ISINs with corresponding market values and currencies. We will also evaluate funds according to all listed direct holdings within the fund. A sample portfolio that illustrates the proper formatting and content can be found on the website. In addition, participants can voluntarily fill out a qualitative template covering climate strategies and action.

Q: What asset classes and sectors are covered in the analysis?

A: This analysis covers listed equity, and corporate bonds in the power, automotive, oil and gas, coal mining, aviation, shipping (coming soon), cement, and steel sectors. Coverage for individual parts of the analysis may vary based on data availability.

Q: Will my portfolio information be kept confidential?

A: All data provided or downloaded in the process of using the online tool is kept confidential and will not be distributed or used for purposes other than running the analysis and providing results, as well as anonymized use for meta-studies and peer comparison. Before uploading the data, 2°Investing Initiative will sign a non-disclosure-agreement, if requested by submitting participant. For the online tool, 2° Investing Initiative uses a stand-alone server, i.e. no other website or information is stored on the server, which increases the security significantly. The server is set up in compliance with the security standards of the German Federal Data Protection Act (BDSG, "Bundesdatenschutzgesetz"), Tele Media Act (TMG, "Telemediengesetz"), and is built on infrastructure that is DIN ISO/IEC 27001 certified.

Q: Will I be required to publish the results?

A: You will not be required to publish the results.

Q: How does the PACTA analysis differ from portfolio carbon foot printing?

A: PACTA is a scenario-based analysis and is forward looking, as it assesses the alignment of a portfolio with different climate scenarios based on forward-looking production and capacity data of companies. Carbon foot printing relies on backward-looking emissions data, and provides rather a snapshot of today based on historical data. The PACTA analysis and carbon foot printing are therefore rather complementary. Since portfolio carbon foot printing often requires the normalization by financial units, this prevents benchmarking to scenarios, and hinders a meaningful comparison between the climate performance of companies.

Q: Will the project give me information on what climate actions I can take?

A: Climate actions are defined as all actions that financial institutions can take to aim for an impact in the real economy. Examples of such actions include engagement, divestment, offering sustainability-linked products to investees, etc. For financial institutions interested in actively contributing to climate change mitigation as a next step to the PACTA alignment analysis, we developed a "Climate Action Guide" available here: <https://www.transitionmonitor.com/climate-action-guide/>. The Climate Action Guide is an interactive guide summarizing currently available knowledge regarding actions that financial institutions can deploy to contribute to emission reductions in the real world. It allows FIs to explore all actions applicable to their FI type and asset of interest and maps each action to "levels of evidence", reflecting the current proofs of effectiveness associated to the action in the academic literature. A variety of additional information is also provided for each action, such as relevant initiatives or articles, name of professionals that can help in action implementation, etc.

Q: I have another question that is not answered in this briefing.

A: Please contact us at pactacop@2degrees-investing.org

Climate Scenario Analysis

1.1. Overview of metrics for scenario analysis

The first part of the analysis is a climate scenario analysis, which provides an assessment of a financial portfolio's alignment with different climate scenarios from the IEA and JRC. It answers three questions, each corresponding to a metric included in the results of the analysis:

1

Research Question. What share of the portfolio is currently exposed to activities in sectors most affected by the transition to a low carbon economy?

Exposure Metric. The *current sector and technology mix exposure* shows the estimated share of the portfolio that is exposed to the following sectors, representing roughly ~75% of global CO₂ emissions and an estimated ~80% of CO₂ emissions in a typical equity or corporate credit (bonds, loans) portfolio: power, automotive, oil and gas, coal mining, aviation, cement, and steel.

2

Research Question. How aligned are the investment and production plans of companies in the portfolio with different climate scenarios and the Paris Agreement?

Production Volume Trajectory Metric. Based on static portfolios, the metric shows the portfolio's evolving exposure in the next 5 years to selected technologies relative to four IEA transition scenarios (the Beyond 2° Scenario (B2DS), Sustainable Development Scenario (SDS), New Policies Scenario (NPS), and Current Policies Scenario (CPS)) and three JRC's temperature goal scenarios (Reference, 2°C and 1.5°C). It also compares the portfolio's trajectory to the trajectory of the global listed equity or corporate bond market over the next five years. It is expressed as a percentage deviation from the scenario, as well as a deviation in units of capacity or production (e.g. Megawatt, cars produced).

3

Research Question. What is the portfolio's technology mix in climate-relevant sectors expected to look like in five years based on current investment plans of the companies underlying the portfolio, and how does it compare to peers, the market, and a technology mix aligned with the Paris Agreement?

Technology Mix Metric. This metric illustrates the portfolio’s expected technology mix in the power, automotive, oil and gas, and coal mining sectors in five years based on the current production and capital expenditure plans of the companies, based on the results of #1 and #2, and compares it to peers, the market, and a technology mix aligned with a climate scenario that meets Paris Agreement goals.

4

Research Question. Which companies are driving the portfolio’s alignment with climate scenarios?

Company-level Technology Mix Metric. This metric is an extension of the technology mix, but at the company level for the power and automotive sector. It displays a breakdown of each invested company production capacity in each sector by technology. This is compared to the portfolio, benchmarks and a hypothetical portfolio if it were to be aligned with the selected scenario. Companies that have higher exposure to a technology than the portfolio drive the exposure of the portfolio to this technology up.

1.2. Overview of inputs and coverage for scenario analysis

1.2.1. Coverage

Asset Classes. The analysis covers listed equity, and corporate bonds. Banks can also participate with their loan books in another PACTA COP module: PACTA for Banks. The present document refers only to investment portfolios; for corporate loans project information, please visit <https://www.transitionmonitor.com/pacta-for-banks-2020/>.

Sectors. The analysis covers climate-relevant sectors that are key to the transition to a low carbon economy. These include the power, automotive, oil and gas, coal mining, aviation, cement, shipping, and steel sectors, which together account for approximately 70-80% of the CO₂ emissions associated with a typical portfolio as well as 15-25% of a typical portfolio in terms of asset value. The real estate, agriculture and forestry sectors, despite being highly relevant in terms of climate, are not covered on a global level due to a lack of available data and may be covered by other tools. R&D investments are also not covered.

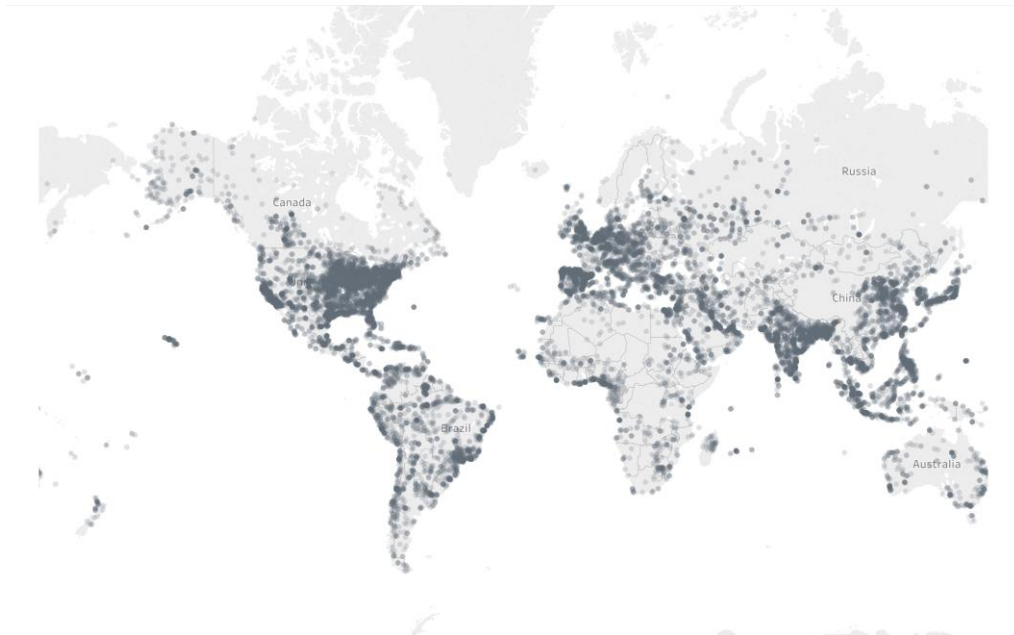
1.2.2. Data Inputs

Portfolio Data. To run the portfolio assessment, participants provide an input file containing security information for each of the portfolios to be analyzed. It includes the following information:

- i. One ISIN for every listed instrument (funds are identified by their ISIN. Securities in each fund are included in the analysis)
- ii. The market value of the financial assets held in the portfolio
- iii. The currency code corresponding to the market value
- iv. A time stamp of the portfolio

Financial Data. Financial data from Bloomberg is used to assign securities to sectors and to link them to parent and subsidiary companies, as well as for sector classification analysis. This data is supplied by 2^o Investing Initiative.

Physical Asset-Based Company Data. The model uses, where possible, forward-looking asset-based company data for key technologies in climate-relevant sectors. The model is data agnostic as long as it complies with the format needed to run the PACTA code. PACTA COP project asset level data is sourced from Asset Resolution. Asset Resolution gathers data on physical assets from data providers included those listed in the following table and matches them with companies and financial securities to produce the asset-based company data feeding into PACTA. For PACTA COP projects data will be updated every fourth quarter of each year. The map below highlights an example of the individual data points for global coal-fired power plants.



Data provider	Sectors	Key data points
GlobalData	Power, oil & gas, coal mining	a. Power plant data, including installed capacity, technology, status (i.e., announced, active, decommissioned, etc.). b. Oil and gas field data, including annual production volume. c. Coal mine data, including annual production mass.
AutoForecast Solutions	Automotive	Production forecasts for light duty vehicles.
Cirium	Aviation	Passenger, cargo and combined aircraft data, including number of seats or tons transported, aircraft model, etc.
PlantFacts <i>(under revision)</i>	Steel	Steel plant data, including production and CO ₂ emissions.
Cemnet	Cement	Cement plant data, including production and CO ₂ emissions.

Scenario Data. This analysis is based on the five climate scenarios developed by the IEA and JRC shown in the table below.

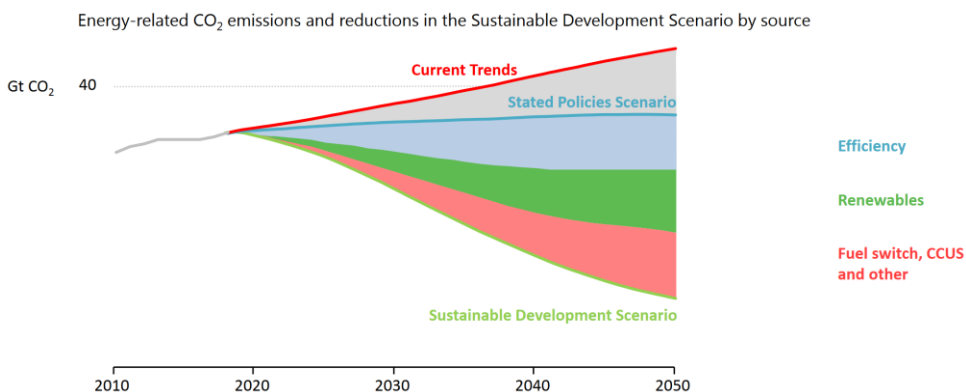
Scenario	Abbreviation	Estimated temperature increase	Source	Sectors Covered
POLES 1.5°C scenario	POLES1.5	~ 1.5°C	JRC	Power, automotive, oil & gas and coal
POLES 2°C scenario	POLES2	~ 2°C	JRC	Power, automotive, oil & gas and coal
POLES Reference Scenario	POLESref	2.9 - 3.8°C	JRC	Power, automotive, oil & gas and coal
Beyond 2° Scenario	B2DS	< 1.75°C	ETP 2017	Power, automotive, oil & gas, coal, cement, steel, and aviation
Sustainable Development Scenario	SDS	1.75 - 2°C	WEO 2020, WEO 2019	Power, automotive, oil & gas and coal

New Policies Scenario	NPS	2 - 2.7°C	WEO 2020, WEO 2019	Power, automotive, oil & gas and coal
Current Policy Scenario	CPS	> 2.7°C	WEO 2020, WEO 2019	Power, automotive, oil & gas and coal

These scenarios were selected for their high degree of granularity, extensive geographic and sectoral coverage, as well as for the compatibility of their indicators with the needs of 2DII’s analysis. In particular, the model uses the following indicators as basis for comparison to the portfolio:

- a. Power capacity by technology in megawatt (MW).
- b. Oil production in barrels per year.
- c. Gas production in billions of cubic feet per year.
- d. Coal production in tons of coal equivalent per year.
- e. GHG emissions pathways in the aviation, shipping, cement, and steel sectors.

The figure below illustrates the distinction between IEA’s “Current Policies”, “New Policies Scenario” and the “Sustainable Development Scenario” in terms of CO₂ emissions reduction until 2050.

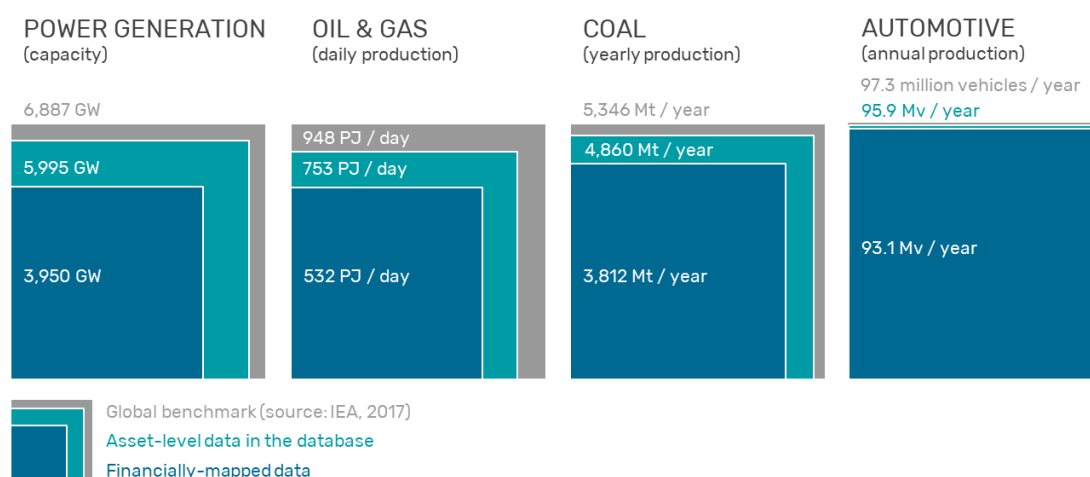


Technical Deep Dive: Physical Asset-Level Data

The PACTA model is based on physical asset-level data across key climate-relevant sectors. Any data source formatted as required by the PACTA code can be used. On Transition Monitor and as part of the PACTA COP project, 2DII sources the data from Asset Resolution. Asset Resolution links financial portfolios with the real economy and provide 2DII with asset-based indicators linked to companies and securities.

Asset Resolution works with specialized sectoral data providers (see table on the previous page) to source data on individual assets in climate-relevant industries. These specialized data providers use a variety of research capabilities, including web scraping, desk research, and direct engagement with industry to map physical assets. Forward-looking information is based on company investment and production plans that have been announced publicly.

These asset-level datasets cover over than 280,000 individual assets (e.g. individual power plants, oil fields, etc.), accounting for around 75% of global carbon emissions. The following charts show the coverage of asset-level data relative to estimated global production figures—the global benchmark—for the power, oil & gas, coal, and automotive sectors. They also highlight the share of assets that have been mapped to financial data and are thus included in the analysis.



Only the assets that have been mapped to financial data are included in the analysis (the blue box in the charts above). This is because financial identifiers are required to link the asset-level production data to the portfolios provided by the participants.

The gap between the asset-level data coverage and the global production figures can be explained by non-corporate asset ownership, time lags in reporting, and errors in asset-level datasets. The discrepancy between the asset-level data and the financially mapped production figures exists because not all companies listed in the asset-level data have been matched with financial instruments in the financial data. Asset Resolution is continuously working to expand its matching capabilities, including with a text-string matching software and manual matching.

Provided that assets have been matched with financial data, Asset Resolution allocates production to companies, and further to financial instruments, based on direct ownership of assets and based on majority ownership of subsidiary companies that own assets. The result is a forward-looking production profile for each financial instrument that serves as starting point and basis of comparison for climate scenario analysis.

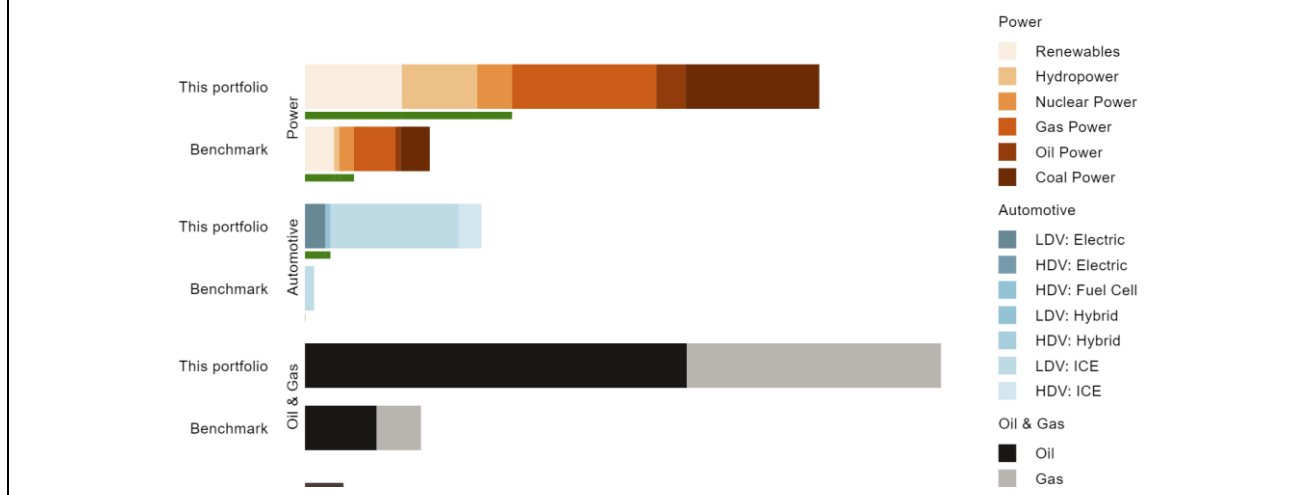
1.3. Current Technology Mix Exposure

Research Question. What share of the portfolio is currently exposed to activities in sectors by the transition to a low carbon economy?

Metric and Methodology. This metric shows the estimated share of the portfolio that is currently exposed to companies with assets in the fossil fuels, power, aviation, cement, steel, and road transport sector. It is calculated by first taking the weight of the portfolio that is exposed to companies in each of these sectors and then calculating the technology breakdown of assets owned by these companies (see figure on the right). The portfolio's current technology exposure is compared to the market portfolio, which is calculated based on the exposure of the global universe of assets in the relevant asset class to the sectors, as well as to the peers participating in the tests.

Limitations. The sectors included in this analysis account for about 70-80% of the CO₂ emissions associated with a typical portfolio, and thus contribute significantly to a portfolio's exposure to climate risk. However, the metric does not cover sectors, such as the real estate, agriculture and forestry sectors, despite being highly relevant in terms of climate risk and impact, due to a lack of available data and scenarios.

Sample Visual. This chart shows the estimated share of the portfolio that is exposed to activities in the power, automotive and fossil fuel sectors (*Note: The analysis extends to the other sectors described above*), in comparison to the listed equity market. A value higher than the market portfolio suggests that the portfolio is currently more exposed to these activities than the market, on average. A value lower than the market portfolio suggests that the portfolio is less exposed to these sectors, all other things being equal. The participant will also benefit from comparing results to peers.



- Use Cases.**
- Manage exposure to climate-relevant sectors & technologies;
 - Provide clarity to management and other stakeholders to what extent the portfolio is exposed to 'transition risk' and 'climate compatibility' issues;
 - Reporting to external stakeholders.

1.4. 5-Year Forward-Looking Alignment Trend

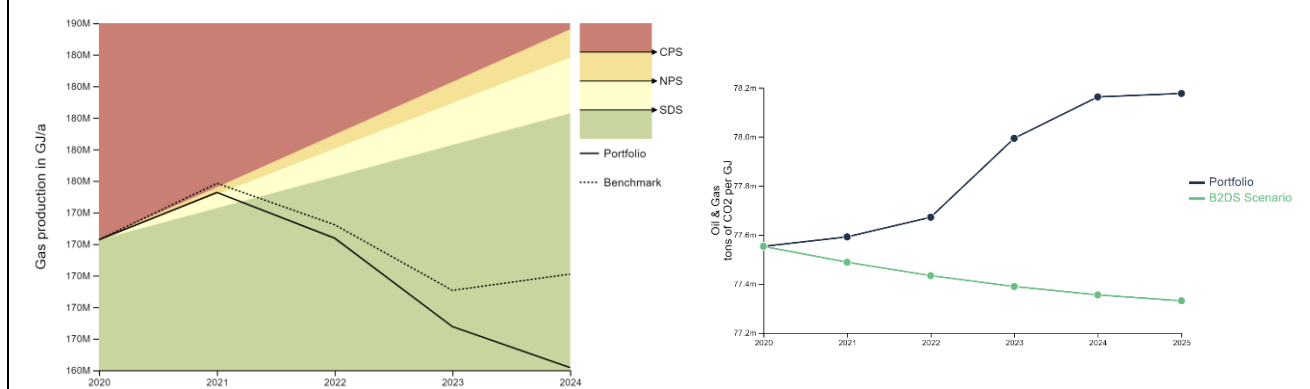
Research Question. How aligned are the investment and production plans of companies in the portfolio with different climate scenarios and the Paris Agreement?

Metric and Methodology. This metric traces the portfolio’s exposure to selected climate-relevant technologies relative to various IEA and JRC transition scenarios. The trajectory of the global listed equity or corporate bond market is also shown, as well as comparison to the peers participating in the PACTA COP country project. It is forward-looking and compares the portfolio’s expected production trajectories in different technologies to scenario-aligned trajectories over the next five years. The portfolio’s expected trajectory is based on the underlying companies’ investment plans for the next five years, while the market’s trajectory is the combination of the current investment plans of all companies in the respective asset class for the same period.

The scenario-aligned trajectories represent the trajectories that would be expected if the companies in the portfolio were to develop according to the scenarios. They are calculated by applying the rates of change defined by the scenarios to the portfolio companies based on their respective market share (see next page for detail).

Limitations. The portfolio’s expected trajectory is based on currently known production and capital expenditure plans from companies and is therefore subject to change. In fact, given the 5-year time horizon, it is likely that plans will change, which presents an opportunity to engage with companies on their investment plans. Similarly, participating financial institutions may alter their portfolio’s composition over time.

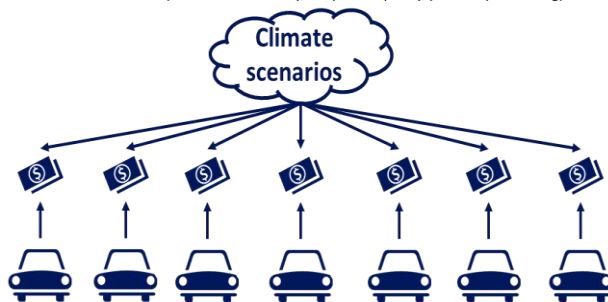
Sample Visuals. The first visualization type are the trajectories charts. These charts trace the corporate bond portfolio’s exposure to a given sector production in comparison to the IEA and JRC scenarios. The dashed line shows the expected development of the corporate bond market over the next five years based on current investment plans. The interactive report also displays the alignment of emission intensities by sector compared to the IEA’s B2DS scenario. The chart uses the current emissions intensity of companies within the portfolio as a starting point and shows how this expected to develop over the next five years based on the plans of the company and what would be expected under the scenario.



- Use Cases.**
- Input into target-setting approaches;
 - Strategic insight into portfolio positioning relative to market, peers, and scenarios;
 - Input into different climate actions (engagement, etc.);
 - Indicator for climate goal alignment of financial flows from a policy perspective (implementation of Art. 2.1.c Paris Agreement);
 - Reporting to external stakeholders.

Technical Deep Dive: ALLOCATING ‘RESPONSIBILITY’ FOR ACHIEVING (MACRO) CLIMATE GOALS TO COMPANIES / ASSETS (MICRO ACTORS)

- ① Each ‘company’ / ‘asset’ gets allocated responsibility based on their ‘market share’
- ② Each ‘company’ / ‘asset’ gets allocated responsibility based on ‘economic efficiency’ (i.e. least cost)
- ③ Each ‘company’ / ‘asset’ gets allocated responsibility based on ‘historic responsibility’
- ④ Each ‘company’ / ‘asset’ gets allocated responsibility based on ‘bottom-up’ allocation involving a combination of factors (economic efficiency, adaptive capacity, political positioning)



There are 4 approaches that could be considered with regard to allocating the macro-level decarbonization requirements from the scenarios to individual companies. Of these 4, the market share approach is currently applied in PACTA.

Market share approach: This approach uses a simple ‘market share’ allocation rule where all sector-level production and capacity decarbonization requirements are proportionally distributed across companies based on market share in the technology or sector. The market share for low-carbon technologies is considered to be the sum of their market share across these low-carbon technologies, whereas for high-carbon technologies it is their

market share for the specific technology or fuel. This different application is a result of the fact that taking the share in the sector for high-carbon technologies might lead companies to be required to retire assets they don’t have, whereas taking the market share in the technology for low-carbon technologies may lead companies to not have to build out low-carbon technologies if their current market share is zero and thus inflates the responsibility of existing ‘leaders’. For example, a power company that only has coal-power capacity, should still be expected to increase renewable power capacity. Whereas a power company with only renewable power capacity cannot be expected to retire a coal plant. This approach is currently used in the PACTA model.

Economic efficiency / least cost approach (under development): This approach uses sector-level output variables, such as demand and price, as a constraint interacting with the production costs of individual companies, arguing that the ‘marginal’ product is produced at the lowest cost. The cost approach uses the cost structure of a company’s existing, planned, and potential capital stock to estimate which assets meet a sector-wide output constraint under the assumption that low-cost assets will be deployed first. This logic has been applied by the Carbon Tracker Initiative for oil, gas, and coal production and capital expenditure (CTI 2014; 2016).

Historic responsibility (not applied): This approach allocates the responsibility based on ‘historic contributions’. It represents a framework in particular in the context of climate litigation analysis in terms of liabilities for climate damages but isn’t considered currently in the context of alignment analysis. The logic will be applied in the litigation stress-test scenarios currently under development.

Bottom-up approach (not applied). The bottom-up approach essentially mirrors the concept of equity and credit research analysts and considers a combination of economic and political factors, as well as adaptive capacity and corporate agility. This approach was applied by the CO-Firm in the context of the 2° Investing Initiative led ET Risk project, but is not part of the PACTA model, given the complexity to apply it at scale.

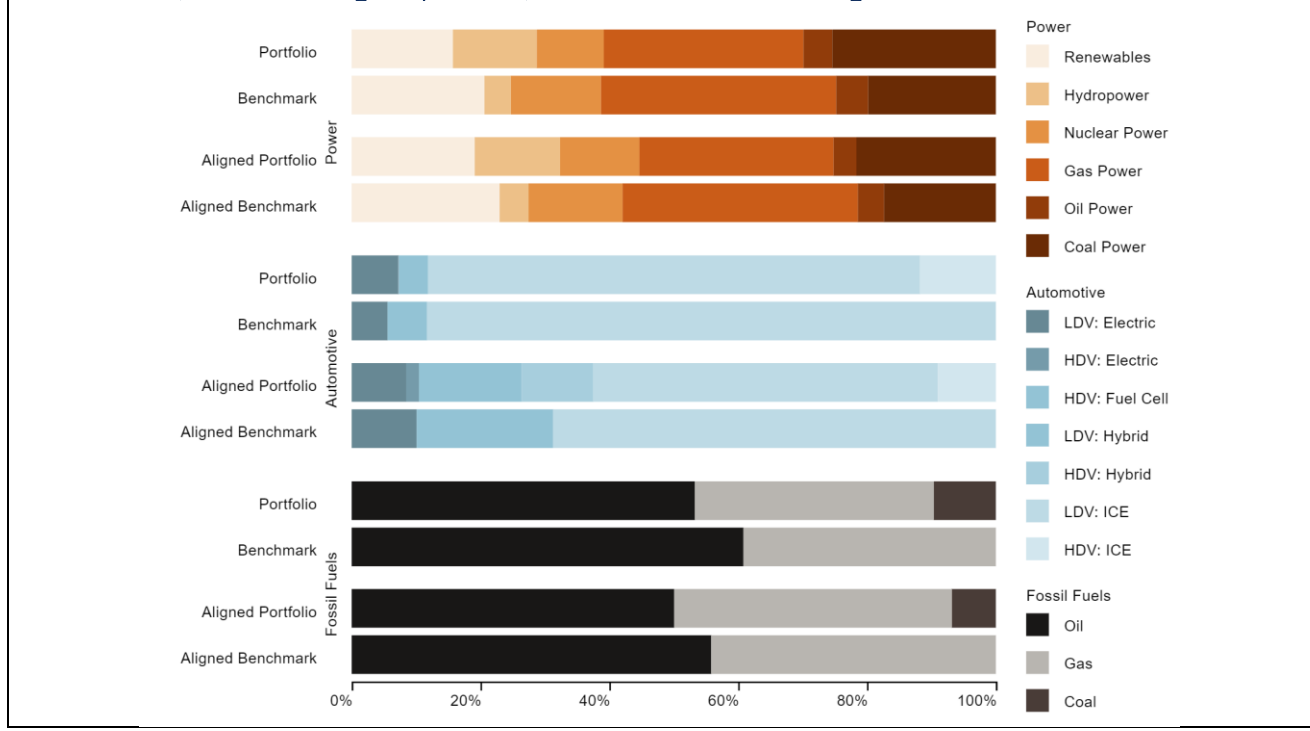
1.5. Future technology mix

Research Question. What is the portfolio’s technology mix in climate-relevant sectors expected to look like in five years based on production plans of the companies in the portfolio, and how does it compare to peers, the market, and a technology mix aligned with the Paris Agreement?

Metric and Methodology. This metric illustrates the portfolio’s expected technology mix in the power, automotive, oil and gas, and coal mining sectors in five years. It is calculated by taking the portfolio’s current exposure to each technology and then applying the trajectory of the exposure over time based on revealed investment and production plans, calculated in the previous step. That is, it represents the next 5-years production values shown in the 5-year trend charts. The metric is compared to peers, the market, and a technology mix aligned with Paris Agreement goals (e.g.: Sustainable Development Scenario by IEA).

Limitations. The portfolio’s expected trajectory is based on currently known production and capital expenditure from companies and is subject to change. In fact, given the 5-year time horizon, it is likely that plans will change, which presents an opportunity to engage with companies on their investment plans. Similarly, participating financial institutions may alter their portfolio’s composition over time (which indeed, may be one of the outcomes of the test itself). Further, for simplicity’s sake, it aggregates certain technologies and may not capture non-mature technologies.

Sample Visual. These charts show the portfolio’s expected exposure to technologies in the power, automotive, and fossil fuels sectors in five years. The portfolio’s future technology mix is compared to peers from the test, a scenario-aligned portfolio, as well as the scenario-aligned market.



Use Cases.

- Management of concentration risks and portfolio diversification considerations;
- Input into target-setting frameworks and climate action strategies;
- Reporting to external stakeholders (given that it is more intuitive to understand).

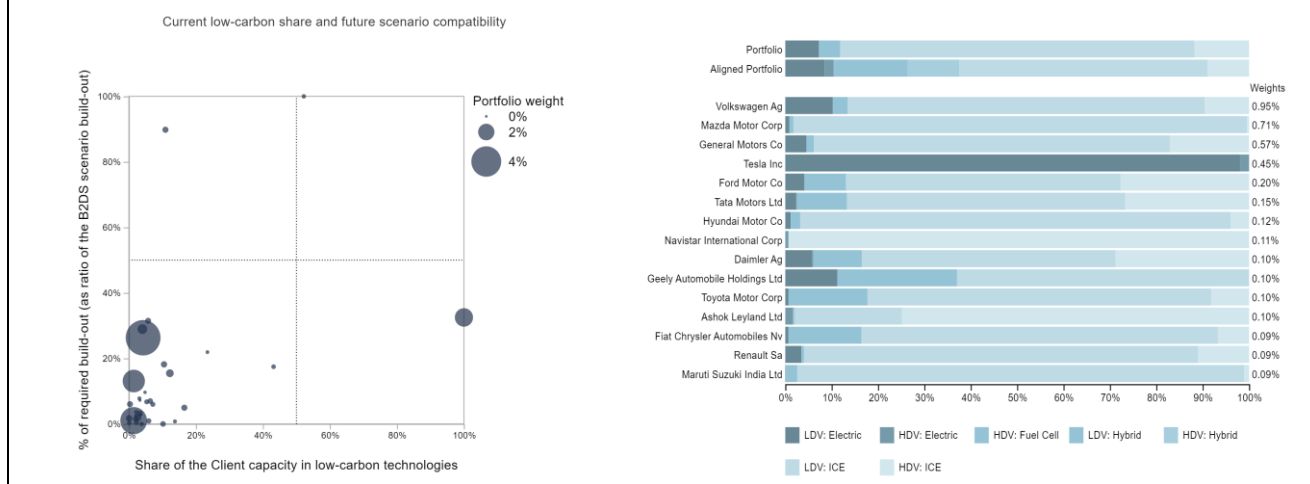
1.6. Company-level results

Research Questions. Which companies are driving the portfolio’s alignment with climate scenarios? Which companies are the leaders and laggards with regards to shifting towards low carbon alternatives?

Metric and Methodology. This metric is an extension of the conventional technology mix brought to the invested company levels for automotive and power sectors. Within the exposure to the automotive and power sectors it identifies the top invested companies (directly and indirectly through funds) and verifies the share of the portfolio that is currently exposed to these companies operating assets and it is calculated by taking the weight of the portfolio that is exposed to companies. In this metric, invested companies’ technology mix are compared to alignment results. Within the automotive and power sector, low-carbon technologies compete with high-carbon technologies in the current market, which allows to assess how companies are split.

Limitations. Currently only available for Power and Automotive companies. Work is ongoing to include additional company-level results for other sectors and will be included in the course of 2021. Moreover, the production-plans are self-reported and may not be updated on a timely manner in data providers databases.

Sample Visuals. The first chart (left) combines current technology mix (x-axis) and alignment information (y-axis) for all invested companies in the chosen sector. Dots positioned further to the right represent companies that have a larger share of low carbon technologies. Dots positioned further up indicate that companies have more ambitious build-out plans in low carbon technologies. The size of the dots represents the weight of the company in the portfolio. The second visualization (right) shows the breakdown of each company’s production capacity in each sector by technology. This is compared to the portfolio, benchmarks and this portfolio if it were to be aligned with the selected scenario. Companies that have higher exposure to a technology than the portfolio drive the exposure of the portfolio to this technology up.



Use Cases.

- Develop climate strategies such as engagement, best-in class investment, exclusion or use exercising voting rights, among others;
- Provide clarity to management and other stakeholders to what extent the portfolio is exposed to ‘transition risk’ and ‘climate compatibility’ issues;
- Reporting to external stakeholders.

Stress Test

2.1. Overview of the metrics for stress testing

The second part of the analysis is a stress test, which quantifies the potential financial losses to an investment portfolio under different economic transition scenarios.

1

Research Question. How will the value of the listed equity and credit (bonds / loans) portfolio change under different climate transition scenarios?

Metric. A discounted cash-flow model is used to estimate the development of the asset-prices under a business-as-usual scenario and a shock-scenario, that involved a late-and-sudden transition from the business-as-usual-scenario to an aligned market in 2050. Based on the difference potential losses or gains are estimated. The methodology can only be applied within the PACTA sectors.

2.2. Overview of the metrics for stress testing

2.2.1. Coverage

Asset Classes. The stress testing framework covers listed equity, corporate bonds, and corporate loans.

Sectors. The transition risk assesments covers the PACTA sectors, which represent the key climate-relevant sectors covered in Section 1

2.2.2. Data Inputs

Portfolio Data. To run the stress test, participants provide the same input file as for the climate scenario analysis.

Financial Data. Financial data from Bloomberg is used to assign securities to sectors and to link them to parent and subsidiary companies, as well as for sector classification analysis. This data is supplied by 2° Investing Initiative.

Asset-Level Data. The model sources, where possible, forward-looking asset-level data for key technologies in climate-relevant sectors from independent industry data providers. It thus bypasses backward-looking, corporate-level reporting. Asset-level data is sourced from the data providers listed in the following table. It is supplied by 2° Investing Initiative and generally updated on a quarterly basis. In addition to asset-level data, the model also relies on sectoral classification codes for those business activities for which it does not source asset-level data.

Data provider	Sectors	Key data points
GlobalData	Power, oil & gas, coal mining	<ul style="list-style-type: none"> Power plant data, including installed capacity, technology, status (i.e., announced, active, decommissioned, etc.). Oil and gas field data, including annual production volume. Coal mine data, including annual production mass.
WardsAuto	Automotive	Production forecasts for light duty vehicles.
FlightGlobal	Aviation	Passenger, cargo, and combined aircraft data, including number of seats or tons transported, aircraft model, etc.
PlantFacts	Steel	Steel plant data, including production and CO ₂ emissions.
Cemnet	Cement	Cement plant data, including production and CO ₂ emissions.

Scenario Data. The underlying principle of the stress testing exercise is to apply different economic transition scenarios to an investment portfolio in order to quantify potential financial losses. This analysis is based on three transition scenarios detailed in the table below.

Scenario	Description/Assumptions
Carbon Balance Approach	For listed equity and corporate bonds, the estimated losses for a late and sudden scenario are calculated based on the carbon balance approach, as suggested by 2DII. The losses are calculated based on a discounted cash flow modelled after assessing the change of market share, due to shock that forces the market to transition for a business-as-usual pathway to an aligned-market in which the mis-alignment (and the respective carbon emission overshoot) needs to be balanced until 2100, to still meet the climate goals.
IPR	For listed equity, the potential losses based on the IPR FPS stress test are calculated.

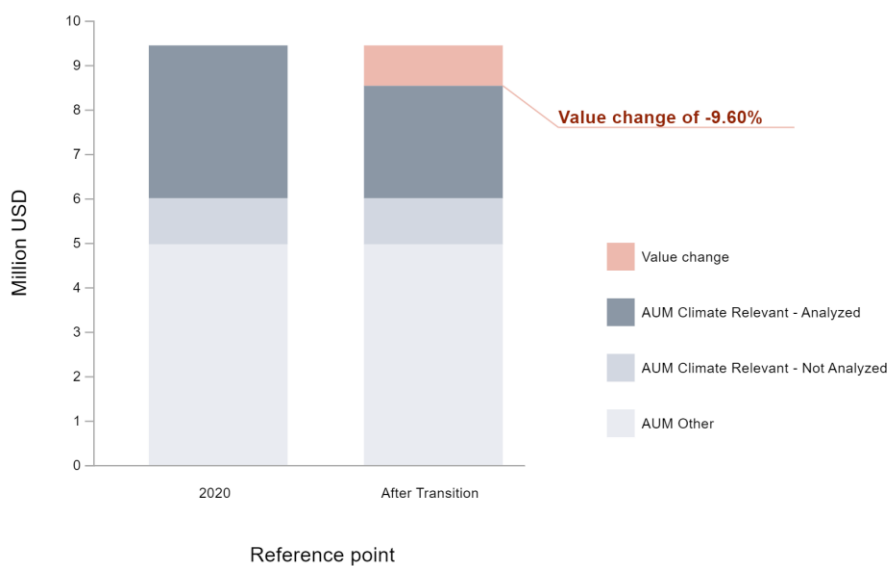
2.3. Stress Test

Research Question. How will the value of your equity and credit (bonds, loans) portfolio change under different climate transition scenarios?

Metric and Methodology. The equity value shocks quantify potential changes in the value of the listed equity portfolio for each sector under different economic transition scenarios. The shocks are derived from existing climate stress-test scenarios co-developed by 2° Investing Initiative¹, including the Bank of England climate insurance stress-test² and the EIOPA climate sensitivity analysis, as well as stress-tests developed by third parties.

Limitations. The application will only be able to apply sub-sectoral, granular shocks for those sectors for which asset-level data is available

Sample Visual. The figure highlights the potential output of this analysis, showing losses for bond and equity portfolios, as well as potential ‘positive’ financial shocks related to low-carbon technologies (e.g. renewables). The results can be expressed in monetary units or % of portfolio losses and can be calibrated based on adjusting input assumptions, notably that of the ‘start date’ of the shock. In this particular visual for example, the start date is set to 2025.



Use Cases.

- Climate-related reporting under the TCFD recommendations.
- Analysis of resilience of capital & liquidity under extreme climate outcomes.
- Basis of dialogue between financial institutions and financial supervisors, both at national level, and in context of the work of the Network for Greening the Financial System (NGFS)

¹ https://2degrees-investing.org/wp-content/uploads/2019/02/Stress-test-report_V2.pdf

² <https://www.bankofengland.co.uk/prudential-regulation/letter/2019/insurance-stress-test-2019>

Impact Analysis

3.1. Overview of metrics for impact analysis

The third part of the analysis is an impact analysis, which highlights climate actions taken by financial institutions to support emissions reductions in the real economy. It provides answers to a single question, corresponding to a metric included in the results of the analysis:

1

Research Question. What are the climate actions taken by financial institutions to support GHG emissions reduction in the real economy?

Metric. The qualitative analysis will involve providing results of survey data collected together with the portfolio data.

3.2. Climate action survey

Research Question. What are the climate actions taken by financial institutions to support GHG emissions reduction in and foster a climate-aligned transition of the real economy?

Metric and Methodology. The qualitative analysis will involve providing results of survey data collected together with the portfolio data. The following provides an example of the questionnaire provided for the application in previous PACTA COP projects. The questionnaire will be analyzed and reviewed, and the results will be presented together with the quantitative results. Over time, these two analytical components will be combined in the online test to show the potential impact of the actions on the targeted companies quantitatively.

The following is a sample draft questionnaire that highlights the type of questions considered in the qualitative analysis.

The set of questions in this section relates to sustainable finance strategies and climate-related targets in your organization. You can also mention membership of your organization in national and international sustainable finance and climate-related initiatives.

9. Do you apply a sustainable finance strategy in investment decision-making? Please flag the strategies applied

- | | |
|---|--|
| <input type="checkbox"/> Negative screening | <input type="checkbox"/> Company engagement/active shareholder |
| <input type="checkbox"/> Best-in-class approach | <input type="checkbox"/> Impact investing |
| <input type="checkbox"/> ESG integration | <input type="checkbox"/> Microfinance |
| <input type="checkbox"/> Thematic/themed investment | |
| <input type="checkbox"/> Other (please specify) | |

10. Do you apply the recommendations of the Taskforce on Climate-Related Financial Disclosures (TCFD)?

- Yes
- Partially
- No
- I don't know

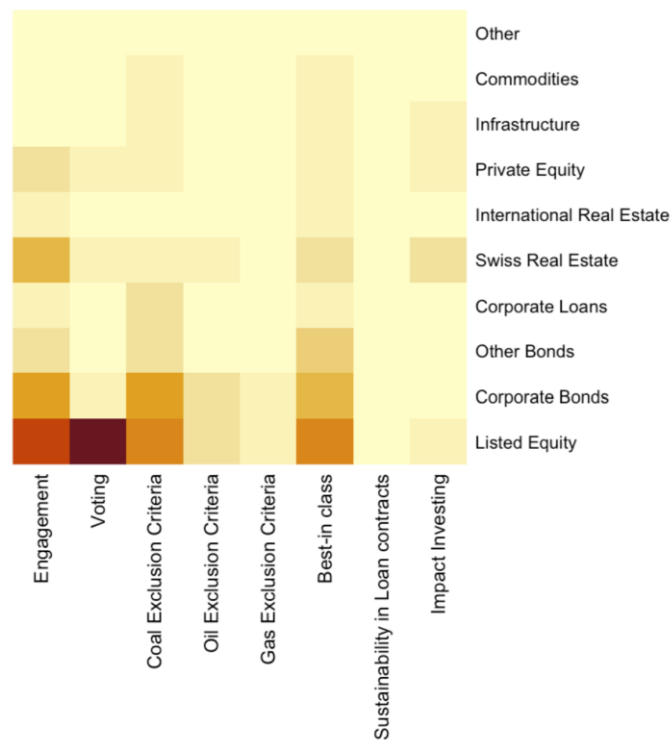
11. Can you please describe how you apply TCFD recommendations?

12. Are you a member of one of the following organizations or initiatives?

- | | |
|--|--|
| <input type="checkbox"/> UN PRI (UN Principles for Responsible Investment) | <input type="checkbox"/> Katowice Banks |
| <input type="checkbox"/> UN PSI (UN Principles for Sustainable Insurance) | <input type="checkbox"/> AOA (Net-Zero Asset Owner Alliance) |
| <input type="checkbox"/> UN PRB (UN Principles for Responsible Banking) | <input type="checkbox"/> PCAF (Partnership for Carbon Accounting Financials) |
| <input type="checkbox"/> CA100+ (Initiative Climate Action 100+) | <input type="checkbox"/> TFND (Taskforce on Nature-Related Financial Disclosure) |
| <input type="checkbox"/> SBTi (Science Based Targets Initiative) | |
| <input type="checkbox"/> Other (please specify) | |

Limitations. At this stage, the qualitative analysis cannot be directly matched to the quantitative analysis. Without historical data, impact of different actions cannot be analyzed in more detail. Even where historical data exists, the project will limit to identifying trends & changes at macro level.

Sample Visual. The following provides a sample visual of a survey of participants as to the climate actions they have taken and compare to its peers.



Use Cases.

- Complement quantitative analysis to create transparency on climate actions and the actions impact in the real economy on mitigation;
- Over time, monitor the efficacy of climate actions.

3.3. What actions can I take?

For financial institutions interested in actively contributing to climate change mitigation as a next step to the PACTA alignment analysis, we developed a “Climate Action Guide” available here: <https://www.transitionmonitor.com/climate-action-guide/>. The Climate Action Guide is an interactive guide summarizing currently available knowledge regarding actions that financial institutions can deploy to contribute to emission reductions in the real world. It allows FIs to explore all actions applicable to their FI type and asset of interest and maps each action to “levels of evidence”, reflecting the current proofs of effectiveness associated to the action in the academic literature. A variety of additional information is also provided for each action, such as relevant initiatives or articles, name of professionals that can help in action implementation, etc.

The screenshot displays the 'Climate Action Guide' interface. On the left, there is a vertical sidebar labeled 'Educational Content'. The main content area is titled 'Select the targeted universe of companies'. Below the title, there is instructional text: 'Define the universe of companies that you want to target with your climate action by selecting a company list, sector or region. Climate-actions should focus on companies with a (high) potential to reduce emissions and at the same time companies that can be influence. The selection of company-lists, sector or regional filters helps to identify suited companies.' Below this, it states: 'The companies that match the selection criteria are shown in the list below. The implication on the portfolio and the required changes to align with the Paris Agreement of the target universe are shown in the implication margin on the right. Information about the company lists and the underlying criteria are shown in the educational content on the left.' There are three dropdown menus: 'Company List' (set to 'All companies'), 'Sector' (set to 'All sectors'), and 'Region' (set to 'Global'). On the right side, the 'Implications' section is visible, containing text about portfolio positions and targeted companies, and a dropdown menu for 'Technology' (set to 'Renewables').

In the coming months, further tools will be added to the platform to guide financial institutions in designing impact-oriented climate strategies, set impact targets, and monitor the effectiveness of these strategies. The Climate Action Guide represents the first brick of this suite of tools, aiming to help familiarize market actors to impact notions.

You can learn more about our Impact-related work at this link: <https://2degrees-investing.org/resource/impact-measurement-target-setting/>

Getting started

4.1. Planning the participation

PACTA COP is a unique opportunity for financial institutions to get acquainted with alignment and transition risks considerations for their portfolios. It is also a chance to open dialogue with government and experts over sustainable finance reporting and exchange of ideas. Before preparing your institutions for taking part on the exercise, here are the first steps you need to know.

1

Invitation letter. PACTA Coordinated Projects are open to all types of financial institutions (banks, asset managers, insurance companies and pension funds). However, to participate you need to receive an invitation letter from the hosting institution (government or trading association). On the invitation letter you will find information for a first introductory workshop and initiative code. If you are aware of a PACTA COP initiative taking place in your country and did not receive the invitation letter, you may e-mail us or inquire your respective association about it.

2

Introductory workshop. The information date for the first workshop with potential participating institutions will be in the invitation letter. In this workshop you will have the chance to understand the project, meet the 2° Investing Initiative team responsible for running the exercise, get acquainted with the PACTA methodology and technical aspects of the project, and space to ask your questions. Participation in this workshop is free of charge, voluntary and it does not oblige your institution to take part into the test. It is an introduction phase for all the stakeholders to understand the projects and its next steps. Before the workshop you are highly encouraged to visit the [PACTA COP webpage](#) and the [PACTA Knowledge Hub](#).

3

Expressing interest. After the workshop, 2° Investing Initiative will send you a form asking if you are interested in taking part in PACTA COP. Your answer is completely anonymous and will not be disclosed to other parties. In case your institution is interested in moving forward, you will be contacted for the next steps.

4.2. Welcome to PACTA COP

One of the biggest advantages of PACTA COP, when compared to running PACTA as the online tool, is the support offered by the 2DII team with technical issues and in understanding the results, as well as additional information received regarding peer analysis and the qualitative survey. If you decided to sign up for a PACTA COP initiative with your equity and corporate bonds portfolio, you should roughly estimate the following timeline and workload:

- a. Participation in workshops: 2-3 hours
- b. Preparing portfolio data: 2-3 days
- c. Signing Non-Disclosure Agreement (*Optional*)³: 1 week
- d. Uploading the portfolio: 4 hours
- e. Completing the climate action survey: 4 hours

Please note that this timeline and allocation of resources may vary across institutions. The above suggested timeline was estimated considering previous PACTA COP exercises, but it may or may not apply to your specific institution. Please consult your internal compliance team and project managers to plan accordingly.

In terms of departments to involve in the project, it also varies across institutions and counties. Usually, the legal/compliance department is involved in signing the NDA (in case it is required by your institution), the back-office or risk management department is involved in providing portfolio data, and asset managers are involved in participating in workshops, compiling portfolio data, uploading the portfolio data and analyzing the results. We strongly suggest designating one person (normally a portfolio manager, sustainability advisor or project manager) to keep track of all necessary steps and tasks involved in a PACTA COP.

4.2.1. Workshops

The aim of the workshops is to explain the technicalities of PACTA COP to participants and make them comfortable with the methodology and results. It is also a space for clarifying questions, giving feedback on the project and for promoting discussion. Therefore, although the participation in workshops is not mandatory, it is highly recommended that a representative of each participating financial institution is present. For institutions participating with listed equities and corporate bonds portfolios, two workshops are foreseen (apart from the introductory workshop). The workshops contents are described below.

Practical workshop. After getting familiar with the PACTA methodology and PACTA COP initiative, the participants of this workshop will get guidance on practical information and technicalities of PACTA COP. The workshop will cover the following points:

1. Presentation of the Transition Monitor Platform: a walk-through the platform and its functionalities;
2. Registration: how to register your organization in the initiative;
3. Data preparation: how to prepare the portfolio data for the project;
4. Non-disclosure Agreement: instruction on gathering signatures and sending the document;
5. Uploading your portfolio: where to upload your file and auditing it;
6. Survey: how to fill the climate action survey and the advantages of doing so;
7. Interactive report: a quick walk-through the final interactive report that institutions will receive once the project is finalized;
8. Q&A.

³ This is not required by 2° Investing Initiative to participate in PACTA COP, but in case your institution requires it a pre-signed Non-Disclosure Agreement (NDA) will be available for you on the platform. Once signed, you can send it through mail or digitalized. Please note that time allocation for this task may vary among institutions, consult your internal policies and resources available

Capital Transition Monitor.

Developed by 2° Investing Initiative with backing from UN Principles for Responsible Investment, PACTA enables users to measure the alignment of financial portfolios with climate scenarios.

Portfolio Monitor »

The workshop content might change slightly according to hosting and financial institutions needs. If after this workshop participants are still having issues, they are welcome to contact 2° Investing Initiative PACTA COP team via pactacop@2degrees-investing.org.

Results workshop. After the analysis period, each participant will receive an interactive report containing their portfolio results. The report will be available in the Transition Monitor Platform and can be accessed applying the same credentials used in the upload phase. The aim of this workshop is not to discuss individual results of participants but rather give them an overview of the meta-results, explain the interactive report functionalities and outputs and next steps. Participation on this workshop can be done under anonymous credentials. The workshop will cover the following points:

1. Presentation of meta-results: one of PACTA COP’s main outputs is a general overview of financial industry alignment with Paris Agreement goals. The main insights will be presented in this workshop.
2. Interactive report: clarify functionalities of interactive report and walk-through the visualizations
3. Next steps: overview of potential climate actions with the evidence for impact team.
4. Q&A

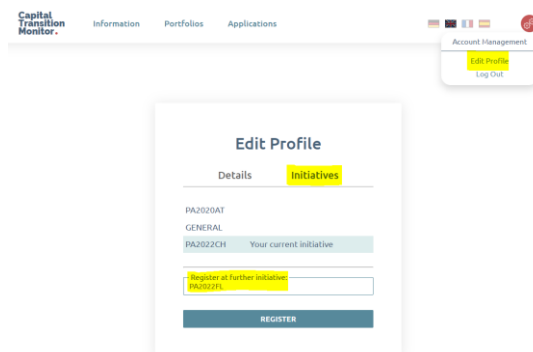
4.2.2. Register in the Transition Monitor Platform

Registering in the Transition Monitor Platform is simple. **If you don't have an account yet**, you can register following these steps:

1. Access <https://platform.transitionmonitor.com/register>
2. Enter with an e-mail address (*note: the PACTA Team highly suggests you register with an general e-mail address and not your own, as the results will be available only in the address registered and it won't be possible to change it in case you are unavailable*).
3. Choose a password
4. Enter with the initiative code signaled by your countries' host institution in the invitation letter (*note: if you don't register with the correct initiative code your results won't be generated accordingly*)

If you already have an account in the Transition Monitor Platform, you don't need to create a new one. You can access your account and follow these steps to register in a new initiative:

1. Go to the "Edit Profile" page in your account
2. Go to the "Initiatives" tab
3. Register with the initiative code received in the invitation letter



In both cases you should receive a confirmation e-mail. Click on the link to confirm your e-mail address, and you should be set to start as part of the Coordinated Project. If you don't receive the e-mail, please contact pactacop@2degrees-investing.org.

4.2.3. Data preparation

After the practical workshop, financial institutions are now able to work on the portfolio data required to the analysis. Some institutions may require a Non-disclosure Agreement (NDA) before the transfer of the data. This session clarifies the usual steps of signing the NDA and portfolio data preparation.

4.2.3.1. Non-disclosure Agreement (NDA)

Portfolio allocation data is sensitive for many financial institutions, and therefore internal policies are developed to avoid leakage and misuse of such data. 2° Investing Initiative guarantees that all data provided or downloaded in the process of using the transition monitor platform is kept confidential and will not be distributed or used for purposes other than running the analysis and providing results, as well as anonymized

use for meta-studies and peer comparison. 2° Investing Initiative uses a stand-alone server, i.e. no other website or information is stored on the server, which increases the security significantly. The server is set up in compliance with the security standards of the German Federal Data Protection Act (BDSG, "Bundesdatenschutzgesetz"), Tele Media Act (TMG, "Telemediengesetz"), and is built on infrastructure that is DIN ISO/IEC 27001 certified.

To guarantee that your data is safe, a pre-signed NDA is made available for financial institution in the Transition Monitor Platform in English language. 2° Investing Initiative does not require participants to sign this NDA in order to perform the test, however, this may be required by internal financial institutions policies.

If your institution requires such document in order to disclose portfolio data, you can download the file on the Transition Monitor Platform (tab "NDA"). After gathering the signatures, you can send the document through regular post mail or electronically (e-mail).

4.2.3.2. Preparing portfolio data

PACTA requires a specific formatting of portfolio data to perform the test correctly. This is a very important step in the project as if the data is inaccurate, your results may be compromised. 2° Investing Initiative relies on self-reported portfolio data to perform coordinated projects and 2DII is not in a position to review the data once it is uploaded. Detailed instruction on how to prepare your data and ensure the accuracy of your results will be given on the practical workshop, however, you will find a summary of the data preparation phase.

Mobilizing resources. The first step to prepare your portfolio data is to mobilize internal resources needed to gather the data, clean and formatting it accordingly. In most institutions, asset managers can quickly report portfolio data, therefore, low effort is needed in this phase. However, we recommend you inquire asset managers, risk, and compliance departments about where the data is located, and how you can access it. 2° Investing Initiative is not able to assist financial institutions in this phase as it relies solely on financial institutions' internal policies and organizations.

Gathering data. PACTA requires only 3 three types of portfolio information: the ISIN code, the market value of your investments in that ISIN, and the associated currency. Without this information for all your equity and corporate bonds portfolios, the test will not be performed. The data should be valid as of the last day of the quarter for the selected quarter (e.g. 31.12.2020 for 2020Q4). A **period (".")** should be used as decimal separator (i.e. European/American spelling). We require the data to be in a spreadsheet format saved as a .csv file. Please note that .xls or .xlsx files will not be read.

Formatting data. A sample csv file is available at the Transition Monitor Platform. The file is composed of 5 columns, in this specific order:

1. “Investor.Name”: Name of your institution. It should be the same for all lines of this file;
2. “Portfolio.Name”: You can report as many portfolios as you wish and name them as per your convenience. The results will be grouped by portfolio (each different name disclosed in this column is characterized as one single portfolio). This means that if you report 20 different portfolios, you will receive in the Transition Monitor Platform 20 different interactive reports. You will be able to group these results on the platform;
3. “ISIN”: each line of this file will correspond to one asset ISIN. ISIN stands for International Securities Identification Number and is a code that uniquely identifies a specific security issue;
4. “MarketValue”: amount allocated on that specific ISIN as per the defined time stamp (e.g. 31.12.2020 for 2020Q4);
5. “Currency”: currency associated with the market value.

The final file should resemble the figure below. Please do not change the columns organization or change their names. Check the formatting of the numbers, the software will read only **period (“.”)** as decimal separators. Make sure you are working in a .csv file; the software will not read .xls or .xlsx files. Before uploading your portfolio, we kindly ask for you to perform basic consistency checks like, i) total amount reported in USD and, ii) number of portfolios. Once the upload period is over, you will not be able to change the information reported.

Investor.Name	Portfolio.Name	ISIN	MarketValue	Currency
Investor	Portfolio1	US0378331005	53794517	USD
Investor	Portfolio1	US00817Y1082	83155043	USD
Investor	Portfolio1	US02005N1000	100202237	USD
Investor	Portfolio1	US00507V1098	8719987	USD
Investor	Portfolio1	GB0009895292	76649702	GBP
Investor	Portfolio1	US01609W1027	21667182	USD
Investor	Portfolio1	GB0002875804	84233849	GBP
Investor	Portfolio1	US09247X1019	40768353	USD
Investor	Portfolio2	FR0000120644	51069902	EUR
Investor	Portfolio2	US1729674242	33427656	USD
Investor	Portfolio2	US15135B1017	99650442	USD
Investor	Portfolio2	US20825C1045	60731838	USD
Investor	Portfolio2	US1924461023	63405909	USD
Investor	Portfolio2	US1266501006	91174916	USD
Investor	Portfolio2	SE0007691613	21885993	SEK
Investor	Portfolio2	US2786421030	72524784	USD
Investor	Portfolio3	US30303M1027	69994609	USD
Investor	Portfolio3	IE0000669501	22106098	EUR
Investor	Portfolio3	FR0000130809	20050361	EUR
Investor	Portfolio3	US02079K1079	111886410	USD
Investor	Portfolio3	US02079K3059	18340234	USD
Investor	Portfolio3	US4370761029	45214250	USD

Investor.Name: Name of your institution. It should be the same for all lines of this file. It is the highest level of aggregation of your file.

Currency: currency associated to the market value. PACTA will use this information to convert the MarketValue into USD.

Portfolio.Name: Name of the portfolio containing the assets disclosed. You can disclose as many portfolios as you wish in the same csv file (no need for multiple files). Bear in mind that the number of portfolios disclosed will be the number of reports received.

ISIN: each line of this file will correspond to one asset ISIN – it is the lowest level of aggregation. Make sure your ISINs are compatible with the international standard of 12 digits. You can report ISINs for all your assets, however, only listed equities, corporate bonds and funds will be considered in the analysis.

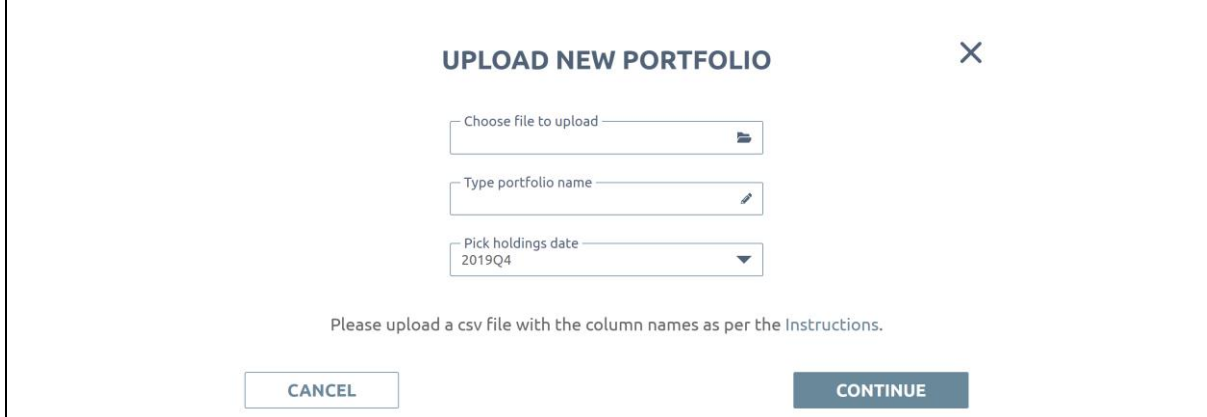
MarketValue: amount allocated on that specific ISIN as per the defined time stamp (e.g. 31.12.2020 for 2020Q4). Please report the full number (not in millions or thousands). You can report this amount in any currency – there is no need to convert the amount. PACTA will automatically convert this value in USD.

4.2.4. Upload your portfolio data

After signing the NDA, gathering, cleaning and preparing your portfolio data, the csv file is now ready to be uploaded into the website. To guarantee your file will be correctly inserted into the website and analyzed, follow the steps below:

1

Insert the file. On the tab ‘Portfolio’ of the Transition Monitor Platform, click on ‘Upload New Portfolio’, choose the file and type the file name. The “portfolio name” required is a method for us to differentiate in case you upload more than one file. The final interactive reports are generated according to the *Portfolio.Name* column of the csv file, not the “portfolio name” inserted here.



2

Audit your file. This is the most important step to guarantee your analysis will be performed accurately. After you uploaded your file, click on “View Portfolio Audit”. The first analysis might take up until 30 minutes to be performed – please do not close the window while the test runs. The test will show which assets were identified in your portfolio, which will be included in the analysis and the total amount uploaded in USD. You will be able to download the audit file and check each asset included or not in the analysis. We strongly advise you to check this file thoroughly and, in case you find any inconsistencies, please correct your data, re-upload the portfolio and repeat this step until you are comfortable with the status of your file, the coverage, and the correctness of total amount. 2DII is not able to perform further data alterations in your portfolio once the platform is closed and is not responsible for any inaccurate data uploaded to our platform. Your results will be calculated based on your self-reported data.

3

Submit. After the auditing, you are ready to submit your portfolio data.

After the uploading data phase of the project, 2DII starts the analysis period, where meta-results are produced, and individual interact reports for each participating institution is generated. Always have in mind the key project dates, like opening and closing of the portal and results delivery.

4.2.4.1. Insert the file and classify it

The PACTA tool return information to participants in the portfolio level. Therefore, correctly inserting the file in the platform and also classifying it properly is crucial to obtain the desired output.

After your data is formatted, you will need to separate the portfolios in the different csv files according to their classification. You can classify your portfolio according to 3 different categories: ESG or Non-ESG, Internal

(asset owner) or External (asset manager), and Engagement Strategy or Non-Engagement Strategy – a detailed description of these categories is displayed in the sessions below. You will need one csv file for any combination or no combination of these categories (see the image below). Signaling the categories is not mandatory: you can select none, one, two or all three and their combinations.

1. Internal		Engagement	No Engagement
	ESG	(ESG/Engagement)	(ESG/No Engagement)
	No ESG	(No ESG/Engagement)	(No ESG/No Engagement)
2. External		Engagement	No Engagement
	ESG	(ESG/Engagement)	(ESG/No Engagement)
	No ESG	(No ESG/Engagement)	(No ESG/No Engagement)

Once your csv files are correctly divided according to their categories you should follow these steps to insert your file:

5. **Choose file to Upload:** browse one file at a time to upload
6. **Type portfolio name:** choose a name for this file. We suggest the name of the file to contain the classification of this portfolio
7. **Pick holdings date:** choose the date that matches with your portfolio timestamp
8. Select the classification of this portfolio regarding ESG/Non-ESG, Internal/External, Engagement Strategy/Non-Engagement Strategy. It is also possible to make no selection.
9. Click continue

Once you click “Continue” you will be able to see the audit of your files.

✕

UPLOAD NEW PORTFOLIO

Non-ESG
 ESG

Internal
 External

Engagement Strategy
 Non-Engagement Strategy

Please upload a csv file with the column names as per the Instructions.

CANCEL

CONTINUE

4.2.4.1.1. ESG x Non-ESG Classification

ESG portfolios usually incorporate environmental, social, and governmental factors to judge an investment’s financial returns and its overall impact. The EU Taxonomy⁴ brings some aspects of activities that can be considered ESG. Nonetheless, for the purposes of PACTA analysis, participants can use a broader concept to

⁴ https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/eu-taxonomy-sustainable-activities_en#:~:text=The%20EU%20taxonomy%20is%20a,implement%20the%20European%20green%20deal

classify the portfolio as ESG. If internally your institution classify this portfolio as ESG, regardless of formal definitions or taxonomy, then you can select the ESG option in the portfolio upload.

4.2.4.1.2. Internal x External

This classification seeks to differentiate asset owners and asset managers.

- **Internal:** assets in this portfolio are directly managed by your institution. Another way of thinking about this classification is whether you are the asset owner.
- **External:** assets in this portfolio are indirectly managed by your institution (i.e., the assets are managed by a second organization)

4.2.4.1.3. Engagement Strategy x Non-Engagement Strategy

Engagement with invested companies means a long-term active dialogue between investors and companies on climate factors. Engagement strategies allows investors to mitigate climate risks and contribute to greening companies by shifting production to sustainable alternatives. This type of strategy can have a high-impact in climate metrics, but it only occurs in the long-run.

This classification gives investors the chance to flag is portfolios reported in a given file are subject to engagement strategies or not.

4.2.4.2. Audit your file

You can audit the files you are uploading through the so called “audit function”. In this step you will have more clarity on the coverage of PACTA regarding your total assets, as well as spot errors in your input such as negative numbers and invalid ISINs. This is one of the most important steps when transferring your data: it guarantees that your portfolio is accurate and can be included in the country’s meta-analysis. 2DII is not responsible for data reported wrongly or inaccurate figures: the PACTA analysis relies on self-reported data, therefore **it is financial institutions’ responsibility to make sure what they are reporting is precise and truthful.**

To audit your file upload a portfolio and click “View Portfolio Audit”. A window will pop, and the function will be triggered. The process can take up to 30 minutes to be concluded, therefore we advise you not to close the browser window while it is loading.

Portfolio Management

- About
- Instructions
- NDA
- Survey
- Portfolio
- Submission



Upload New Portfolio

Sample View Portfolio Audit

Non-ESG Internal This file includes 1 portfolio(s) Modify Delete

The first audit tab is called **“Current coverage”**. In this tab you will have a full picture of the assets identified by the PACTA tool and the total amount uploaded in USD by asset class. The chart is a visual representation of the assets covered. The blue area are the assets identified in our database, but note that not all of these assets will be part of the final analysis as assets can be identified but might not be part of the PACTA scope. The red area corresponds to invalid ISIN or, in other words, ISINs that do not follow the standard and therefore needs to be corrected. The gray area corresponds to assets identified but not covered in our database. **Please note that this coverage can change: PACTA relies on external data streaming services and the availability of data in such databases may vary** depending on time, market movements and data disclosure. The PACTA team updates internal financial databases regularly in order to achieve the best coverage possible.

1. Current Coverage
2. Incorrect ISINs
3. Download Audit
✕

By count of ISINs

- Included in analysis: 81 (97.6%)
- Invalid input: 1 (1.2%)
- No data coverage: 1 (1.2%)

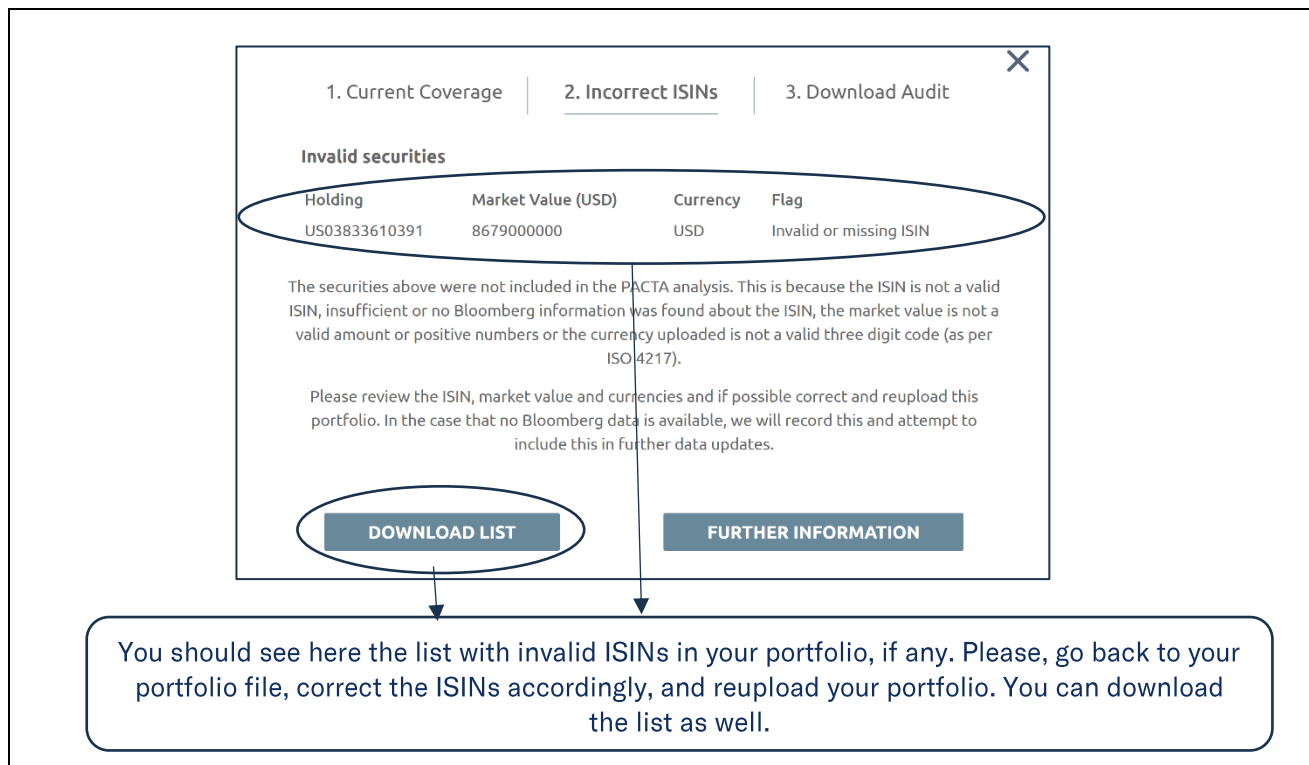
The portfolio you have uploaded has \$125,666,000,000 USD in holdings. Of which \$0 USD is in bonds, and \$116,504,000,000 USD is in equity. The remainder of the holdings are in asset classes outside the scope of this analysis. For more information as to how each holding is classified, review the chart and audit file below. Any erroneous inputs will be ignored in the following analysis. ISINs missing from Bloomberg will be captured and added to our data base on a rolling basis. Similarly companies incorrectly classified will be analyzed.

FURTHER INFORMATION

Coverage of uploaded assets. Check if the total count of assets corresponds to what you reported and understand what is included in the analysis or not.

Total amount uploaded in USD by asset class. Please check if this amount is in line with what you expect for your portfolio.

The next tab to be analyzed in your audit, is the “**Incorrect ISINs**” tab. In case PACTA reads through an invalid ISIN or an ISIN not found in Bloomberg, then it will be listed here. Please check the ISINs and correct it accordingly.



1. Current Coverage | **2. Incorrect ISINs** | 3. Download Audit

Invalid securities

Holding	Market Value (USD)	Currency	Flag
US03833610391	8679000000	USD	Invalid or missing ISIN

The securities above were not included in the PACTA analysis. This is because the ISIN is not a valid ISIN, insufficient or no Bloomberg information was found about the ISIN, the market value is not a valid amount or positive numbers or the currency uploaded is not a valid three digit code (as per ISO 4217).

Please review the ISIN, market value and currencies and if possible correct and reupload this portfolio. In the case that no Bloomberg data is available, we will record this and attempt to include this in further data updates.

DOWNLOAD LIST **FURTHER INFORMATION**

You should see here the list with invalid ISINs in your portfolio, if any. Please, go back to your portfolio file, correct the ISINs accordingly, and reupload your portfolio. You can download the list as well.

In the last tab, “**Download Audit**”, you can download a full csv file with an overview of your portfolio audit. Below you will find a description of columns available in this file.

- investor_name: Input by the user in the portfolio CSV
- portfolio_name: Input by the user in the portfolio CSV
- holding_id: Unique, sequential ID given to each holding in your portfolio
- isin: ISIN provided by the user in the portfolio CSV
- value_usd: market value reported by user converted to USD
- company_name: company name determined from the user provided ISIN
- asset_type: asset type determined from the user provided ISIN:
 - Equity: refers to listed equity, this asset type is read through PACTA and included in the final analysis;
 - Bonds: refers to corporate bonds, this asset type is read through PACTA and included in the final analysis;
 - Funds: refers to ISINs attributed to funds, this asset type will be looked-through and PACTA will identify the equities and corporate bonds components of the funds and attribute it to your portfolio as indirect ownership of assets. Fund’s coverage relies on Lipper data, and is subject to change across the project period;
 - Others: refers to assets identified but not covered in PACTA (sovereign bonds, derivatives, commodities, etc.);
 - Unclassifiable: assets not identified and not covered by PACTA.
- valid_input: logical TRUE or FALSE flag.
 - FALSE: the “Flag” variable (see description below) is classified as “Holding not in Bloomberg database”, or “Invalid or missing ISIN”, or “Negative or missing input value”;
 - TRUE: the “Flag” variable is classified as “Included in analysis.

- **direct_holding:** logical TRUE or FALSE flag:
 - TRUE: asset owned directly in your portfolio;
 - FALSE: asset owned indirectly through a fund or fund of funds.
- **financial_sector:** Determined PACTA (climate-relevant) sector as the primary activity of the company:
 - Oil&Gas;
 - Shipping;
 - Automotive;
 - Power;
 - Aviation;
 - Steel;
 - Coal;
 - Cement;
 - Other (sector identified but not a PACTA sector);
 - Unclassifiable (sector not identified).
- **bics_sector:** BICS broad level sector classification
- **sectors_with_assets:** "+" separated list of PACTA sectors that the company has assets in (this often includes more PACTA sectors than the company's primary sector/activity)
- **has_ald_in_fin_sector:** logical TRUE or FALSE flag:
 - TRUE: PACTA have data for assets of the company that are active in the company's primary sector (linked to financial_sector)
 - FALSE: PACTA do not have data for assets of the company that are active in the company's primary sector (linked to financial_sector)
- **flag:** identifies whether the asset is included in the analysis or not
 - Included in the analysis: asset could be identified and market value assigned is valid (please note that this doesn't mean that this asset will be included in the final analysis. The asset can be identified but not belong to a PACTA sector – which ultimately means it will be out of the final results);
 - Holding not in Bloomberg database;
 - Invalid or missing ISIN: please check the ISIN and correct it accordingly;
 - Negative or missing input value: please check the market to check whether it is negative or missing, correctly it accordingly.

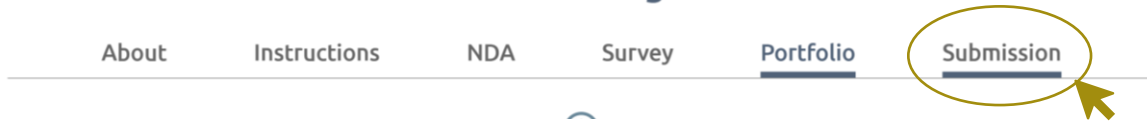
After you went through all the audit and corrected all the inconsistencies, you can now reupload your portfolio and go through the audit process again. Retake the audit process until you are comfortable with the accuracy of the data you are uploading. 2DII relies on your data to generate your results and to complete the country analysis. The PACTA team has no means to check whether your data is accurate or to change your uploaded data once is submitted, therefore, please keep in mind that the auditing process and the reliability of your data is key for the entire PACTA COP project.

Once you are comfortable with your portfolio data, you are ready to submit it. The submission step is crucial in order to confirm your participation in the project. Without the formal submission your portfolios won't be considered, and you won't receive your results. To complete this step, you can follow the below instructions:

- Go to the "Submission" tab
- Select the files you want to submit
- Click in the button "Submit"

This is the last step you need to take in the project: after this step you just have to wait until your results are available.

Portfolio Management



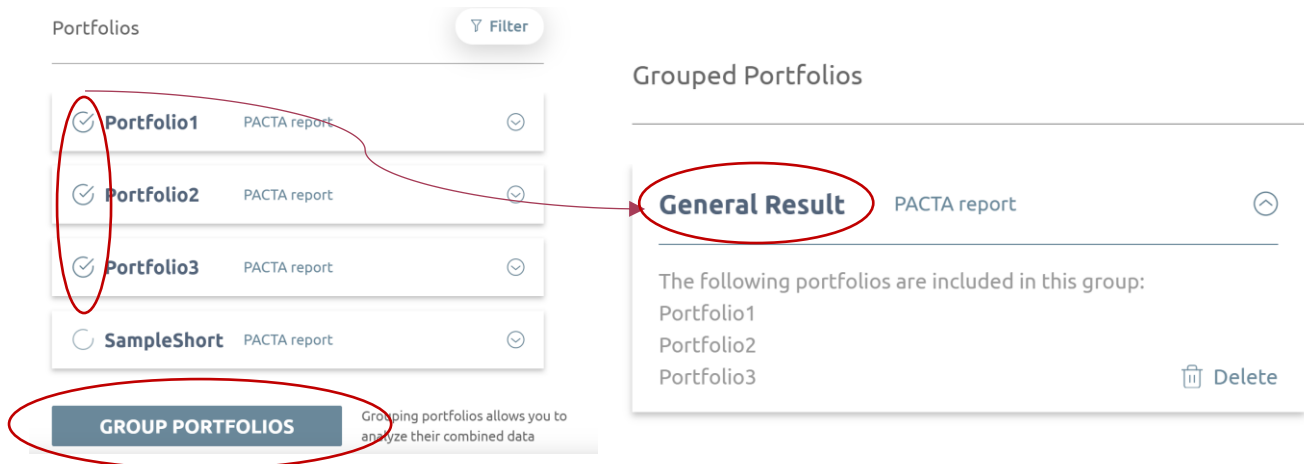
4.3. Accessing your results

After the analysis period and under the project scheduled, you will be informed by e-mail once your results are ready. To access your results simply log-in in the Transition Monitor Platform with the same credentials you used to upload your portfolio and click in “Results”. You can see an example of the interactive report you will receive [here](#).

4.3.1. Grouping your results

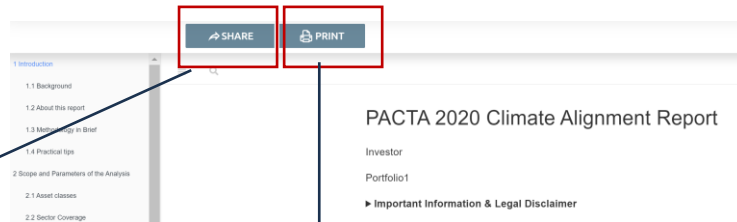
As mentioned previously, you can submit as many portfolios as you wish. You will receive one interactive report for each portfolio disclosed. If you wish to group your portfolios and see your general results you can do this by

10. Selecting the portfolios you want to group
11. Click in “Group Portfolios”
12. Give a name for this group
13. Analyze your aggregated results on the report generated under “Grouped Portfolios”

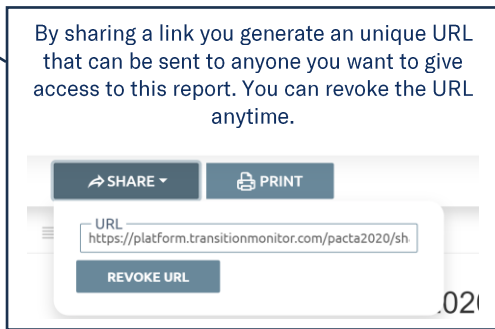


4.3.2. Sharing your results

You will not be required at any stage of this test to share your results. However, if you want to share your full report internally or externally you can do this by sharing a temporary link or by printing a static PDF. The tool offers both possibilities for all your individual portfolio results and grouped ones.



By sharing a link you generate an unique URL that can be sent to anyone you want to give access to this report. You can revoke the URL anytime.



By printing a PDF you lose the interactiveness of your report, But you can customize it by adding, excluding the graphs you want.

