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# Why should financial actors align their portfolios with a low-carbon pathway to manage transition risks?

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**This analysis note is the first part of three Climate Briefs on the management of climate-related transition risks by financial actors.**

## SUMMARY FOR DECISION-MAKERS

Financial actors are exposed today to major risks associated with climate change:

- Physical climate-related risks: these are the uncertain financial impacts that result from the effects of climate change on economic actors and on asset portfolios;
- Transition risks: these are the uncertain financial impacts (positive and negative) that result from the effects of setting up a low-carbon economic model on economic actors. Transition risks are characterised by a "radical" uncertainty on the nature of the low-carbon pathway (i.e. the pathway for reducing greenhouse gas emissions, which restructures the economy) and a more "usual" uncertainty on the methods for implementing this pathway in economic and social terms.

The management of transition risks can be addressed by the alignment of portfolios with a low-carbon pathway:

- An economic actor is aligned with a 2°C pathway when the gradual reduction of its greenhouse gas emissions - specific to the activities being carried out - corresponds to the rhythm of a 2°C pathway. Aligning a portfolio with a low-carbon pathway means progressively selecting – within a sector or category of financial assets – those counterparties that implement increasing decarbonisation efforts, as required from their business sectors. Aligning a portfolio with a 2°C pathway is a gradual process which it will be possible to put in place once a sufficient volume of financial assets begins to be aligned with a 2°C pathway;
- The alignment of a portfolio with a low-carbon pathway can limit transition risks. By encouraging exposure to those counterparties who adopt a progressive and flexible strategy for aligning their activities, this reduces exposure to assets that do not follow a sector-based decarbonisation pathway. Furthermore, this approach does not penalise the asset's future performance depending on the different possible decarbonisation pathways and scenarios of implementation, and without drastically changing the portfolio's sectoral exposure compared with the benchmark;
- However, this cannot totally reduce exposure to transition risks (e.g. when the counterparty makes the necessary strategic choices which reduce its flexibility when faced with alternative scenarios and pathways).

There are several reasons for prioritising low-carbon alignment of portfolios in order to manage transition risks:

- The usual strategies for risk management in finance (i.e. "risk transfer" through hedging and insurance, or "diversification") will not be enough to cover the greater part of the exposure to transition risks. A low-carbon alignment strategy for the portfolio can manage risks through "avoidance" (i.e. avoiding the assets most exposed to transition risks) or "engagement" (i.e. pushing the counterparty to reduce its exposure);
- The credibility of a long-term decarbonisation of the economy as opposed to a business-as-usual pathway is reinforced by a number of increasingly strong trends (climate-related policy; financial; market);
- There is a rising momentum of the inclusion of the low-carbon alignment of portfolios in statutory or regulatory requirements.

In practice, the strategy of alignment with a low-carbon pathway should be based on a forward-looking analysis of the financial impact of the low-carbon pathway covering all assets in the portfolio.

## The rising momentum of incorporating climate-related issues into financial practice

The momentum of incorporating climate-related issues into financial practice has been brought to the fore since 2015 – the year of COP21. Among their objectives, the search by financial actors for a strategy on transition risk management is the subject of special attention. Finance practitioners and their regulatory authorities are today saying publicly that the transition towards a low-carbon economy involves a risk for financial institutions and even for the stability of the financial system. Furthermore, there is increasing agreement that it is now urgent to prevent the occurrence of such a risk. Mark Carney, Governor of the Bank of England, has stated that "financial policy-makers do have a clear interest in ensuring the financial system is resilient to any transition [towards a low-carbon economy] hastened by [governmental decisions and private sector investments]".[1] In France, the Treasury Department has stated that it is "essential for banking institutions to develop suitable methodologies and assemble data, so as to be able to gain a better appreciation of the risks [associated with climate change] to which they are subjected".[2]

The question arises today of what strategy can be implemented by financial actors to manage their exposure to climate-related risks. The analysis presented in these three Climate Briefs focuses on transition risks. The management of physical climate-related risks by financial actors is equally important, but requires another strategy to be followed and a different analysis to be carried out.

This Climate Brief offers theoretical avenues to explore the management of transition risks, which make up a proportion of the climate-related risks to which financial actors are exposed. The next two parts of this series of publications (n°45 and n°46) offer operational solutions for the progressive introduction of a strategy for aligning portfolios with a "low-carbon pathway".

## What climate-related issues need to be managed by financial actors?

### Climate change causes physical risks

Since the industrial revolution, the accumulation of an unprecedented level of greenhouse gases in the atmosphere has been leading to global warming with multiple consequences on economies and companies around the world. All sectors of the economy will undergo the financial impacts associated with the effects of climate change. For example, the agricultural sector will undergo, on the one hand, a change in its productivity linked to change in temperature and rainfall and, on the other hand, a greater frequency of local interruptions in production and distribution following an increase in the frequency and severity of extreme climate-related events (storms, hurricanes, floods, landslides).[3] The electricity generation sector will also be disrupted: the increase in droughts will for example have a negative impact on hydroelectricity generation, just as on thermal electricity generation (fossil-fired or nuclear) which needs water to supply its cooling systems.

These physical impacts of climate change will indirectly affect financial actors due to their propagation across all sectors of the economy. The effects of climate change will also have a direct impact on the performance of infrastructure and property investment portfolios. As a result, there could be major losses for the financial sector. Dietz *et al*[4] consider that, if current economic practices are extended from 2015 through to 2100, there is a 99% chance that climate change will lead to a loss estimated at USD 24,200 billion (in constant 2013 dollars) on total global financial assets.

### The low-carbon pathway causes transition risks

#### *What is a low-carbon pathway?*

To limit global warming and its economic consequences, there is a limited "budget" for carbon that can be released into the atmosphere between now and the end of the century. Climate-related policies therefore stimulate a process of economic restructuring which aims to effectively cap its carbon emissions and thereby limit global warming.

A "low-carbon pathway" therefore refers to the pathway of an economy that is implementing efforts to sufficiently restructure its activities to significantly reduce greenhouse gas emissions between now and the end of the century. The pathway refers as much to the emission reduction level achieved as to the spread of the reduction effort over time.

1 *Speech by Mark Carney, Resolving the climate paradox, Arthur Burns Memorial Lecture, Berlin, September 2016, http://www.bankofengland.co.uk/publications/Documents/speeches/2016/speech923.pdf*

2 *French Treasury Directorate, with the assistance of the Banque de France and the Autorité de contrôle prudentiel et de résolution (ACPR - French Prudential Supervisory Authority). (2017). L'évaluation des risques liés au changement climatique dans le secteur bancaire (The assessment of risks associated with climate change in the banking sector). http://www.tresor.economie.gouv.fr/File/433386*

3 *World Economic Forum. (2016). The Global Competitiveness Report 2016–2017. http://doi.org/92-95044-35-5*

4 *Dietz, S., Bowen, A., Dixon, C., & Gradwell, P. (2016). 'Climate value at risk' of global financial assets. Nature Climate Change, (April), 15. http://doi.org/10.1038/nclimate2972*

In line with the reduction effort effectively produced over time, a low-carbon pathway can be compatible with a limitation of warming to different targets, such as +2°C, +1.5°C, etc. Among low-carbon pathways, those that are most discussed in the context of climate-related policies are the "2°C pathways". These correspond to an economy at zero net emission between now and the end of the century, with a view to capping global warming at +2°C, the limit beyond which any climate-related imbalances will probably be extremely costly.[5]

However, there is no single "2°C pathway". To achieve an objective of limiting global warming to +2°C, national decarbonisation actions vary from one country to another, above all in line with their level of development and dependency on fossil energies (in terms of both exports and imports).

### *What are transition risks?*

The different low-carbon pathways inevitably lead to modifying the risks of loss and the opportunities for gain in the economy. They will progressively benefit assets "aligned" with the low-carbon economic model, compared with those "aligned" with the old, more carbon-intensive, economic model. The emission reduction process involves regulatory and industrial policy measures with impacts on markets.

Financial actors are exposed to transition risks as the introduction of a new economic model exposes them to potential losses, in particular through their choice of counterparties. The example that is discussed most often is the fossil energies extractive industries sector. The effective limitation of the carbon budget is incompatible with the consumption of known and exploitable fossil fuel reserves. However, the exploitation of these resources has a heavy influence on the valuation of the businesses in these sectors. In a scenario such as this, the capital expenditures already undertaken therefore run the risk of transforming themselves into stranded assets.[6]

Transition risk is characterised by two types of uncertainty. Firstly, the ambition and speed of introduction, i.e. the "pathway", of transition towards a low-carbon economy is uncertain. Secondly, within a possible pathway, the specific terms and conditions for achieving the objective of decarbonising the economy also remain uncertain. It is these "radical" uncertainties related to the low-carbon pathway followed by the economy, and more "usual" on the scenarios for implementation of these pathways, which expose financial actors to "transition risks".

Uncertainty on the nature of the pathway and its implementation scenarios has a number of sources. It can arise from various factors that influence the transition, and that interact among each other. These transition risk factors are classified into four families by the Task Force on Climate-related Financial Disclosure[7] (TCFD) launched by the Financial Stability Board:

- *regulatory risk factors*, i.e. risks generated by the potential introduction of policies that are conducive to the transition towards a low-carbon economy. Such policies can be seen as constraints or incentives;
- the report associates *legal risk factors* with them, i.e. risks of lawsuits issued by stakeholders, for contribution to climate change or through lack of consideration of climate-related and transition impacts;
- *technological risk factors*, i.e. the risks involved by a technological breakthrough innovation for actors not having anticipated this change;
- *market risk factors*, i.e. the risks generated by change on the markets upstream or downstream of actors and leading to a loss of competitiveness;
- *reputational risk factors*, i.e. associated with changing stakeholder perceptions.

The interpretation by financial markets of information relating to transition also represents an additional source of risk, to the extent that such information may quickly lead to a change in sentiment and thus provoke a dramatic and unexpected change in the valuation of certain financial assets.

Therefore the uncertainty on scenarios for implementing a given pathway concerns for example: the regulatory and fiscal constraints that will be put in place by the different countries; the way in which sectors and technologies will interact with transition policies; and how these economic shocks will influence actors. These methods of implementation will possibly have a different financial impact on the assets in question, even if they correspond to the same pathway for decarbonising the economy.

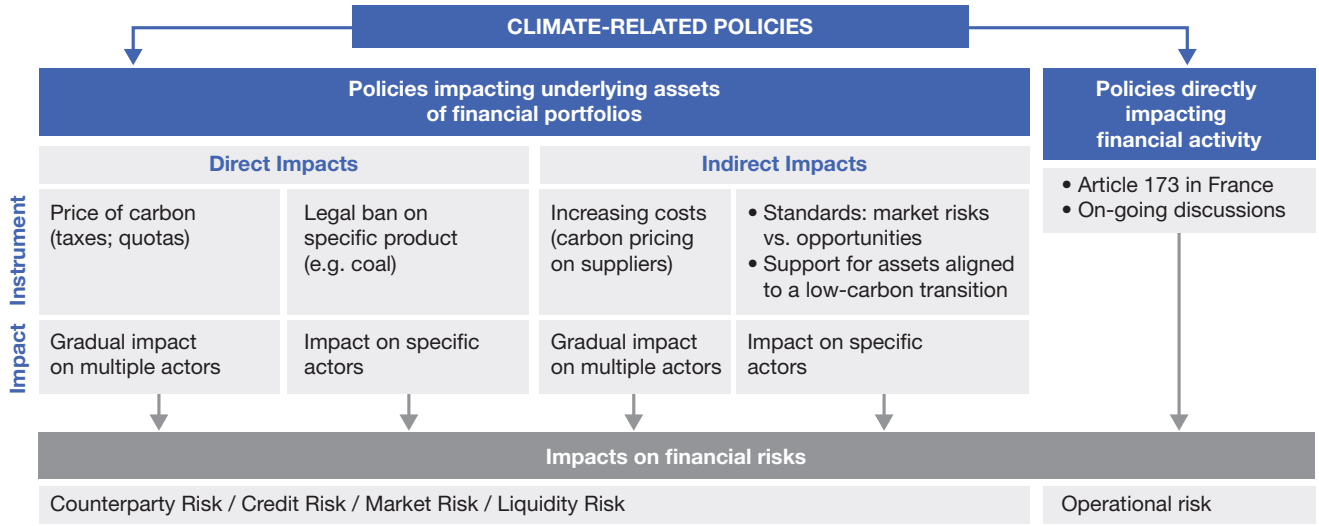
As seen in Figure 1, policy and instrument choices linked to transition risks may have direct impacts on financial actors. They may also have an indirect impact on financial actors via impacts on assets in a portfolio. The impact on assets may itself be direct or indirect, due to repercussions on the asset from changes in wider economic environment and markets. It may involve only those assets that are the least aligned with a low-carbon pathway, or a gradual change affecting all actors in a sector, i.e. in line with their level of alignment with a given low-carbon pathway.

5 *For more information on the emission pathways which are compatible with a +2°C global warming limitation, refer to the report by UNEP. (2016). Emissions Gap Report. https://uneplive.unep.org/media/docs/theme/13/Emissions_Gap_Report_2016.pdf*

6 *Carbon Tracker. (2014). Unburnable Carbon - Are the World's Financial Markets Carrying a Carbon Bubble? https://www.carbontracker.org/wp-content/uploads/2014/09/Unburnable-Carbon-Full-rev2-1.pdf*

7 *Task Force on Climate-related Financial Disclosures (TCFD). (2016). Recommendations of the Task Force on Climate-related Financial Disclosures. https://www.fsb-tcfd.org/*

**FIGURE 1: IMPACTS ON FINANCIAL PORTFOLIOS CAUSED BY CLIMATE-RELATED POLICIES**




*Source: I4CE.*

A typology of all transition and physical climate-related risks is offered by the TCFD and reproduced in the following table, together with examples of risks for each category.

**FIGURE 2: TYPOLOGY OF TRANSITION AND PHYSICAL CLIMATE-RELATED RISKS**

| TRANSITION RISKS | | PHYSICAL RISKS |
|---|---|---|
| **Policy and legal** | **Markets** | **Acute** |
| • Increased pricing of GHG emissions<br>• Enhanced emissions-reporting obligations<br>• Mandates on and regulation of existing products and services<br>• Exposure to litigation | • Changing customer behavior<br>• Uncertainty in market signals<br>• Increased cost of raw materials | • Increase severity of extreme weather events such as cyclones and floods<br>*(causing damages on facilities, reduction or disruption in production capacity…)* |
| **Technology** | **Reputation** | **Chronic** |
| • Substitution of existing products and services with lower emissions options<br>• Unsuccessful investment in new technologies<br>• Upfront costs to transition to lower emissions technology | • Shift in consumer preferences<br>• Stigmatization of sector<br>• Increased stakeholder concern or negative stakeholder feedback | • Changes in precipitation patterns and extreme variability in weather patterns<br>• Rising mean temperatures<br>• Rising sea levels<br>*(causing damages on facilities, increased operating costs, impacts to workforce management and planning…)* |

*Source: I4CE, adapted from TCFD. (2016). Recommendations of the Task Force on Climate-related Financial Disclosure.*

# Alignment of a portfolio with a low-carbon pathway as a management strategy for transition risks

## What does aligning a portfolio with a low-carbon pathway mean?

### *What is an asset aligned with a low-carbon pathway?*

In the context of a low-carbon pathway, each activity will see its carbon intensity progressively decrease, at a level and pace depending on its specificities and the technological breakthroughs occurring in its sector. A low-carbon pathway therefore implies a progressive process of decreasing greenhouse gas emissions, rather than requiring assets today to meet an estimated carbon intensity target corresponding to the economy as it will be in its final state of decarbonisation. As such, an economic actor aligned with a low-carbon pathway is not necessarily one for which a significant proportion of revenues is drawn today from activities with a very low carbon intensity. Rather, this means an actor for which the decrease in greenhouse gas emissions associated with its activity follows the rate – specific to the activities being carried out – that corresponds to the low-carbon pathway in the process of occuring. For example a cement producer may be aligned with a 2°C pathway, if it achieves its carbon intensity reduction rate in line with a 2°C pathway and initiates enough efforts – in terms of investment and R&D – to keep itself on that pathway, since there will be a need for cement in a 2°C-compatible economy.

Even if there are different scenarios for decarbonisation of the economic activities for the same low-carbon pathway, it is possible to ascertain whether an actor is more or less in line with the expected efforts on its activity, at least relatively (see Climate Brief n°46). Such analysis makes it possible to differentiate the actors who currently have the most resilience in a low-carbon economy and the actors who have not made sufficient efforts to decarbonise or redirect their activities and will therefore be impacted in the next few years by highly probably changes in regulatory, fiscal and market environments.

### *How to align a portfolio with a low-carbon pathway?*

Similarly, a portfolio aligned with a low-carbon pathway is not necessarily a portfolio that contains only low carbon intensity assets, but a portfolio in which the assets are aligned with a low-carbon pathway – which represents a progressive process for decarbonising activities.

In practice, aligning a portfolio with a low-carbon pathway therefore means choosing – within a sector or category of financial assets – those counterparties who are progressively beginning to implement the required decarbonisation efforts on their business sectors.

Conversely, aligning a portfolio with a low-carbon pathway does not mean financing only those companies for which the majority of current revenues originate from low carbon intensity activities.

Furthermore, it is important to note that this type of alignment with a low-carbon pathway can only be put in place progressively, in particular in the case of institutional investors. In fact, the global economy today is not aligned with a low-carbon pathway, it is still in the process of restructuring itself. As such, those actors aligned with a low-carbon pathway represent a total capitalisation that is too limited in relation to the size of portfolios managed by this type of investor.

## In what way does aligning a portfolio with a low-carbon pathway constitute a management strategy for transition risks?

### *What does managing transition risks involve?*

Transition risks originate from uncertainties – "radical" on the implementation of a low-carbon pathway and the level of ambition of that pathway, and more "usual" on the terms and conditions (in particular regulatory and market) for implementation of that pathway.

As shown in Figure 3, management of transition risks therefore requires:

- firstly, the limitation of potential losses irrespective of the economic pathway that appears;
- secondly, the limitation of potential losses relating to the various methods for putting this pathway in place.

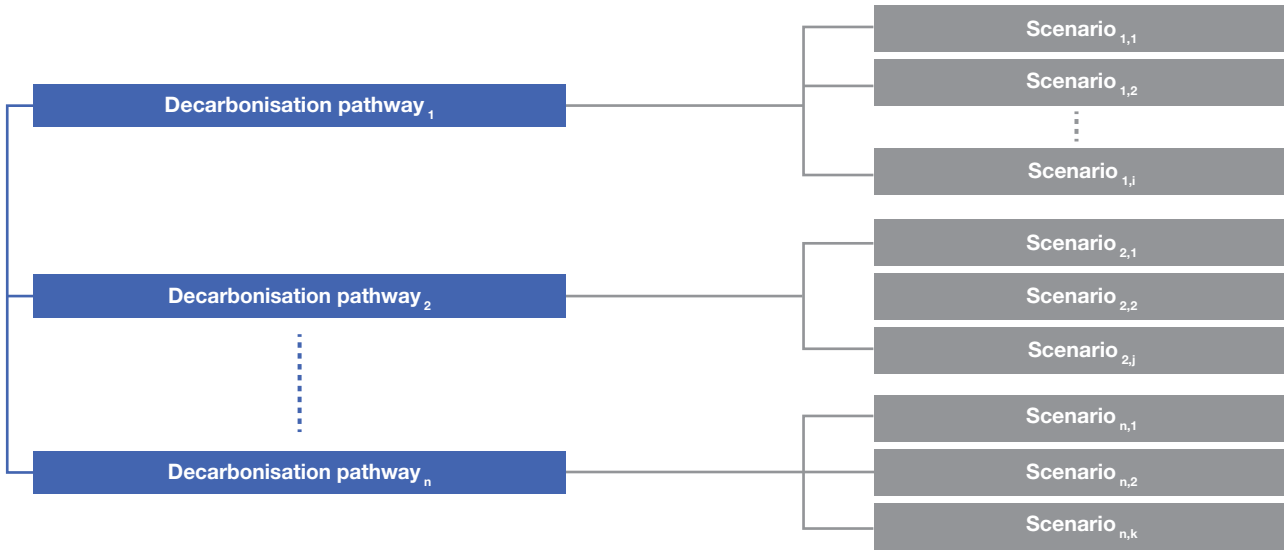
### *Aligning a portfolio with a low-carbon pathway makes it possible to limit the exposure to transition risks*

There are a number of strategies for managing a portfolio's risks. One of these strategies consists in limiting exposure to such risks "at the source" in two ways: by avoiding the financing of risky assets (avoidance strategy) or by supporting the progressive implementation of necessary efforts at the counterparty (through shareholder engagement) when it is technically possible, and when that method's effectiveness is credible.

Aligning a portfolio with a low-carbon pathway addresses the risk at the source. It means choosing counterparties from inside a conventional investment or financing environment who are making the most efforts to place themselves on an ambitious low-carbon pathway.

Therefore, for "second level" transition risks as classified above, such counterparties limit their risks of potential losses regardless of the methods for implementing the low-carbon pathway under consideration, since they reduce the carbon intensity of their activity when compared with other actors in the same business segment. Whatever methods are used to implement the low-carbon pathway under consideration, such counterparties (already aligned or in the process of alignment) will be less affected than their peers. This is true with the exception of the specific case where counterparties make their effort to decarbonise by carrying out risky strategic decisions – such as for example the early adoption of a technology that has not proven its value on the market yet. Such counterparties see themselves as inevitably exposed to the risk of making a choice which will not always be supported by future developments in the broader economy.

**FIGURE 3: THE TWO LEVELS OF TRANSITION RISKS**




**LEVEL 1: Positioning on one of the possible decarbonisation pathways**

*A pathway represents a profile for emission reduction over time, with a final level of reduction achieved at the end of the century (and its result in terms of limiting global warming).*

*(NB: The positioning on a pathway is a dynamic characteristic. The achievement of emission reduction over time:*
*– updates the final targeted level of emission reduction;*
*– reduces all possible pathways;*
*– can change the positioning on one or another of the pathways.)*

**LEVEL 2: Positioning in one of the possible scenarios**

*A scenario represents an example of modalities of implementation of the pathway in the economy and society, in terms of:*
*– Regulatory change;*
*– Market change;*
*– Technological change;*
*– Societal preference change.*

*Source: I4CE.*

With regard to "first level" risks, those counterparties aligned with an ambitious low-carbon pathway will reduce their potential losses in the event of effectively continuing on this low-carbon pathway. The difficulty is rather to ensure that these counterparties do not increase their potential losses in the event that the low-carbon pathway should continue at a less ambitious level.

Depending on the sectors, compared with their peers such counterparties will have either reduced the carbon intensity of their current activities, or reviewed their strategy and developed new products or services, to align themselves with the ambitious low-carbon pathway that they had anticipated. In the first case, they will undoubtedly have made investments and therefore incurred costs that were not incurred by counterparties who made no effort to decarbonise. However, since the activities remain the same, such counterparties are not faced with significant risks of losses in connection with their efforts to decarbonise. In the second case, if the strategy remains flexible and if the development of new activities is carried out on a step-by-step basis, such counterparties will be able to turn back and refocus on their current core activity. They will in fact have developed the capacity to assess internally their risks and opportunities in line with the pathways implemented and should therefore be in a better position to anticipate the occurrence of one pathway or another. Such counterparties will therefore run the risk of suffering losses, although these losses may be limited if the transition of their economic models takes place step-by-step as and when a pathway is consolidated.

It is important to note that this type of strategy for the portfolio's progressive alignment with a low-carbon pathway does not entirely remove the exposure to transition risks. It does, however, allow the reduction of vulnerability to transition risks through the removal of those counterparties in a portfolio that will be most affected by the transition, and that would therefore see their performance reduced in comparison with their peers in the event that the introduction of a low-carbon pathway takes place.

## Four reasons for prioritising a portfolio's alignment with a low-carbon pathway as a management strategy for transition risks

### 1. The Paris Agreement strengthens the credibility of low-carbon economic pathways as opposed to the business-as-usual pathway

The Paris Agreement brings long-term visibility to the engagement of countries to limit global warming between now and 2100 below +2°C. Ratification of the Paris Agreement commits signatory countries to comply with the actions laid out in their voluntary and Nationally Determined Contributions (NDCs). In principle, the national determination of NDCs means that the countries consider such contributions to be achievable and that they are based on analyses of efforts that may be made in the country. Between now and 2020, it will become compulsory for all countries that have ratified the Agreement to communicate their NDCs for the period up to 2030.

Admittedly, NDCs do not provide perfect information on effective decarbonisation of the economy between now and 2100 due to a number of factors including: their short horizon; the possibility of exogenous shocks handicapping their implementation; or that the aggregated effort of current NDCs is not in line with a 2°C pathway. However, they can be considered as a credible reference scenario for what a country's decarbonisation pathway might be in the medium term. Moreover, the countries undertake to submit, every five years at most, a new NDC which is expected to be more ambitious than the previous one.

This process also has the advantage of building a relationship of trust between the stakeholders – countries, local authorities, civil society and company representatives. The result of this is a societal collaboration and momentum that further strengthens the probability of implementing a low-carbon transition, whatever its final ambition may be. Above all, it creates a policy framework which should be able to survive government and regime changes for durability over time.

### 2. Economic factors give credibility to low-carbon pathways compared to the business-as-usual pathway

In addition to climate-related policies focusing on the economy, other factors increase the credibility of the introduction of a low-carbon pathway for financial actors and demonstrate the potential advantage of taking into account the already-begun restructuring of the economy towards a decarbonised model.

Firstly, financial regulators are increasingly paying attention to climate-related risks for the financial system, and seem to be recommending the implementation of a low-carbon economic pathway. As mentioned above, Mark Carney, Governor of the Bank of England, has highlighted that from 2015 the financial system has been exposed to a trilogy of climate-related risks (i.e. physical climate-related risk, transition risk and liability risk). He considers that the low-carbon pathway is the only credible option for successfully reducing the financial system's exposure to climate change. The European Systemic Risk Board has also presented the low-carbon transition as a key issue.[8]

Secondly, as far as the real economy is concerned, market factors are also more and more favourable to low-carbon portfolios in the energy production field. The International Energy Agency has shown that the production cost of renewable energies followed a significantly downward trend between 2010 and 2015, narrowing the gap with gas and coal which have seen their costs increase.[9]

Such information indicates that transition risks should be seen as credible and even with imminent impacts on portfolios that include assets whose business model is currently incompatible with a low-carbon economy.

### 3. There is a transition risk relating directly to the incompatibility of financial portfolios with a low-carbon pathway

Certain approaches to achieving the low-carbon can have direct impacts on the financial sector. The Paris Agreement creates a risk of non-alignment with the transition, given the formal objective to make "all financial flows compatible" with a low-carbon pathway (Article 2.1.c). The public authorities of various countries have also taken action relating directly to financial portfolios. The Norwegian sovereign fund was mandated by the Norwegian Parliament to divest from coal in June 2015. In July 2015, the London Assembly asked the London Pensions Fund Authority (GBP 4.6 bn assets under management in 2016) to exclude coal and to participate in financing the transition. Civil society for its part has conducted several campaigns for divestment from fossil fuels (e.g. "Go Fossil Free" campaign launched by 350.org). Other groups also encourage investors to reallocate their capital in a manner that is compatible with the transition pathway (e.g. Divest-Invest movement).

### 4. Conventional risk management strategies will not be enough to cover the exposure to transition risks

As seen in Figure 4, a number of conventional risk management strategies do not make it possible to manage transition risks.

For financial actors, ***risk transfer strategies*** consist of transferring the risk to a third party by hedging through the use of derivatives or insurance against such risks. In theory, such strategies are applicable to the management of transition risks, although they cannot be mobilised for the time being. In fact, there appears to be no mature financial instrument or insurance product for hedging or insuring against the occurrence of events specifically associated with transition towards a low-carbon economy. Furthermore, the feasibility of such products remains to be seen, since transition risks are systemic risks.

8 *ESRB. (2016). Too late, too sudden: Transition to a low-carbon economy and systemic risk. https://www.esrb.europa.eu/pub/asc/html/index.en.html*

9 *IEA, NEA. (2015). Projected Costs of Generating Electricity. https://www.oecd-nea.org/ndd/pubs/2015/7057-proj-costs-electricity-2015.pdf*

***Risk retention strategies*** consist of fully retaining and assuming the risk associated with an asset, this is therefore not a strategy for limiting exposure to the risk. This strategy only suits financial actors who have an appetite for risk, and ask for a higher yield in return for agreeing to invest in high-risk assets.

***Diversification strategies*** consist of spreading portfolios across the securities of various sectors of activity and various geographical areas which would not be expected to react in the same manner to events that affect the market, and thus limit the risks for the portfolio for a given level of profitability. Initial theoretical results of applying a diversification strategy to the management of climate-related risks have been obtained by the Cambridge Institute for Sustainability Leadership for portfolios representative of the management strategies of pension funds and insurers.[10] These tests indicate that only around 50% of the negative impacts associated with climate change on the performance of the funds can be hedged by a sector-based diversification strategy in assets that are less exposed to climate-related risks. This means that approximately 50% of the climate-related risks to which securities portfolios are exposed cannot be hedged by a diversification strategy. A diversification strategy therefore only provides a limited response to the management of climate-related risks by financial actors. It would therefore be necessary to try and mitigate climate-related risks "at the source" so as not to endanger portfolios individually, as well as the stability of the financial system.

10 CISL. (2015). Unhedgeable risk: How climate change sentiment impacts investment. http://www.cisl.cam.ac.uk/

## Avoidance and Mitigation: two tangible ways for managing transition risks by alignment

Two risk management strategies can at present be applied to the transition risk and make it possible to implement a strategy to align the portfolio with a low-carbon pathway. This involves mitigation and avoidance strategies, which limit exposure to risks "at the source", i.e. by limiting risks at the level of counterparties themselves.

A **mitigation strategy** consists of retaining assets exposed to risk, while at the same time putting strategies in place at the asset level to mitigate its exposure to risk. This may for example involve the negotiation of contractual clauses or guarantees limiting losses for the financial actor in the event of the risk occurring. This strategy may also take the form of a shareholder engagement in order to reduce over time the asset's exposure to climate-related risks. The effectiveness of a mitigation strategy is nonetheless conditional on the power of influence of the financial actor (or coalition of actors) on the company's strategy, and can therefore only be adopted for certain types of financial products.

An **avoidance strategy** consists of not investing in assets that are significantly exposed to climate-related risks, i.e.

**FIGURE 4: RISK MANAGEMENT STRATEGIES IN FINANCE BY STAGE OF INVESTMENT**

<table>
<tr><th>Commitment stage / Risk management strategy</th><th>NEW INVESTMENTS</th><th>CURRENT HOLDINGS</th></tr>
<tr><td>Transfer</td><td colspan="2">This means transferring the risk to other agents while at the same time keeping the asset, via:<br>• Hedging (derivative products which transfer the risk to a player wishing to hedge against the opposite risk);<br>• Insurance (insurance products which transfer the risk to the insurer in return for a risk premium).</td></tr>
<tr><td rowspan="2">Absorption and management:<br>• retention<br>• mitigation<br>• diversification</td><td colspan="2">This means absorbing the risk associated with the asset held and managing it in-house, via:<br>• Retention of the risk as is, associated with the asset;<br>• Mitigation of the asset's risk: reducing the asset's vulnerability to risk in-house via:<br>– Self-hedging: reducing the probability of the risk occurring;<br>– Self-insurance: reducing the amount of losses in the event of the risk occurring;<br>• Mitigation of the portfolio's risk via diversification: diversifying the portfolio's exposure to different assets in order to reduce vulnerability to the risks that are specific to each asset.</td></tr>
<tr><td>Examples:<br>• Retention: investment (under constraint of compatibility with risk appetite and the ability to assume the risk in relation to the capital held);<br>• Mitigation:<br>– Investment: following a possible screening (e.g. ESG selection, sector-based policies);<br>– Loan: pricing of perceived risk (in the interest rate for a loan); contractual clauses (covenants); collateral.</td><td>Examples:<br>• Retention: retention of the asset and its risk;<br>• Mitigation of the asset's risk: shareholder engagement.</td></tr>
<tr><td rowspan="2">Avoidance</td><td colspan="2">This means avoiding the risk carried by the asset by avoiding the asset in itself.</td></tr>
<tr><td>No investment</td><td>Divestment</td></tr>
</table>

*Source: I4CE, after Crouhy et al. (2014). The Essentials of Risk Management; WRI et UNEP-Fi. (2015). Carbon asset risk: discussion framework.*

in the case of transition risks to avoid assets that are not aligned with a low-carbon pathway. Since the portfolio does not contain assets that are significantly exposed to transition risks, it is only slightly exposed to transition risks.

## Two essential characteristics of a strategy to align a portfolio with a low-carbon pathway

Progressively aligning a portfolio with a low-carbon pathway therefore seems to be the most efficient strategy for a financial actor to manage transition risks. This strategy could also be a relevant investment strategy in order to maximise the profitability of its portfolio in the medium term at a given level of risk.

It appears, however, that an alignment strategy must have two characteristics: to cover all financial sectors and products, and to be based on a forward-looking analysis.

### 1. The strategy to align a portfolio with a low-carbon pathway must cover all economic sectors

Discussions concerning transition risks focus most often today on the risks of stranded assets in the fossil energies extractive industries (i.e. oil, gas and coal). Yet this is not the only economic sector to be exposed to transition risks.

On the one hand, the financial impacts of low-carbon transition on the fossil energies extractive industries will spread into the value chains tied to these sectors. Downstream of the fossil energies extractive industries, all economic agents using such energy are already, and will increasingly become, financially impacted by low-carbon transition policies. For example, in the case of carbon pricing policies in line with the "polluter pays" principle. Indeed the vast majority of greenhouse gas emissions associated with fossil energies take place during combustion. Carbon pricing therefore has a direct impact on road haulage operators for example. More broadly, 80% of the primary energy consumed around the world is of fossil origin. Any consumer of fossil energy (and therefore literally all sectors of the economy) is exposed to transition risk. Upstream of the fossil energies extractive industries, it is all suppliers of products and services who will see their financial performance deteriorate if oil, gas and coal operators will reduce their purchasing in the absence of markets, unless they have been able to sufficiently diversify their markets in preparation for the low-carbon transition.

On the other hand, the emergence of the low-carbon transition will substantially exceed the simple context of the carbon intensive emissions sectors. There are many greenhouse gases (e.g. methane, nitrous oxide, halogenated industrial gases) emitted directly by various sectors of the economy: industrial activities; forestry and agriculture; transport; building.[11] And as for the carbon emissions linked to fossil energies, the financial impacts associated with efforts to reduce these other greenhouse gases will also directly affect all economic agents in their value chains.

Since all economic sectors are exposed to transition risks, it is crucial that a strategy to align a portfolio with a low-carbon pathway should concern itself with all assets in a portfolio and not just oil, gas and coal assets. A sector-based policy to exclude oil, gas and coal assets makes it possible to reduce direct exposure to the risk of oil, gas and coal stranded assets, but it is not sufficient to limit the whole of a portfolio's exposure to transition risks.

### 2. The strategy to align a portfolio with a low-carbon pathway must be based on a forward-looking analysis of the risks and opportunities associated with the transition

Looking only at the past is not sufficient for understanding the economy's unprecedented and sustainable transformation towards a low-carbon pathway. Moreover, the analysis of an asset in a static or retrospective context may lead to incorrect conclusions on the risk and future financial performance of that asset in an environment of substantial adjustment to the economic balances. Today, an economic actor can have the ability to limit or pass on financial impacts associated with the transition that may as yet be limited, but find itself badly affected financially by the accelerating implementation of the low-carbon transition. It is the economic actor's ability to continue its existence in an economy restructured on a low-carbon model that is important. In this forward-looking context, it appears that the strategy of passing financial impacts on to other agents in the value chain represents a secondary capacity to adapt. The true capacity to adapt is the strategy of alignment with the low-carbon pathway. Therefore, only a forward-looking analysis of the risk and financial performance of the assets in a low-carbon economy is capable of proposing a reliable strategy for managing the transition risk.

Nevertheless, reference to the past is widely present today when analysing risks. Predictive econometric models are generally tested and calibrated using historical data (back-testing) and conventional macroeconomic models describe the evolution of systems in a context of returning to a state close to the initial equilibrium. Such instruments do not provide information on the unprecedented and sustainable restructuring of the economy which is under way in the current context of transition towards a low-carbon economy. The challenge for transition risk management is therefore to be able to get past the usual anchorage of analyses onto historical data by allowing forward-looking analyses to be taken into account and making the uncertainties of transition acceptable in decision-making processes.

*11 According to the IPCC (Contribution of Working Group III to the Fifth Assessment Report released in 2014), the 49 (± 4,5) GtCO2-eq emitted in 2010 are attributed at 35% in the energy production sector; 24% in the Agriculture Forestry and Land Use sector; 21% in industry; 14% in transport; 6.4% in building. When emissions associated with the production of heat and electricity are allocated to the energy end-use sector, the percentages for industry and building stand respectively at 31% and 19%.*

## Conclusion: The alignment of portfolios with a low-carbon pathway should be considered as a transition risk management objective

To manage transition risks, the risk analysis process must be nurtured by a clear vision of the low-carbon transition and the risk that this creates. The low-carbon transition is a sustainable transformation process for the whole economy. It is expected to favour the assets corresponding to counterparties who are capable of playing their part in the decarbonisation pathway for their business sector, throughout the implementation of this pathway over time. The achievement of this transition generates risks which in fact correspond to two types of uncertainty: the ambition and timing of the decarbonisation pathway; and the scenarios that describe the progress of a given pathway.

In this uncertain environment, "the alignment of portfolios with a low-carbon pathway" is a solution for the management of transition risks. Such an alignment is a gradual process, both with regard to the counterparty (which makes itself compatible with a sector-based pathway) and with regard to the financial portfolio (the alignment of which is subject to the availability of aligned counterparties). An aligned counterparty is made less vulnerable to transition risks when it has put in place a strategy that makes it resilient not only to the occuring of a sector-based low-carbon pathway, but also to its lack of occuring. Any counterparty's alignment strategy is therefore not automatically a perfect hedge against all hazards related to the nature of the pathway and on the methods for implementation of that pathway. The portfolio's alignment as strategy for hedging transition risk must therefore rely on the forward-looking analysis of counterparties, in every sector of the economy.

Some operational strategies for managing risks lend themselves well to achieving such alignment. In particular, this means prioritising avoidance (i.e. divestment or non-investment) or shareholder engagement strategies. A number of arguments are in favour of applying such strategies with a view to managing transition risks without delay. The momentum of the Paris Agreement and other driving forces are giving credibility to a low-carbon pathway. In terms of operational feasibility, among conventional risk management strategies, those strategies supporting the low-carbon alignment of portfolios appear to be the best suited for managing transition risks.

Nevertheless, these processes will only support the low-carbon alignment of portfolios provided that sufficient incentives are sent to economic actors to shift the broader economy onto a low-carbon pathway; and provided that the investment policy framework does not put a brake on the financial system's capacity to trigger the alignment of portfolios.

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