

Strategy & Sustainability

Guiding a bank's energy portfolio to Paris

Benchmarking the financial transition to a Paris-proof economy

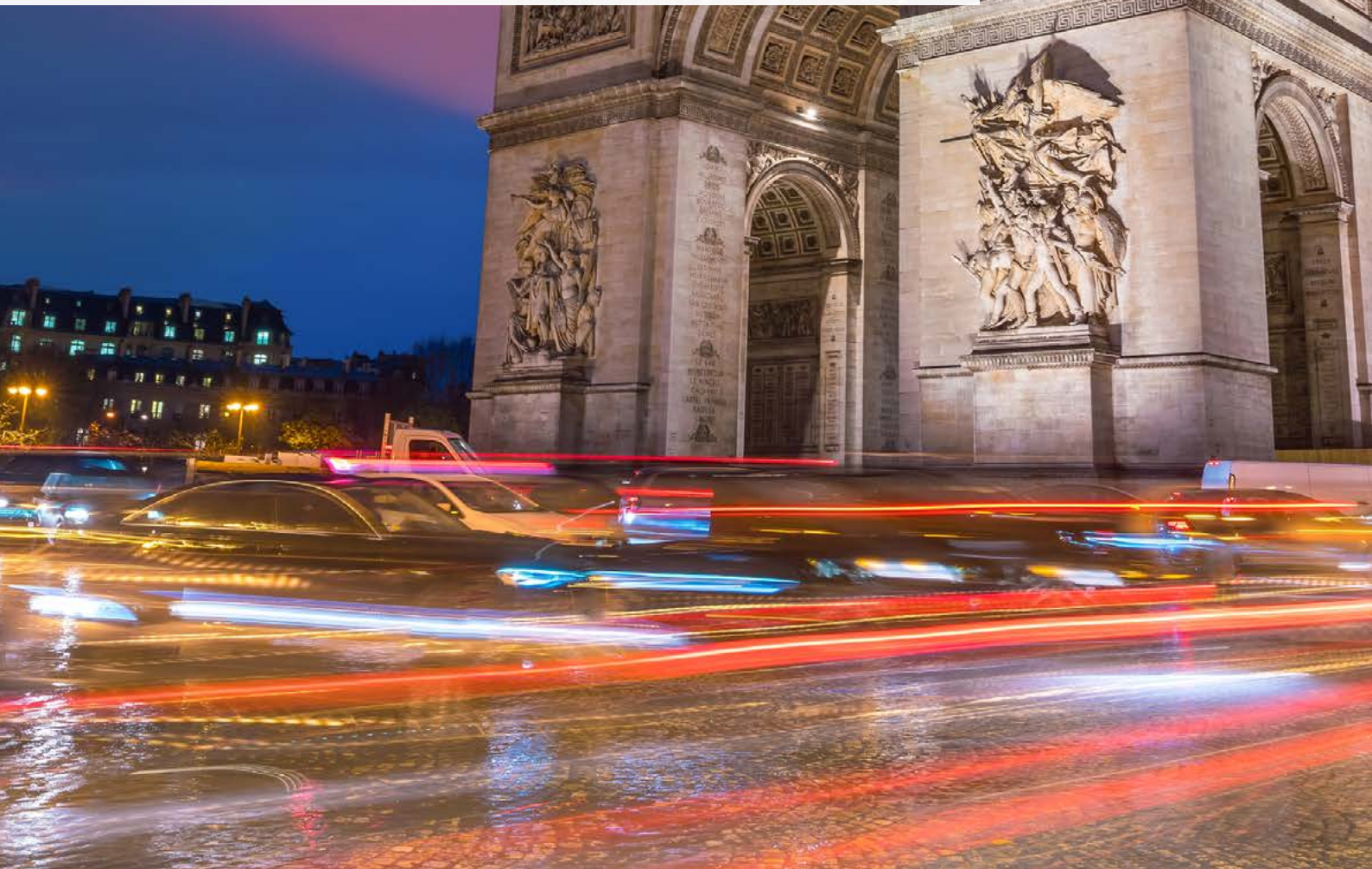


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Preface by Climate Envoy of the Kingdom of the Netherlands

Marcel Beukeboom

I grew up with the archetypical image of a banker. My uncle was a director of a local bank in a rural town in the Netherlands. Solid and reliable, one of the dignitaries of the town. You could trust him with your money, and be sure that investment advice would be on the conservative side. Keeping risks manageable meant that he usually kept things as they were.

“Keeping things as they are” is no longer the name of the game. Doing the things we have always done will irrevocably lead us to be hit by the limits to growth that the Club of Rome outlined as long as 50 years ago. Changing our behaviour proves to be the most difficult part of the required transition. This is especially true for bankers, for whom more change equals more risk. From whom we, their customers, demand that they avoid situations that can lead to losses.

What is different from the time of my uncle, is that we are now aware that we are facing global warming. The resulting climate change also puts us at risk of losing ecosystems, biodiversity, air and soil quality and nature at an unprecedented rate. This situation demands more than incremental change – we are looking for systemic shifts. The Paris Climate Agreement of

2015 created momentum for such a systemic shift. Governments agreed to limit global warming, adapt to the already changing climate and bring financial flows in line with these objectives. Since then governments have continued to work on details of the agreement. Their diplomats are working on the distribution of individual countries’ contributions. One could argue that a diplomat’s profession is similar in some ways to that of the archetypical banker: things are not moving fast enough.

Although much work remains to be done on the technical aspects of the Paris Agreement, it is already having a deep impact in the real economy. Customer demands across the globe are changing due to a growing awareness of the urgency of the climate crisis and businesses are responding to these changing customer demands. And despite the conservative DNA of bankers, the Dutch financial sector is now showing leadership, realising that it is in their customers’ best interest to be proactive in this systemic shift.

As a climate diplomat I see the difficult geopolitical realities, slowing the pace of implementation of the Paris Agreement. At the same time I see many people acting on its promise. I take the example of financial institutions like ABN AMRO, and partnerships among financial institutions such as PCAF, with me into this world of tough negotiations. These examples put pressure on those unwilling to act, and inspire those who do not yet know how to act.

Together we can make it happen.



**From the author,
Global Sustainability
Advisor**

Jan Raes

A better understanding of climate change in relation to banking

The IPCC has been researching the complex relationship between climate change, global warming, human activity and economic loss for years. The scientific community of the IPCC by now offers statistical proof for the increase of economic loss due to extreme weather events. Uncertainties remain about the relationship between cause and effect, because weather events are variable over time and have an unequal geographical distribution across the globe. Despite these uncertainties and the lack of perfect correlations, this IPCC research has been going on for decades and by now it is showing a clear trend, based on a high level of confidence and a high level of agreement. It is this growing body of scientific evidence that has put the economic effects of climate change on ABN AMRO's agenda. The estimates of annual economic losses in consumption range widely from a few billion euros to 200 or even 500 billion euros per year.

Beyond the precautionary principle

While the scientific community continues gathering evidence and data, the precautionary principle alone is enough for ABN AMRO to prepare and to act. At ABN AMRO we also dare to go beyond this precautionary principle, since we believe that the economic effects could even be greater than currently projected by the IPCC. After all, the loss of human life and damage to precious ecosystems is hard to monetise and not yet fully reflected in the IPCC's estimates. These insights call for adjustments to our current activities. Economic sectors in which the bank's clients are active will undergo transformation or fundamental change over the coming years. Therefore the bank has taken on the challenge to better understand and better manage the risks of climate change to improve and maintain relationships with all its stakeholders. Acceptance of this challenge is needed to deliver on ABN AMRO's purpose "Banking for better, for generations to come".

Cool, calm and collected

We also acknowledge that climate change at times has become a media circus with many alarming distractions. Professionals at the bank have to remain cool, calm and collected. It is this mindset that drove ABN AMRO to collaborate with the international think tank called 2 Degrees Investing Initiative (2DII). Together with financial players around the world, 2DII operates at the crossroads of climate science, finance and data science. ABN AMRO and 2DII were already in contact in the run-up to the Paris Agreement. In 2012 2DII polled ABN AMRO about the preparation of France's groundbreaking article 173. This article of law contains the French regulation on obligatory climate reporting by financial institutions. This was also the year that ABN AMRO made public that sustainable banking was an integral part of the bank's long-term priorities. Continued collaboration with 2DII is part and parcel of ABN AMRO's structured and integrated way of making sustainable ambitions and targets concrete and actionable for ABN AMRO's business lines and employees.

Paris Agreement is a game changer

Since the signing in 2015, ABN AMRO has considered the Paris Agreement to be a game changer. The Paris agreement offers guidance for making ABN AMRO's energy portfolio Paris-Proof. Financial institutions will increasingly focus on those areas where the production profile of clients does not align with the Paris Agreement's goal: "Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels." We are only five years down the road now with the Paris Agreement. Achievement of these goals is a match that will be played over the course of the next decade, the next twenty to thirty years. The longer we wait, the more expensive the solutions will be .

Advice to the reader

Although the executive summary can save the average reader precious time, we advise those professionals that are involved in the combination of energy, finance and the role it plays in preventing uncontrolled climate change to read the full report. Despite the information density of the report that follows and despite the fact that it can also be interpreted as an instruction manual, we wish you pleasant reading.

Executive Summary

Committed to Paris Agreement

ABN AMRO commits to the achievement of a Paris-proof economy by 2030. Paris-proof means that climate-critical sectors need to lower the amount of greenhouse gas emissions and ABN AMRO should align its financial exposure to climate-critical sectors in line with the goals of the Paris Agreement. To enable this transition, ABN AMRO needs to set concrete and validated reduction targets to manage financial allocations in its loan and investment portfolios. Alignment with the Paris Agreement will not happen automatically.

ABN AMRO is well on track, but not fully aligned yet

On the one hand, ABN AMRO is well underway with its energy clients: already 60% of the loans in its energy portfolio is allocated to renewable (solar and wind) power generation capacity. On the other hand, this is not yet enough for ABN AMRO and its clients to be aligned in the future with the Paris Agreement. The future expansion of cleaner production capacity among clients is the issue that matters most, not where ABN AMRO is today. Continued investment in ever cleaner technologies and active engagement with energy clients are required towards 2030.

In the next 10 years, ABN AMRO's loan exposure to power generation should change as follows:

- ▶ Financial allocation to renewable power should increase from 60% to 65%;
- ▶ Hydro and nuclear power can remain unchanged at 10% of the financial allocation;
- ▶ Financial allocation to coal power should drop from 9% to 6%;
- ▶ Allocation to gas power should drop from 20% to 17%;
- ▶ Allocation of the financial exposure to power generated from oil should drop below 1%.

We did the same exercise for the bank's upstream clients.

In the next 10 years, ABN AMRO's loan exposure to upstream clients should change as follows:

- ▶ Financial allocation to coal should further drop from 5% to 2%;
- ▶ Financial allocation to oil should drop from 53% to 50%;
- ▶ Allocation to gas can increase from 42% to 47%.

No quick fix

Most readers will think that the above alignment can be easily achieved by ending the relationship with some clients (exclusion) or by letting loans expire without renewal. Although exclusion of economic activities by banks can have a great impact, this is not ABN AMRO's goal. The study of how to align with Paris should not be used as a quick fix. ABN AMRO could also keep its exposure amounts to the energy sector in line with the current exposure amounts. For alignment with the Paris Agreement, the addition of clean production capacity and/or future decommissioning of less clean capacity is what matters most. Engagement with existing clients on energy transition is an essential part of the recommendations of this report.

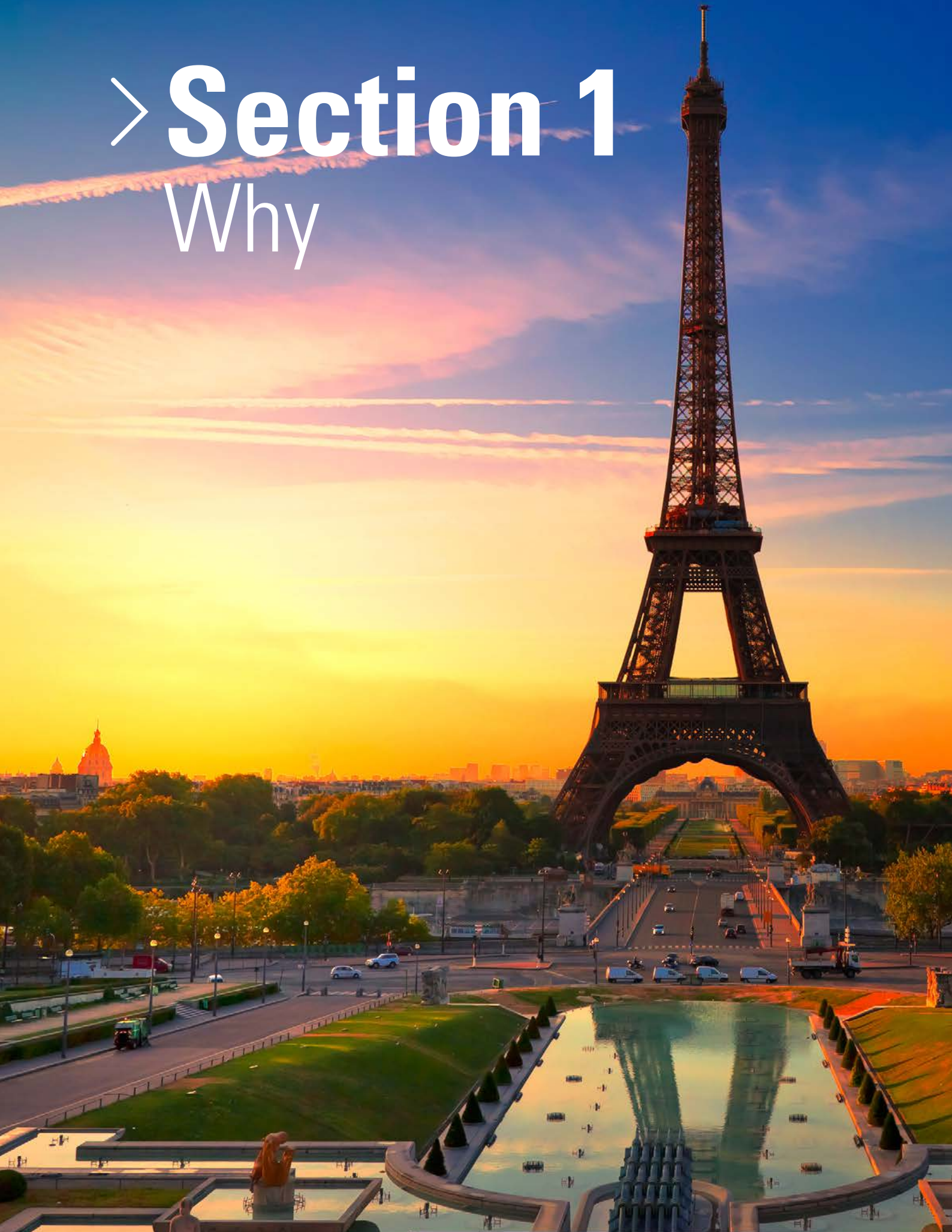
Next steps

1. Based on the outcomes of this analysis, ABN AMRO is working towards setting targets aligned with the Paris Agreement. ABN AMRO recognises that such targets will only be achieved if they lead to emissions reduction.
2. ABN AMRO will further develop carbon accounting skills as a partner of PCAF. This will enable the bank to move from measuring portfolio alignment with the Paris Agreement towards steering on GHG emission reductions measured in the real world. This means that ABN AMRO has to measure, report and steer on the impacts of the bank and its clients.
3. ABN AMRO will continue to work with initiatives such as 2DII, energy clients and sector experts to build the real-world evidence that the bank is making a positive impact. ABN AMRO should use those future findings to increase the efficacy of its actions and to stimulate growth of Paris-proof economic activities.

This report has been produced with the right to copy.

> Section 1

Why



What is the Paris Agreement?

The Paris Agreement is considered a milestone in international climate diplomacy. In 2015, at the COP21 international climate summit in Paris, the Paris Agreement was signed by 195 countries to prevent and combat the worst effects of global warming. The parties signing the Paris Agreement pledged to take efforts to limit global warming to well below 2°C. The Netherlands also signed and ratified this goal.

Commitment to the Paris Agreement

There are three important steps that connect ABN AMRO as a private company to the Paris Agreement:

Article 2.1c of the Paris Agreement

This is relevant to private companies and banks in particular. Through this article the United Nations Framework Convention on Climate Change (UNFCCC) process has set a collective goal to adapt finance such that it can successfully address climate change. The article sends a strong signal to the finance sector to align portfolios with the Paris Agreement.

Paris climate conference and PCAF

A second important step is that at the 2015 Paris climate conference, ABN AMRO became the co-founder of the Partnership for Carbon Accounting Financials (PCAF). ABN AMRO, together with many other Dutch financial institutions, committed to climate improvement by taking the Dutch Carbon Pledge. New participants subscribe to this pledge upon joining the PCAF.

Footnote <https://www.abnamro.com/en/newsroom/press-releases/2018/financial-institutions-demonstrateco2-impact.html>

Dutch Climate Agreement

The third step took place in 2019 when ABN AMRO signed up to supporting the Dutch government's climate goals. The Dutch climate goals are aligned with the Paris Agreement.

Footnote: <https://www.abnamro.com/en/newsroom/newsarticles/2019/abn-amro-signs-up-to-dutchgovernments-climate-goals.html>

Purpose of collaboration between ABN AMRO and 2DII

The purpose of the collaboration between ABN AMRO and 2 Degrees Investing Initiative (2DII) on the preparation of science-based targets for various parts of ABN AMRO is twofold:

1. Measuring the exposure of ABN AMRO's corporate loan book to different high and low carbon technologies across several climate relevant sectors
2. Assessing the alignment of the production plans of ABN AMRO's clients with a scenario in line with the Paris Agreement

Footnote: Science-based targets are targets adopted by companies to reduce greenhouse gas (GHG) emissions. These targets are considered science-based if they are in line with the level of reduction of GHG emissions required to keep global temperature increase below 2°C compared to pre-industrial temperatures, as described in the Assessment Report 5 of the Intergovernmental Panel on Climate Change (IPCC).

Who is 2DII

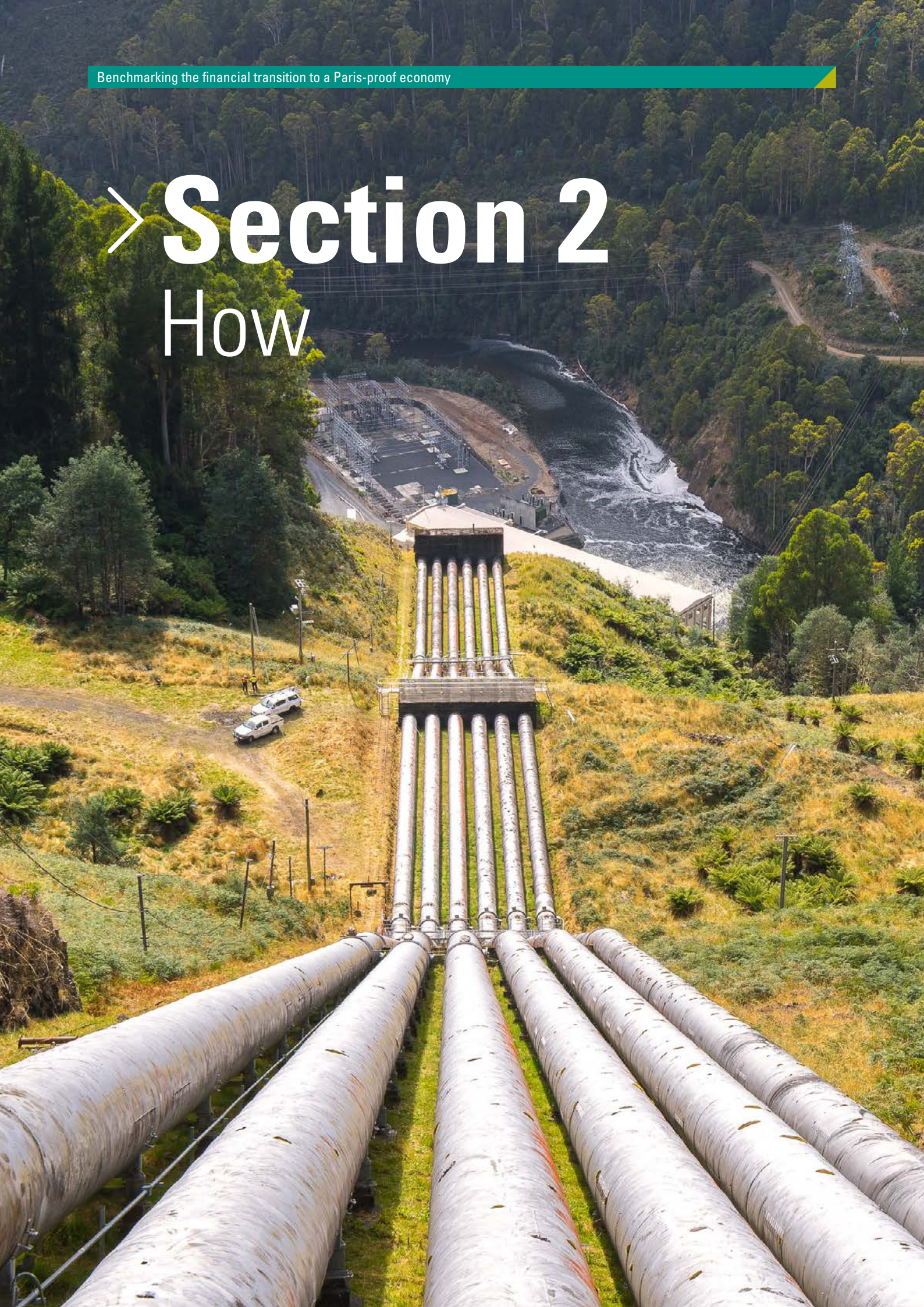
2 Degrees Investing Initiative (2DII) is an organisation based in Paris, London, Berlin and New York City. It is the leading research centre on climate-related metrics for financial markets globally, and notably leads most EU-funded research projects on the topic. It regularly produces analysis and policy recommendations on the topic of financial institutions' climate disclosures.

Taking the Paris alignment of our lending portfolio to a higher level

The PCAF method is used for reporting on ABN AMRO's GHG emissions at portfolio level. As a first step ABN AMRO started to report the GHG emissions of its commercial lending exposure (loan book) in 2017. This corresponds to ABN AMRO's scope 3 emissions and is based on the PCAF method. PCAF is a great starting point for financial institutions worldwide. This study with 2DII allows ABN AMRO to measure and express how well the ABN AMRO portfolio and clients align (or do not align) with the Paris Agreement. In the next section, you can read how this methodology works.

> Section 2

How



Which sectors in this banking pilot were analysed and why?

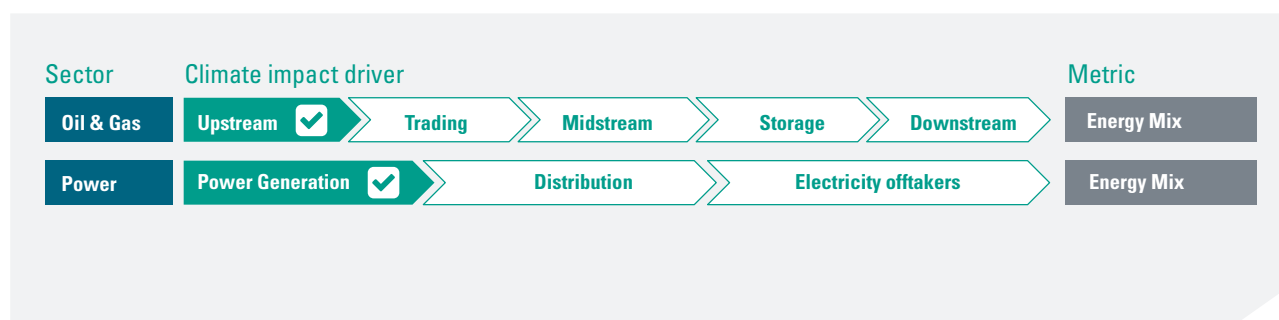
The results published in this report reflect the alignment with the Paris Agreement of ABN AMRO's exposure to clients in the power generation and upstream fossil fuel extraction sector. The analysis is based on the financial exposure at year-end 2018.

The results show to what extent total future production of the companies in the loan book align with the trajectory to reach the Paris Agreement's goals.

What part of the sector value chain was analysed and why?

The reason we chose these specific parts of the value chain is that upstream and power generation simply impact carbon emissions the most. Another factor is the excellent availability of asset level data for power generation and upstream fossil fuel production (see diagram 2 below). In the power sector we avoid double counting of GHG emissions by excluding the distribution and electricity offtakers. In the fossil fuel extraction sector the same logic applies. Trading, midstream, storage and downstream transport and treatment of fuels all follow the volumes produced in the upstream stage.

Diagram 2. Part of sector value chain in scope of analysis: the green checkmark indicates which part of the value chain is in scope.



What is the matching percentage and the amount of loan book exposure in this 2DII banking pilot?

Data matching is a key activity in the 2DII methodology. For 87% of ABN AMRO's exposure to clients in the power generation sector 2DII was able to match the client and loan data to the production asset data. This amounts to a loan exposure of 2.2 billion euros for power generation clients that was analysed. For ABN AMRO's exposure to upstream fossil fuel clients, 2DII was able to match 85%

of the client loan data to the production asset data for a total of 5.7 billion euros in loans. Only if this matching percentage exceeds 80% can analysis of alignment with the Paris Agreement start.

Diagram 2 bis. Matching percentage of the loan book exposure in scope of analysis

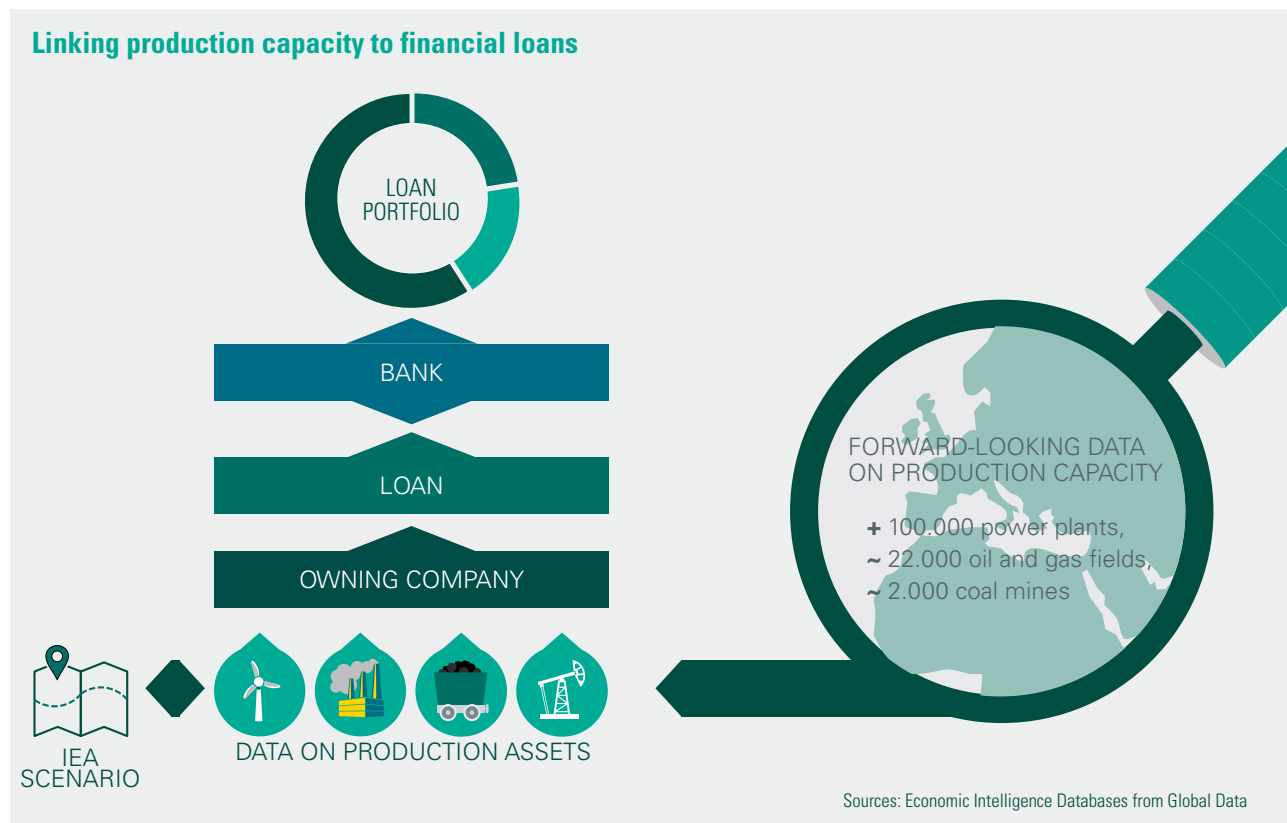
Sector value chain	Loan book exposure (in billions of euros)	Match percentage by 2DII tooling
Upstream fossil fuels	5.7	85%
Power generation	2.2	87%

The core of the 2DII methodology is the connection between physical assets and financial instruments

In order to link data to the exposure of ABN AMRO's corporate loanbook, 2DII has developed the methodology described below. Diagram 1 outlines the data used in the analysis:

1. The first step in preparation of the analysis is gathering client data of the ABN AMRO loan portfolio for climate relevant sectors. These sectors were chosen based on their impact on climate change and their importance for the global transition towards a Paris-proof economy. In the case of this report, our scope is the loan portfolio for the energy sector.
2. The loan amount (the money) is disbursed by ABN AMRO to the client. The client who uses the money is called the "owning company" in the diagram
- below. The loan allows the client to own and operate production assets.
3. Algorithms and manual matching connect loan data for every client to the production database. This link between production capacity and the financial loan also contains forward-looking data on the expansion of production capacity by our clients. The source for this market data is the Economic Intelligence database provided by Global Data.
4. The last and important step is comparing production capacity associated with each client to a particular emission trajectory and the corresponding warming potential of a scenario trajectory published by the International Energy Agency (IEA).
5. Once the link between the loan data, production data and scenario data is established, the analysis can start.

Diagram 1. Connecting energy related assets to financial instruments via a Market Intelligence Database



How do ABN AMRO and 2DII measure portfolio alignment with the Paris Agreement?

To measure alignment with the goals of the Paris Agreement we need a frame of reference for the energy sector. The International Energy Agency (IEA) has developed such a frame of reference: the Sustainable Development Scenario (SDS).

The IEA's Sustainable Development Scenario offers a pathway for the energy sector where global energy-related GHG emissions enter a sustained decline to net zero emissions by 2070. The scenario charts a path for the energy sector to be aligned with the Paris Agreement by holding the rise in global temperatures to well below 2°C. It is complemented with a corresponding technology mix for the energy sector.

Using market intelligence data to forecast future installed capacity

The connection between ABN AMRO's financial exposure and the IEA scenarios is made on the basis of 2DII's allocation method. This method translates the SDS scenario into targets specific to ABN AMRO's loan book. The allocation rule is that all clients provide the same proportion of effort relative to their size. The 2DII production database includes forward-looking data for each client in the energy sector. Therefore, the forecasted production plans of ABN AMRO's client base can be compared to the targets derived from the SDS scenario. This forecast is based on industry expert knowledge, market intelligence databases and investor communications, researched and aggregated by Global Data. In our case for the period 2019 to 2024.



More and more professions measure, analyse and forecast non-financial data for decision-making

Measuring financial allocation

In order to accurately study financial allocation of a financial institution's loan book, the production capacity is weighted according to the size of the loan to the client in the loan book. With this weighting technique, a loan of 100,000 euros has less impact than a loan of 1 billion euros. The financial allocation data allow banks to measure the alignment of their financial exposure with the scenarios of the IEA and the Paris Agreement.

Explanation of the IEA scenarios used

For the analysis we used the technology mix scenarios of the International Energy Agency (IEA). These are related to the following temperature ranges of global warming:

Above 3.2°C -> CPS = Current Policies Scenario. The Current Policies Scenario is a baseline picture of how global energy markets would evolve if governments make no changes to their existing policies and measures.

2.7°C to 3.2°C -> NPS = New Policies Scenario, now replaced by the Stated Policies Scenario, or STEPS, which is identical in design to the previous NPS. The Stated Policies Scenario reflects the impact of existing policy frameworks and today's announced policy intentions.

1.75°C to 2°C -> SDS = Sustainable Development Scenario. This IEA scenario charts a path fully aligned with the Paris Agreement by holding the rise in global temperatures to "well below 2°C and pursuing efforts to limit [it] to 1.5°C"

The Paris Agreement and the probability of outcomes

The Paris Agreement calls for an early peak and rapid subsequent reductions in GHG emissions. The SDS policy trajectory is consistent with this. If the scenario plays out, the general economy will decrease its GHG emissions from 33bn tonnes in 2018 to less than 10bn tonnes by 2050 and reach net-zero in 2070. The SDS comes with a probability and an uncertainty of outcomes. There is no single party in the world that can achieve the SDS alone. If decision-makers follow the policy trajectory of the SDS, then the temperature rise will be limited to below 1.8 °C with a probability of 66%. In the SDS scenario, the probability that the temperature will be limited to below 1.65 °C is 50%. For some time the IEA has been working on developing scenarios towards and below 1.5°C. Long awaited by the environmental and energy community. It is good to realize that any IEA scenario is subject to probabilities of outcomes that are below 100%.

2DII compares client data to the IEA scenario

For each client 2DII calculates the technology mix, based on the production capacity data in the 2DII production database. Below are two sample data sets that originate from the analysis. These illustrations show that the percentages for each technology in the technology mix of most clients differ. It is the technology mix of an individual client that steers the degree of alignment to the IEA scenario of the client exposure. The IEA scenarios allow a diversity of installed technologies. This possibility to diversify the technology mixes is important to our clients.

Diversity plays a crucial role in energy supply security, the efficiency of energy use and production, and the ability of our energy system to transition to new technologies. The client level technology mix gives a good overview of the distribution of production capacity across low and high carbon technologies. This also gives a first indication to ABN AMRO of which companies it needs to engage with first. The next step is to compare the forward-looking production plans to the trends of the IEA's scenarios.

Illustration 1. An anonymised sample of technology mixes of power generation projects and companies

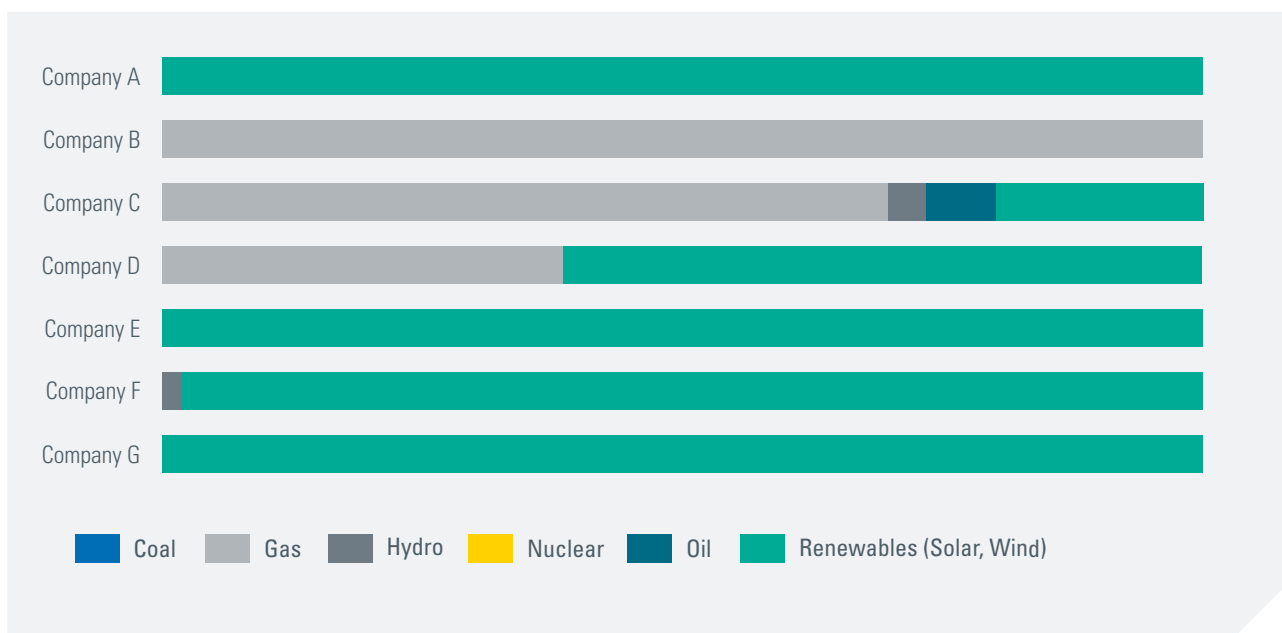
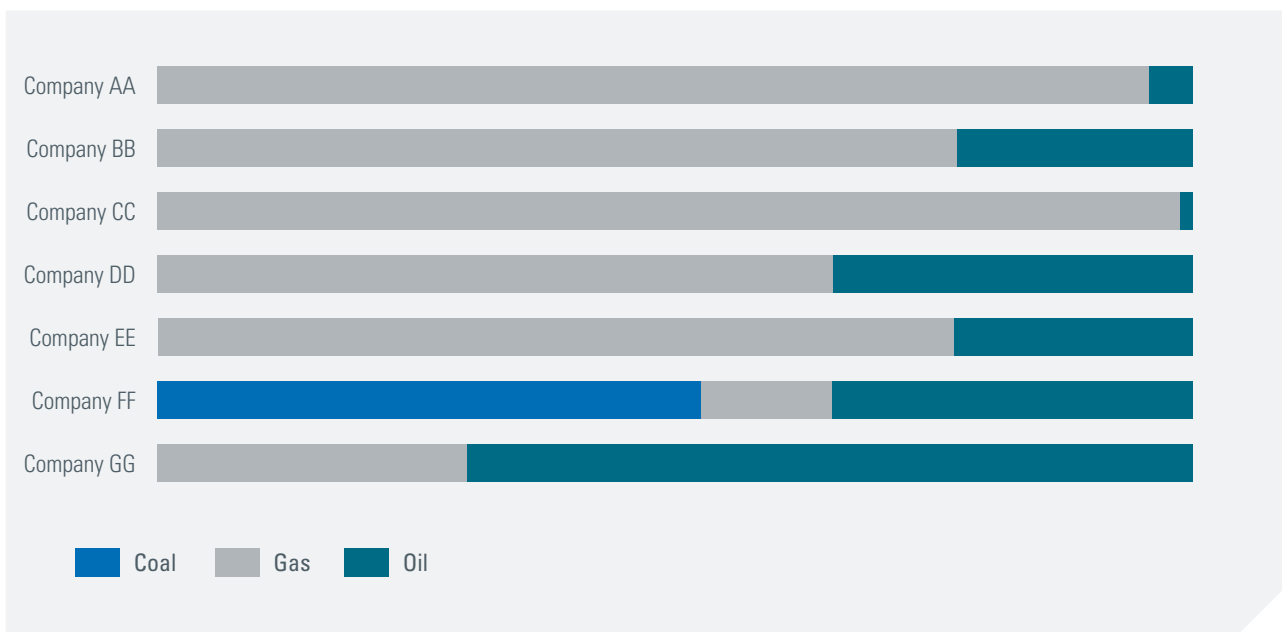


Illustration 2. An anonymised sample of technology mixes of upstream projects and companies



Further considerations when working with the 2DII methodology

Sectoral in-depth knowledge of all energy related technologies remains a key asset.

Both renewables and fossil fuels will remain relevant for years to come. Therefore broad energy sector knowledge remains essential while working on the decarbonisation of our economies. To achieve truly sustainable energy portfolios, in-depth sector knowledge across all existing technologies and the focus on innovation remains essential.

Carbon capture and storage not in this analysis.

The IEA uses carbon capture and storage in its scenarios. Carbon capture and storage are not mature technologies. Due to the experimental phase of testing these solutions, carbon capture and storage do not yet play a role in this analysis.

Role of gas in 2DII analysis and IEA scenarios.

Gas is considered a transition fuel in the IEA energy scenarios used by the 2DII analysis. This is reflected in the outcomes presented in the analysis. In the short run the 2DII analysis outcomes for power generation clients focus on reduction of coal power and the increase of power from renewables by 2024. Electricity generated from gas contributes to GHG emissions and is considered a transition solution in all IEA scenarios. For an analysis with a time horizon longer than 5 years, gas definitely comes into the picture as a contributor to GHG emissions. In the short run the analysis outcomes for upstream fossil fuel clients focus primarily on reduction of coal and oil in favour of gas. Gas is used as a substitution for oil and coal in the SDS target for the upstream portfolio. However, to limit the contribution of fossil fuels to global warming, our economies need to reduce the GHG emissions of all the fossil fuels that we use. This includes the GHG emissions from gas. In the medium to long term cleaner alternatives to the use of gas will become more available and more affordable. The role that gas plays can be replaced by biogas, geothermal solutions, electrification, renewable energy storage, green or blue hydrogen, biofuels, synthetic fuels and other innovative technologies.

Analysis of power generation and upstream is different

The analysis for upstream fossil fuel extraction is fundamentally different from the power generation sector

results. This is because, among these three analysed technologies for upstream clients (oil, gas and coal), there are no renewable alternatives available within this 2DII analysis.

Power generation is a regional market and this is reflected in the methodology

As the power generation market is a regional market, the IEA scenario data for power generation is used at a regional rather than at a global level. A global target is then constructed from regional targets by aggregating them using the same regional distribution as the loan portfolio clients. The location/geography of the power plant determines which regional scenario is used. An example of regional difference in targets is whether a power plant is in an OECD or a non-OECD country. This difference determines the required change to meet the SDS scenario for these countries. These required changes at power plant level are aggregated to the company and then to the loan portfolio to determine the overall change in production capacity that is required. The reason is that the power sector is regionally distinct.

Upstream fossil fuels are part of a global market

For the upstream fossil fuel sector, global IEA targets are used to determine the target production for each technology.

Proportion of effort for companies

For high-carbon technologies (oil, gas and coal) companies are expected to provide the same proportion of effort relative to their own size in the sector. For low-carbon technologies (hydro, renewables and nuclear) the required effort is expressed as a function of the initial total capacity in the sector. To align with Paris, a company's low-carbon capacity build-out target is relative to the size of its total capacity and not just to the size of its low-carbon capacity. This prevents that an historical laggard, with a marginal current amount of low-carbon capacity, could be Paris aligned with a limited absolute low-carbon capacity increase.

2DII methodology publication expected soon

More details on 2DII's methodology can be found on the 2DII website. This document is expected to be issued in Q2 2020.

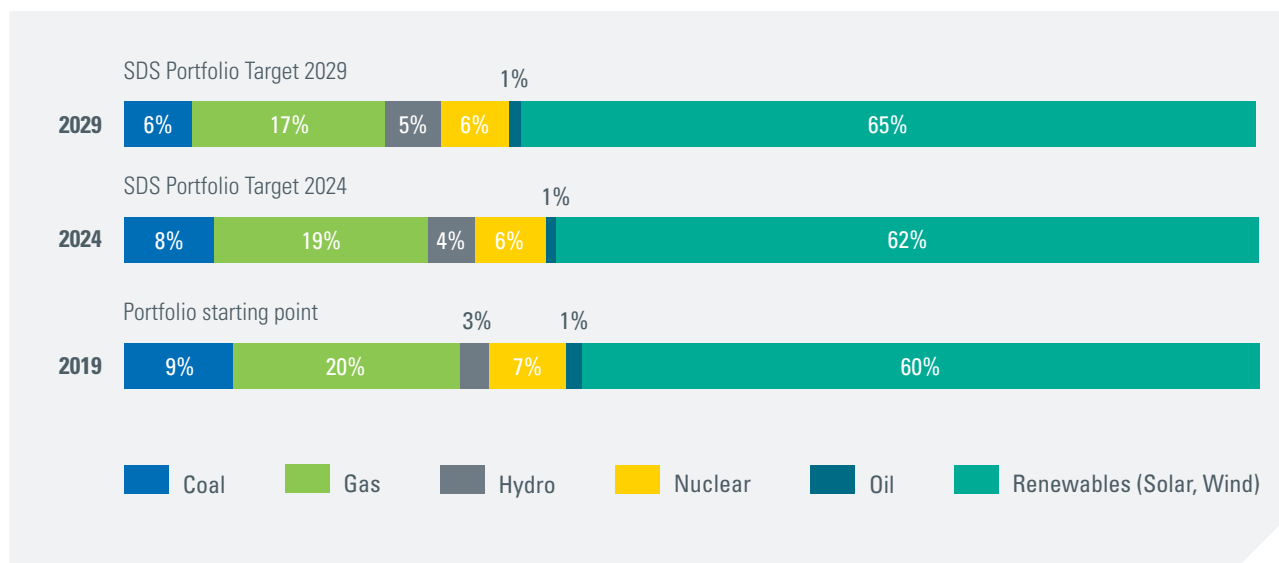
> Section 3

What | the result



Results section for power generation clients

Graph 1. Technologies weighted for size of ABN AMRO's loan book exposure per power generation client.



ABN AMRO's financial allocation across technologies in the power sector is mostly allocated to renewable power generation technologies (see Graph 1). In simple terms, this means that ABN AMRO allocates more exposure to those companies and projects that have already developed renewable energy generation capacity. Graph 1 is a snapshot, and whether the companies currently present in the loan portfolio will further develop renewable capacity is shown in Graph 2 on the next page. Alignment with the Paris Agreement can only work if the expansion plans and targets of ABN AMRO's energy clients become cleaner and are aligned with the rate of change required by the Paris Agreement.

How to read the graph

- ▶ The 2019 bar at the bottom shows how ABN AMRO's financial exposure is distributed across the different technologies, weighted for the size of ABN AMRO's credit exposure per power generation client. The shown energy mix represents the energy mix of ABN AMRO's clients in the power sector, weighted by the outstanding loan exposure.
- ▶ The 2024 and 2029 bars at the top show the financial allocation targets for ABN AMRO's loan exposure in 2024 and 2029, in accordance with the Sustainable Development Scenario (SDS) of the IEA. More specifically, it shows ABN AMRO's exposure to these technologies as they are set on a SDS pathway.

Analysis Outcomes

The analysis outcomes are forward-looking from our starting point of 2019 towards 2024 and 2029. The analysis outcomes show how ABN AMRO's financial exposure should evolve in order to be aligned with the SDS over the next 10 years, by the end of 2029. There is also the SDS target by 2024 as an intermediate step.

By 2029:

- ▶ Financial allocation to renewables power generation should increase by an additional 5% in the loan portfolio, from 60% to 65%.
- ▶ Financial allocation to oil power should decrease to below 1%, the end result is too minimal to be easily observed in the graph.
- ▶ The fact that nuclear capacity decreases in the financial allocation from 7% to 6%, does not mean that there are no capacity additions planned for this technology. Since the capacity build out of nuclear capacity takes more time, it increases at a slower rate than renewables do, for example. Hence nuclear's share in the financial allocation decreases by 1 percentage point.
- ▶ Hydro capacity build out should be sufficient to increase the share of hydro power by 1% in the weightings of the loan portfolio.
- ▶ Financial allocation to coal and gas power should drop in the weighting of the loan portfolio by 3% each by 2029.

Rate of change for installed power generation capacity

In the below graphs we look at the rate of change for renewable power capacity and coal power capacity of ABN AMRO clients.

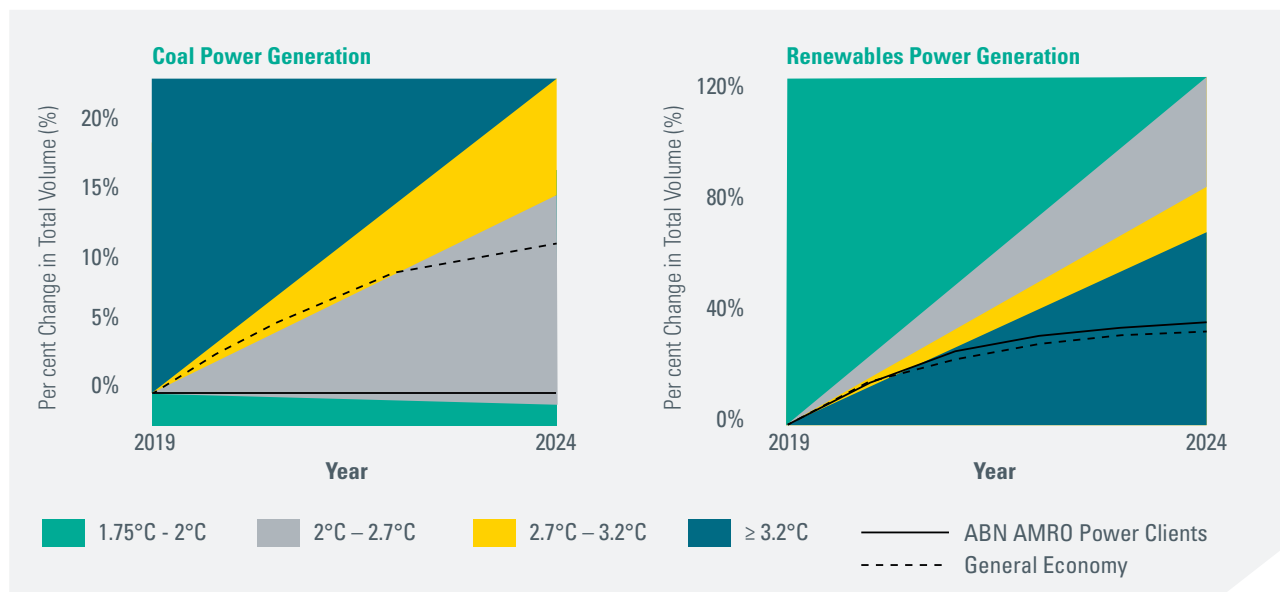
Rate of change for installed renewable power generation capacity

Graph 2 shows that the rate of change for installed renewable power generation capacity is not on the SDS trajectory. Even more so, the planned capacity increase seems to stagnate from 2021 onwards. For alignment with the SDS trajectory, current market intelligence shows a lack of announcements for renewable projects by ABN AMRO power clients beyond 2021.

Rate of change for installed coal power generation capacity

Although Graph 2 shows that ABN AMRO clients will not open new coal-fired plants, it also shows that the rate of change for coal power capacity is not on the SDS trajectory, since this would require decommissioning of coal plants by 2024. In the coming five years ABN AMRO will continue engagement with mainstream power generation clients, particularly on coal-fired power generation. This engagement aligns with the IEA's call for accelerated global decommissioning of coal-fired plants.

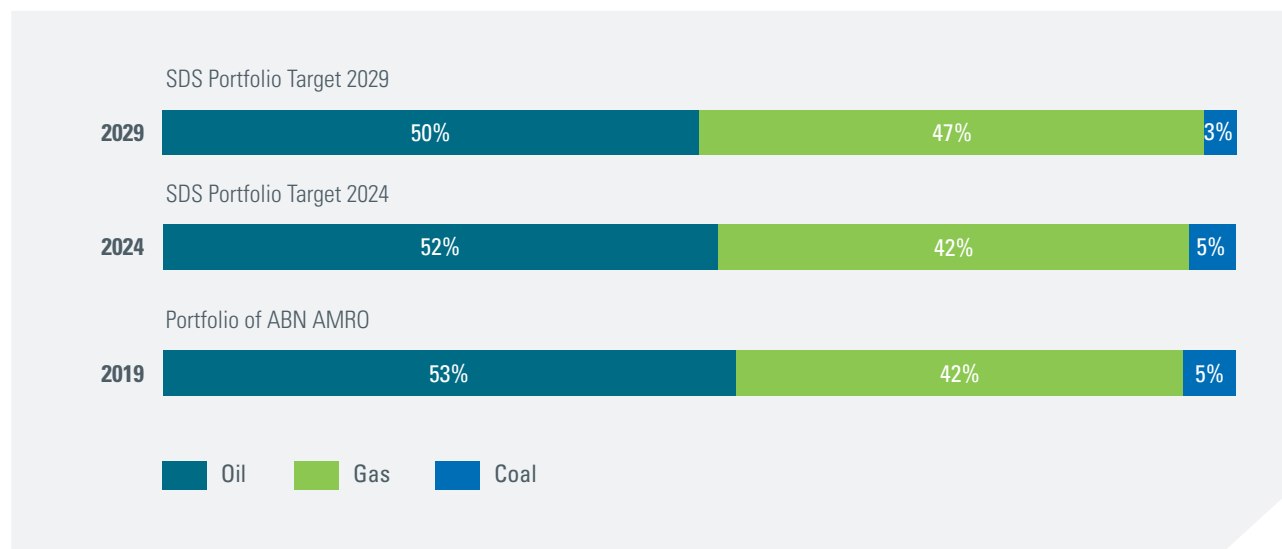
Graph 2. Rate of change for renewables and coal for power generation clients compared with IEA scenarios.





Results section for upstream clients

Graph 3. Technologies weighted for size of ABN AMRO's loan book exposure for upstream



How to read the graph

- ▶ The YE 2018 starting point bar shows the financial allocation weighted for the size of ABN AMRO's credit exposure per client active in upstream fossil fuel extraction.
- ▶ The 2024 and 2029 SDS target bars show the targets for ABN AMRO's loan exposure in 2024 and 2029, in accordance with the Sustainable Development Scenario (SDS) of the IEA.

Analysis Outcomes

The analysis outcomes are forward-looking from our starting point in 2019 towards 2024 and 2029. How should ABN AMRO's financial exposure evolve to be aligned with the SDS over the next 10 years, by end of 2029? There is also the SDS target by 2024 as an intermediate step.

By 2029:

- ▶ Oil should drop in the weighting of the loan portfolio by 3%.
- ▶ Coal should drop in the weighting of the loan portfolio by 2%.
- ▶ Gas can increase by 5% in the financial allocation. Gas is the transition fuel in this scenario, because of its lower GHG emission factor.

Rate of change for installed oil extraction capacity

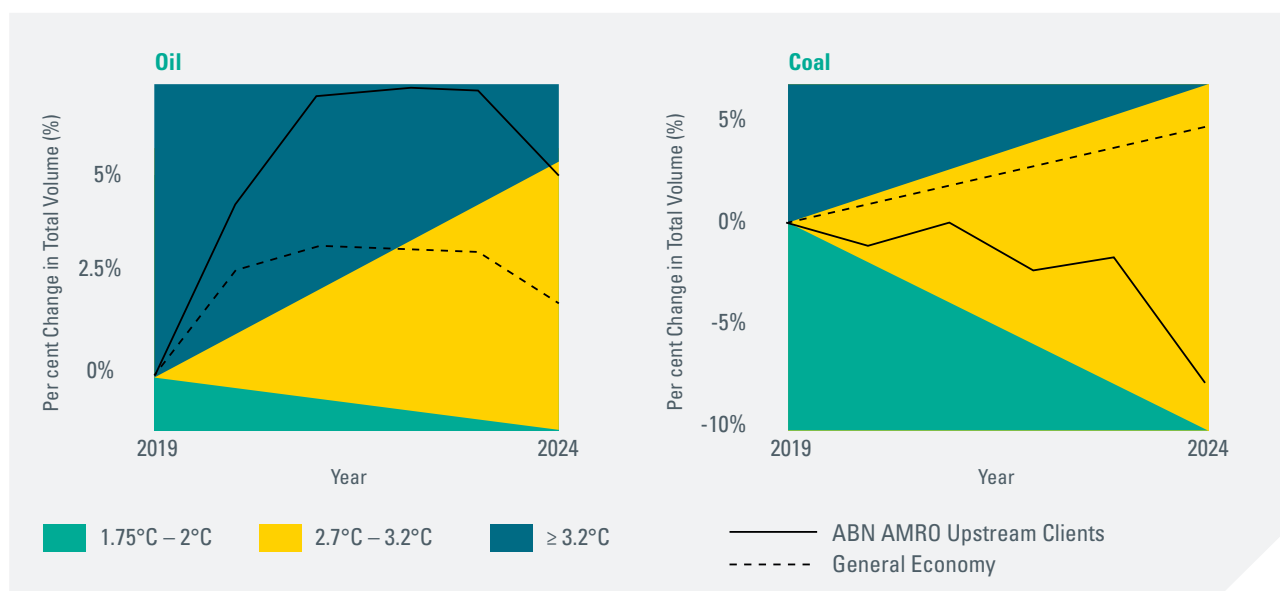
For oil production ABN AMRO oil clients grow their production capacity at a faster rate than the general economy. This is not in alignment with SDS. Only in 2024 does their rate of change start to align with the NPS. The global economy's oil production is also expected to grow over the next 5 years.

Rate of change for installed coal mining capacity

Graph 4 shows that the production capacity of ABN AMRO coal mining clients decreases and moves towards

the Sustainable Development Scenario trajectory. This decrease accelerates from 2021 onwards. This accelerated reduction of coal mining activity is important for global warming scenarios. Coal as a combustion fuel scores highest as a contributor to the increase in the earth's surface temperature. In 2018, the IEA assessed that the impact of CO₂ emitted from coal combustion was responsible for over 0.3°C of the 1°C increase in global average annual surface temperatures above pre-industrial levels. This makes coal the single largest source of global temperature increase.

Graph 4. Rate of Change for Upstream Oil and Coal clients



Discussion of results for upstream

The 2DII analysis measures the volumes of fossil fuels in barrels of oil, cubic metres of gas and metric tonnes of coal. To make the charts, these annual production volumes are converted to a common measure of energy: gigajoules. To better limit global warming, the total amount of fossil fuels should be monitored and go down over time. Decision makers should ensure that the transition to a cleaner technology mix of new and existing clients is not outdone by growing volumes of fossil fuels.

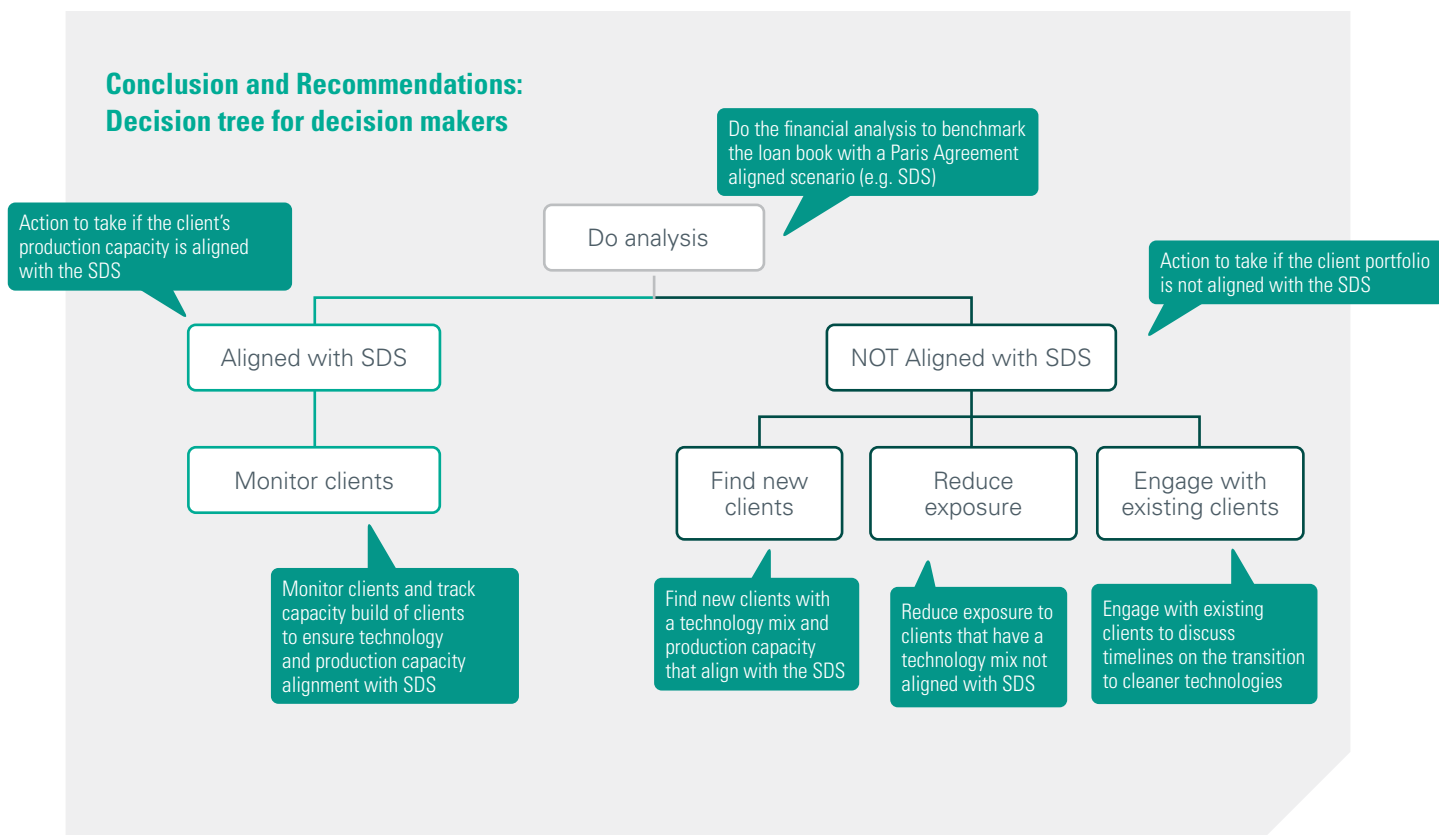
This means that for financial institutions there are three main ways to achieve alignment with the SDS for upstream fossil fuels:

1. Reduce financial exposure to upstream fossil fuel extraction.
2. Find new clients and increase financial exposure to companies transitioning their business models from fossil fuel extraction towards renewable energy storage, green or blue hydrogen, biofuels, synthetic fuels and electrification.
3. Engage with existing clients to transition to a cleaner technology mix.

In the conclusion and recommendations, we outline this further in the decision tree for decision makers.

> Section 4

Recommendations



Conclusion and decision tree

To be able to make this report, 2DII analysed the installed capacity and technology mix for ABN AMRO clients in the power generation and upstream fossil fuels sector. The result is twofold:

- ▶ The role of the bank is analysed by comparing the financial allocation with the SDS scenario (Graphs 1 and 3).
- ▶ The role of individual clients is analysed by comparing the capacity build out of clients over a period of 5 years with the various IEA scenarios (Graphs 2 and 4).

In both cases the analysis outcomes that are made available allow decision makers to align their financial allocation with the Sustainable Development Scenario (SDS) and the Paris Agreement.

The outcomes of the analysis show how the selection of individual clients and projects in power generation and upstream fossil fuels make a difference in the degree of alignment with the Paris Agreement. After all, the installed production capacity of individual clients is cleaner or less clean.

A recommendation for decision makers is to take the steps in the decision tree above. It gives simple and effective guidance to decision makers on how to take action to steer the portfolio in line with the SDS. For companies like ABN AMRO this 2DII analysis is also a great step towards the formulation of science-based targets.

A further recommendation is that the outcomes of the 2DII analysis are not a one-way street towards the exclusion of clients. The outcomes are meant to nudge, push or accelerate the energy transition, not to shift the financial burden to other parties. The outcome of this analysis forms an important step towards a better understanding by the financial industry of how to set science-based targets for energy-related loans. Although exclusion of economic activities by banks can have a great impact, it is not the goal of this analysis. The study of alignment with the Paris Agreement should not be used to polish portfolios without any form of engagement with existing clients. This analysis is not a quick fix. Therefore, engagement with existing clients on energy transition is an essential part of the decision tree in the recommendation section. Decision makers will always need to assess and measure the real world impacts of their decisions.

FOOTNOTE: Science-based targets are targets adopted by companies to reduce greenhouse gas (GHG) emissions. These targets are considered science-based if they are in line with the level of reduction of GHG emissions required to keep global temperature increase below 2°C compared with pre-industrial temperatures, as described in Assessment Report 5 of the Intergovernmental Panel on Climate Change (IPCC).

The client data generated through the 2DII analysis contributes to the growing body of knowledge on non-financial data. For the energy transition to succeed, this type of analysis can steer decision making in financial institutions across the globe to reduce GHG emissions linked to their financial portfolios.

Active management of financial portfolios in line with the Paris Agreement can help avoid the most negative outcomes of climate change.

> Section 5

Useful Resources

RESOURCES

A man with a beard and glasses, wearing a dark suit and a purple shirt, is pointing his right index finger towards the word "RESOURCES". The background is white.

Useful resources



The 2° Investing Initiative (2DII) has helped more than 200 financial institutions worldwide on energy-related analysis in relation to climate outcomes. This makes 2DII the leading research centre on climate-related metrics and the preparation of Paris Agreement alignment. <https://2degrees-investing.org/our-research/>



The International Energy Agency (IEA) works with countries around the world to shape energy policies for a secure and sustainable future. Please consult the available "2°C scenarios" developed by IEA. These scenarios are in line with the level of CO2 reduction required to keep global warming well below two degrees. <https://www.iea.org/topics/world-energy-outlook>



Global Data warrants the availability of excellent market intelligence on the global energy sector. The databases supplied by Global Data contain non-financial data such as the installed capacity, production volumes and the technology mix of energy-related companies. <https://www.globaldata.com/industries-we-cover/power/>
<https://www.globaldata.com/industries-we-cover/mining/>
<https://www.globaldata.com/industries-we-cover/oil-gas/>



The Partnership for Carbon Accounting Financials, which measures and discloses the GHG emissions associated with the lending and investment activities of financial institutions is a foundation designed to create transparency and accountability, and to enable financial institutions to align their portfolios with the Paris Climate Agreement. The PCAF paper launched at COP25 in Madrid can be downloaded here: <https://carbonaccountingfinancials.com/newsitem/dutch-pcaf-group-presents-2019-report-in-cop25-madrid#newsitemtext>



The Science Based Targets initiative is a partnership between CDP, UN Global Compact, WRI and WWF. ABN AMRO is one of the financial institutions taking action in order to set science-based targets for various parts of its business. <https://sciencebasedtargets.org/>

> Section 6

Right to Copy & Acknowledgements



The right to copy

ABN AMRO and 2DII are encouraging financial players across the world to follow suit ('right to copy') – by publishing this report, we stimulate transparency of reporting to prepare for target setting in line with the Paris Agreement

Crucially, 2DII delivers open-source tools and frameworks. All codes developed by 2DII are publicly available on GitHub.

As policymakers and the private sector seek to build standards and common approaches for climate scenario alignment, a non-commercial business model is imperative to avoid commercial biases. The grant-funded business model of the 2DII allows financial institutions and other users to minimise their costs of measurement and to focus their resources on taking the required portfolio management actions.

ABN AMRO Bank N.V., with registered office at Gustav Mahlerlaan 10, 1082 PP Amsterdam, Netherlands (AA), is responsible for the production and dissemination of this document, which has been prepared by individuals working for AA and the 2DII whose identity is mentioned in this document.

This document has been generated and produced by a sustainability advisor from Strategy & Sustainability in cooperation with a data scientist from the 2DII and a number of contributors as mentioned below. Strategy & Sustainability prepares documents that contribute to a clearer understanding of banking for all the bank's stakeholders: clients, employees, investors and society at large.

The data used to develop this report has been obtained from ABN AMRO and was enriched and analysed with 2DII tooling. All data used a projection to the year 2019 based on Q4 2018 asset-level data. AA and 2DII have aimed to use reliable data sources, and have taken care to present results with accuracy and completeness, based on the highest matching levels achievable. Nevertheless, future analysis will be subject to further data quality improvements.

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Authors

Jan Raes – Global Sustainability Advisor – ABN AMRO Strategy & Sustainability
Daan Koopman - Data scientist - 2° Investing Initiative

Contributors

Klaus Hagedorn - Senior Analyst - 2° Investing Initiative

Karianne Tieleman, Carolien Peeters, Petra Gibcus, Victor Amankwah, Siert van Kemenade, Robert Hoekstra – ABN AMRO

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Liam Rozing - Liam Rozing Fotografie - photo of Jan Raes

Dedicated to all climate and energy nerds: always remember that the people who are crazy enough to think they can change the world, are the ones who actually do.