VBDO

White paper
Round Table on Climate Adaptation

How to become part of the solution

Background

A group of experts, investors and other stakeholders convened at the Global Center of Adaptation (GCA) in November 2019 to discuss different approaches on how to adapt to the consequences of climate change. VBDO organized this round table as part of a series of activities in cooperation with WNF, focused on climate change and the financial sector.

Climate adaptation is a relatively new topic for investors but gaining importance quickly. Universities, ngo's, governments and engineering organizations are also working on adaptation from their perspectives. Sharing and discussing different perspectives contributes to evaluating and sharpening prevailing approaches and to overarching knowledge building.

With this round table VBDO hopes to help direct the joint efforts towards effective approaches, tools and solutions to achieve socio-environmental resilience.

The focus of the discussion was on real assets: adaptation to the physical risks of climate change and possible solutions. The discussion was introduced by presentations on:
- Overview of models to embed physical risk in investment portfolio's: an academic approach;
- Climate change and investing in real assets: a market approach;
- Socio-environmental resilience: a system approach;
- Nature-based Solutions to climate change that also offer investment opportunities: a practical approach.

This paper offers an account of the presentations and discussion.

Overall findings

A portfolio risk approach can lead to perverse incentives
Climate adaptation is not only about risk to the portfolio, but also about the impact of the portfolio on our climate. With a sole focus on portfolio resilience, real risks are not necessarily addressed.

Real asset resilience does not function in isolation
Considering resilience of the actual asset, the protection of the asset against physical risk is embedded in investment decision making. Yet, a climate resilient building in a non-resilient area does not hold investor value for long.

Socio-environmental resilience is a key driver for economic benefits
We can only thrive in a liveable world. The question is, how do we envision this world considering different climate change scenarios? We begin with the end in mind and take a collaborative approach between investors, companies, (local) governments and ngo's.

PHYSICAL RISK

Investors are at the very beginning of incorporating physical risks into investment decisions.

Less than 20% of the Dutch institutional investors have formulated a policy on physical climate risks[1]. The main reasons are, 1) little and only recent awareness of the relevance of climate change on investors and 2) complexity and lack of knowledge of available approaches and instruments.

For a reliable climate risk assessment, science-based research on climate hazards needs to be translated into investor tools.

Data service providers and asset managers are currently developing methodologies on physical risk assessment, filling a rapidly increasing investor demand. Such methodologies are continuously in development and do not (yet) answer all the questions.

As an investor it is important to be clear on what the different approaches do and do not offer:

- Be sure the methodology is transparent;
- Be sure the scope and input data are clear (what hazard, scenario, asset class, counterparty, area, scale);
- Is there an understanding of the interdependencies of different climate hazards?
- Use different methodologies next to each other for more accurate results.

1 Dutch Institutional Investors and Climate Change, VBDO, 2019

REAL ASSETS

Making investment decisions while lacking complete and reliable data

- Local- and context specific circumstances need to be reflected in global assessment models;
- Climate risk metrics should combine physical risk, transition risk and vulnerability of real assets on an asset level base;
- Harmonizing the many certification schemes for real estate investments (which are different, overlap or cover just a specific aspect of the asset) would be helpful.

SOLUTIONS

Real world solutions for climate change offer opportunities for investors

Focusing on real world solutions for climate change is relevant for investors. Such solutions can reduce climate risk and provide investment opportunities. For example, there are many feasible Nature-based Solutions to achieve socio-environmental resilience and bring along other positive societal benefits (e.g. health, biodiversity). Collaboration with the financial sector is vital for scaling up Nature-based Solutions.

Introduction

In the 2015 Paris Agreement, we committed to keep global warming well below 2°C. Global policies are slowly adjusting accordingly. However, current predictions of the IPCC state that, in reality, we are headed for global warming between 3- and 4°C. The 2- and 4°C - scenarios differ significantly in impact and the effort needed to adapt to the consequences. For example, the 4°C scenario predicts more extreme weather, higher sea levels and irreversible damage to coral reefs compared to the 2°C scenario.[2]

Mitigation of the causes of climate change is crucial to preventing further escalation of the changing climate. If, at this point in time, we are to accomplish the 1.5°C scenario, an average yearly decrease of 7.6% CO2-emission is necessary.[3]

We are already experiencing consequences of climate change and will so increasingly. Parallel to reducing CO_2-emission we also need to act on adaptation to these consequences. And this will become ever more important if we fail to meet our commitments in the Paris Agreement.
Adaptation is in many ways different and more complex compared to addressing the causes of climate change by reducing CO_2-emission. The various climate hazards differ very much in themselves and also regarding the context and location in which they take place. Adaptation as resilience can be seen from different perspectives. In this roundtable we have taken a financial investor perspective, a real asset perspective and a real-world perspective.

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2 https://interactive.carbonbrief.org/impacts-climate-change-one-point-five-degrees-two-degrees/?utm_source=web&utm_campaign=Redirect#
3 Emissions Gap Report 2019, United Nations Environment Programme https://wedocs.unep.org/bitstream/handle/20.500.11822/30797/EGR2019.pdf?sequence=1&isAllowed=y

ROUNDTABLE "ADAPTATION TO THE PHYSICAL RISK OF CLIMATE CHANGE"
Global Center on Adaptation, Rotterdam, November 2019

Physical climate risk assessments for investment models

According to the Task Force on Climate-related Financial Disclosures (TCFD), climate change risks have become financial risks and should be factored into financial decision making. They can be divided in two types of risks: transition and physical risks. Transition risks stems from changing regulation, consumer preferences, liability, and/or technological innovations that form part of the transition to a low-carbon economy; an economy that can present financial costs to a company or investor. Physical risks are focused on the cost of impacts of extreme events (flooding, droughts, heat waves, storms) or long-term effects like sea level rise and rising temperature.

In response to the TCFD's 2017 recommendations, climate service providers as for example shown in figure 1 have developed tools that can help investment decision makers assess exposure to physical climate risk. Transforming climate data into useable models and metrics for investors has many challenges. Physical climate risk assessment tools currently available take a range of hazards, scenarios and time horizons into account. However, the tools are not always transparent or comprehensive enough in their methodology to meet users' needs.

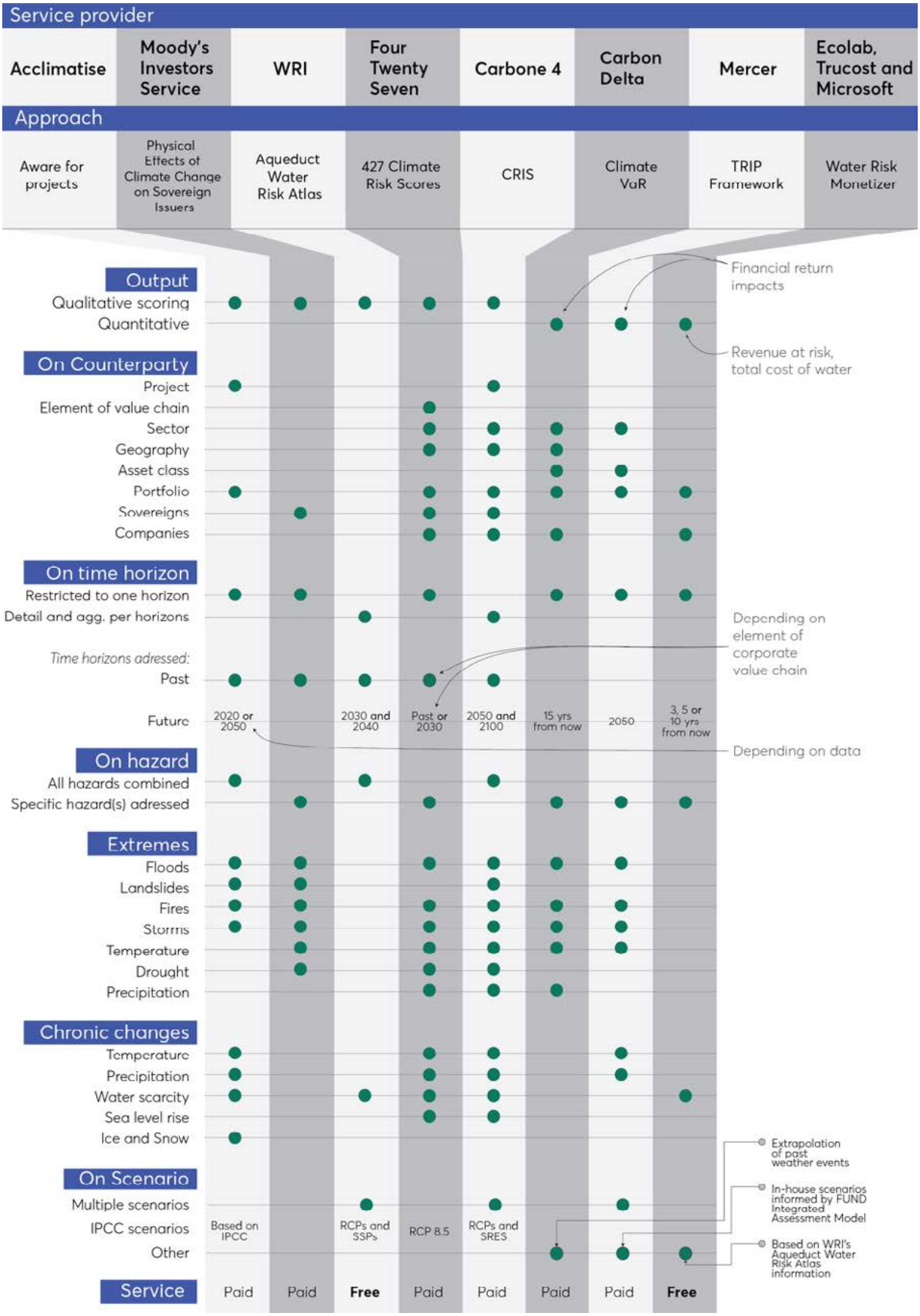
ClimINVEST[4] is a research consortium bringing climate scientists and investors together to improve the information flow between climate science and investors; promote systemic thinking that connects climate hazards and financial impact; and facilitate disclosure of climate risk in investment portfolios, in accordance with the Financial Stability Board's (FSB) Task Force on Climate-related Financial Disclosures (TCFD) 2017 recommendations. In particular, ClimINVEST is working to co-design a selection of the climate indicators, maps and impact chains that investors can use to better inform vulnerability assessments.

During its first phase, the ClimINVEST project studied the approaches of eight physical climate risk assessment tools currently available to investors. Figure 1 shows an overview of the various elements of the available tools. As shown, the tools demonstrate the range of models, time horizons and hazards factored in.

Carbone 4, a France-based consultancy aims to provide insight on climate risks for businesses (assets, markets and supply chain). By using different climate models and scenarios the consultancy firm captures the uncertainty of these tools and learns about climate variability. A recent case study on the use of Heating Degree Days to capture the 'coldness', hence the heating needs, found that heat sales would decrease by 12-20% in 2050 in European cities. Another case study investigated the impact of a temperature increase on an agricultural portfolio, showing an increase in the exposure of this portfolio to temperatures that can cause damages on wheat crops.

4 The following organizations are working together on the ClimINVEST project – CICERO, Wageningen Environmental Research, I4CE, Carbone 4, METEO France and Climate Adaptation Services

Figure 1 | Physical Climate Risk: Investor Needs and Information Gaps. Source: ClimINVEST, 2019



The impact of climate change on real estate portfolio was also investigated with French banks. Carbone 4 quantified the evolution of climate risks (and the evolution of the portfolio exposure) for different hazards (heat, rainfall/floods and droughts). This analysis considered both the hazards (i.e. climate events and their evolution through time) and the assets' vulnerability to climate hazards (i.e. the potential impacts on the asset). If it is possible to quantify the proportion of the portfolio value that is and will be exposed to a high risk in the future, the quantification of the financial impacts on each asset requires a thorough, time-consuming impact analysis for each impact and each hazard. The risk rating approach used here is an efficient way to 1) have a broad view of the portfolio current and future exposure, and 2) identify the assets that are most-at-risk.

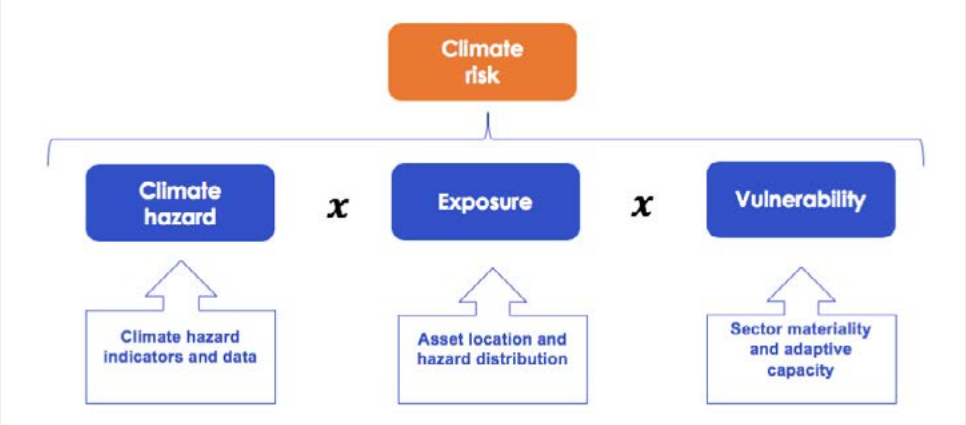
The firm provides analysis on European portfolios and continues to work on the development of impact chains, linking climate hazard to financial impact.

PHYSICAL CLIMATE RISK

Climate hazard and **exposure** can be estimated quite accurately, as climate hazard indicators and data provide insights, and exposure is related to asset location and hazard distribution. However, **vulnerability** is harder to estimate, since it depends on sector materiality and the adaptive capacity. Especially data on asset sensitivity and adaptive capacity is lacking. This makes the total estimation of physical climate risk uncertain.

Estimating physical climate risk is done on the basis of the relevant climate hazards for each situation. These hazards differ across assets due to the location, asset class, vulnerability and exposure. For each climate hazard, an assessment needs to be done in terms of potential impact and resilience. These assessments need to be added up for individual assets, and consecutively be aggregated to real estate portfolio level.

Figure 2: presented by ClimINVEST at VBDO round table in November 2019Information Gaps. Source: ClimINVEST, 2019



Climate risk and resilience of real assets: investor best practice

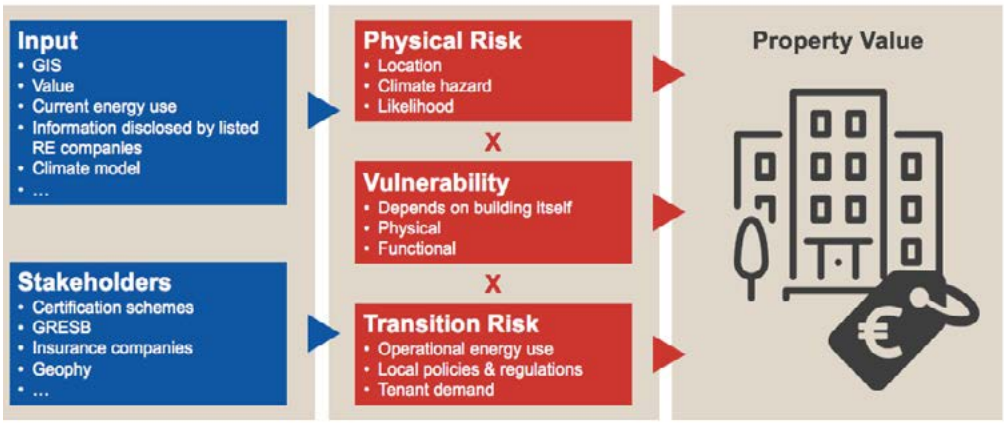
APG, with over €530bn in assets under management is the largest pension investor in the Netherlands. It strives to realize good pensions in a sustainable world for its pension fund clients and 4.6 million beneficiaries. As such, APG is already embedding climate change in its investment process, both from a risk and an opportunity perspective. Although all asset classes are prone to climate effects, the following focus is primarily on real assets: real estate and infrastructure. Real assets are tangible and climate effects are directly linked to the location and characteristics of an individual asset.

In the approach of APG both transition risks and physical risks are simultaneously assessed in the investment analysis for real assets. Figure 3 provides a schematic overview of APG's approach towards property value. In order to retrieve the necessary data to understand climate hazards and embed climate risk in investment models APG works with specific service providers, but only when the underlying model and indicators are transparent. As the market lacks complete and reliable data, APG is also developing its own models as part of its Innovation Project, covering specific features as:

- Tailored information on physical and transition risk.
- Location based climate-proofed assessments.

By participating in research projects such as the EU Carbon Risk Real Estate Monitor (CRREM) APG is supporting the work on models aimed to decarbonize the building sector by 2050. Poor energy efficiency of existing buildings and low refurbishment rates are important challenges to address.

Figure 3: Quantifying impact of physical and transition risks - APG Asset Management Innovation Project



5 https://www.crrem.eu/

For APG climate resilient assets are located in an area with less likelihood of climate hazards and less vulnerability for such hazards or for transition risk of individual assets. From a climate risk perspective APG holds a preference for climate resilient assets in climate resilient locations.

As mentioned before, retrieving the data to make better informed investment decisions is continuous work in process, but ultimately the necessary information will become more transparent. Some of the challenges for obtaining the correct information are:

- Comparing global models with local models on asset level;
- Understanding interdependencies of different climate hazards;
- The number of certification schemes for real estate investments alone (> 200).

There are over 200 certification schemes for real estate investments alone, which are all different, overlap or cover just a specific aspect of the asset. It would be helpful if e.g. the largest ESG benchmark for Real Assets, GRESB, would only recognize the more advanced standards that take climate adaptation into account.

Besides these challenges to assess climate risk for investment portfolios and for resilience of real assets, the physical impacts of climate change are manifest in a broader context than that of the financial markets. Although the effort of the financial sector to assess and even price climate risk in a market context, this addresses only part of the problem and will not provide the incentives for resilience of the entire eco-system. Ultimately resilience of specific assets only has economic value in a resilient eco-system and not in isolation.

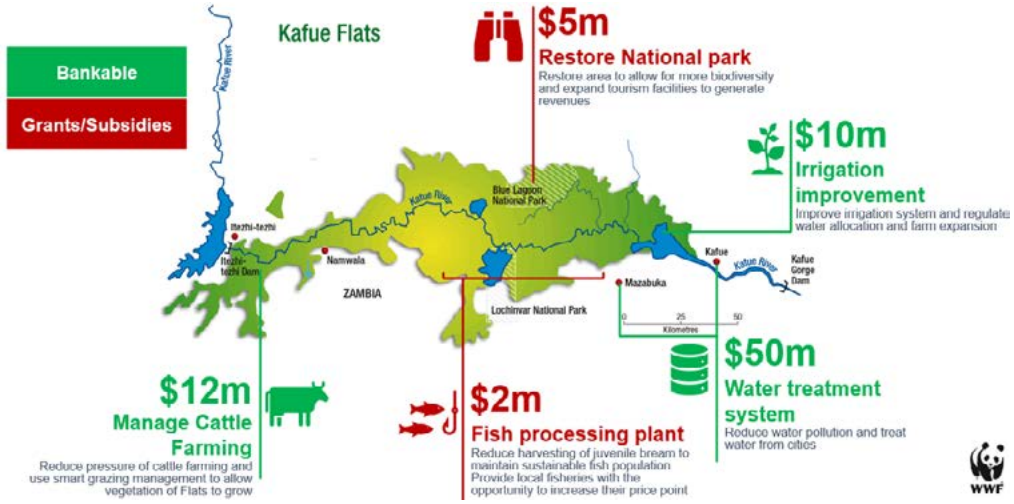
Socio-environmental resilience: a system approach

The previous sections illustrated different market approaches from the financial sector perspective to deal with climate change. Where the financial sector takes a risk approach to prevent further warming and to adapt to the physical consequences, investment portfolio climate resilience does not automatically lead to real world, socio-environmental resilience.

In a system approach the socio-environmental context is the point of departure. Resilience can be about issues in a certain area (e.g. resilience of water supplies, cattle, a species, a city, property) to certain climate hazards through adaptation strategies (e.g. rainwater harvesting, migration corridors, raising homes on stilts) to create resilient landscapes.

Embedding socio-environmental resilience into investment decisions or making direct investments to ensure socio-environmental resilience thus requires a more holistic approach. It may require a series of investments, to be effective, rather than assessing investments in isolation.

Figure 4: Example of a systems approach in adaptation investing. Source: WWF, 2019

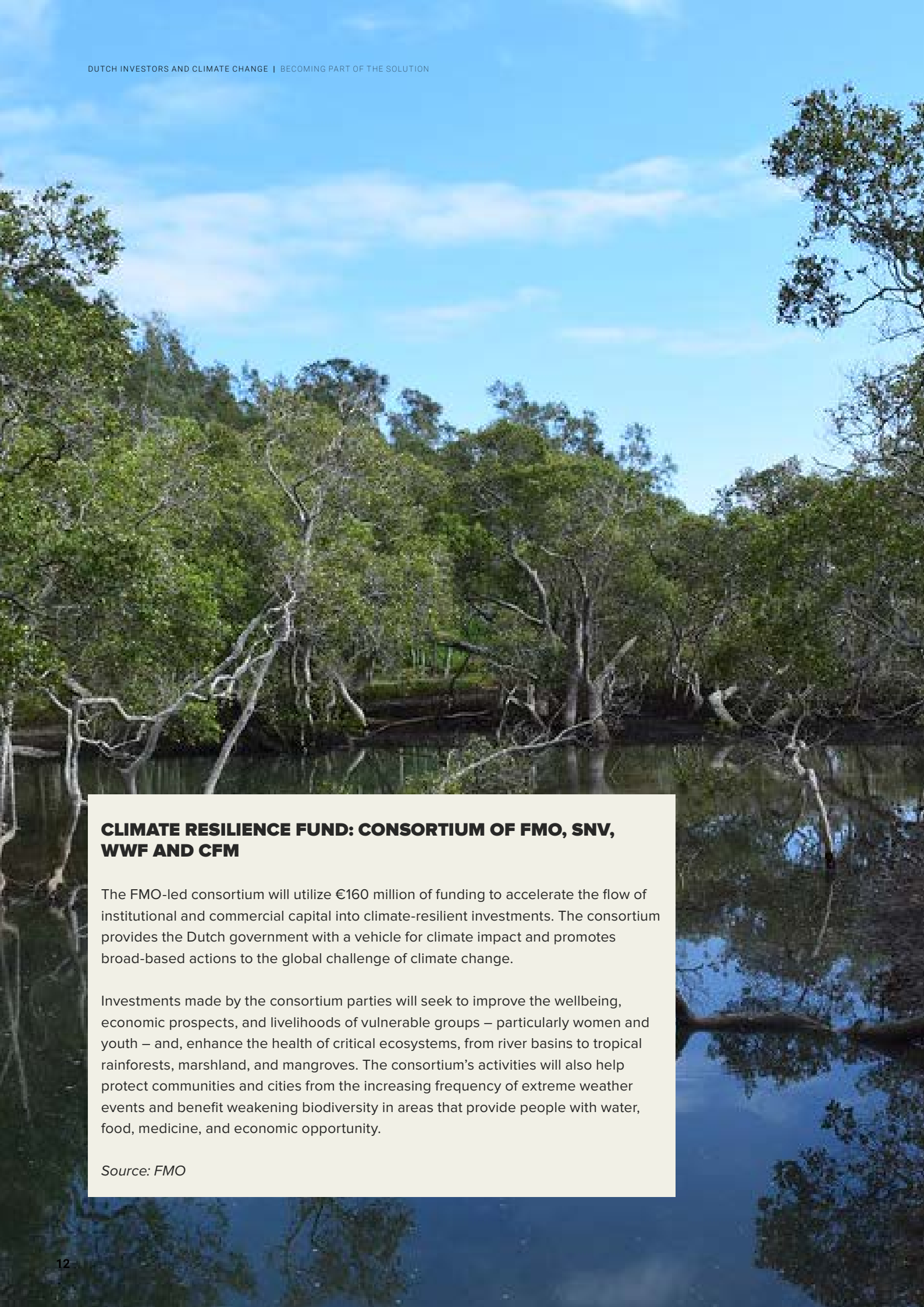


An example of a systems approach is displayed in figure 4. The cluster of projects, or system, works best when it incorporates natural properties of the asset and when it divides bankable, non-bankable, projects and investments.

It could very well be that some projects do not fully meet private sector risk-return rates and others do. But these projects are all necessary to create a resilient landscape with positive societal benefits in terms of e.g. livelihood and biodiversity. That is why, besides private sector investors, governments also have an important role to play.

Governments can provide insight into what a country needs to do to realize socio-environmental resilience. National Adaptation Plans can be instrumental. In addition, governments can also ensure the necessary commitments to attract private sector investors. Commitments can be both in financial terms (e.g. additional funding for first losses) and ensuring that private sector investments can indeed be effective. For this to happen, central and local governments should ensure long-term responsibility to create a trustworthy and stable environment e.g. to be able to realize implementation and maintenance of the financed assets and projects.

Another example of cooperation between public and private sector is the creation of funds such as the Climate Resilience Fund.



CLIMATE RESILIENCE FUND: CONSORTIUM OF FMO, SNV, WWF AND CFM

The FMO-led consortium will utilize €160 million of funding to accelerate the flow of institutional and commercial capital into climate-resilient investments. The consortium provides the Dutch government with a vehicle for climate impact and promotes broad-based actions to the global challenge of climate change.

Investments made by the consortium parties will seek to improve the wellbeing, economic prospects, and livelihoods of vulnerable groups – particularly women and youth – and, enhance the health of critical ecosystems, from river basins to tropical rainforests, marshland, and mangroves. The consortium's activities will also help protect communities and cities from the increasing frequency of extreme weather events and benefit weakening biodiversity in areas that provide people with water, food, medicine, and economic opportunity.

Source: FMO

The potential of Nature-based Solutions and the role of business

In the transition to a climate resilient world, Nature-based Solutions (NbS) play a vital role. This section will illustrate some of these most effective solutions that are embedded in the natural environment and provide economic benefits.

NATURE-BASED SOLUTIONS
Solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience.

The EU Research and Innovation policy agenda for Nature-Based Solutions

The EU policy agenda advocates that NbS, "bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource efficient and systemic interventions."[6]

In fact, the biosphere is the foundation for a successful transition to a climate resilient world. In terms of Sustainable Development Goals (SDGs), this means that if we do not meet SDG 6,13,14 and 15 we will not be able to meet the SDGs at all (as shown in figure 5).

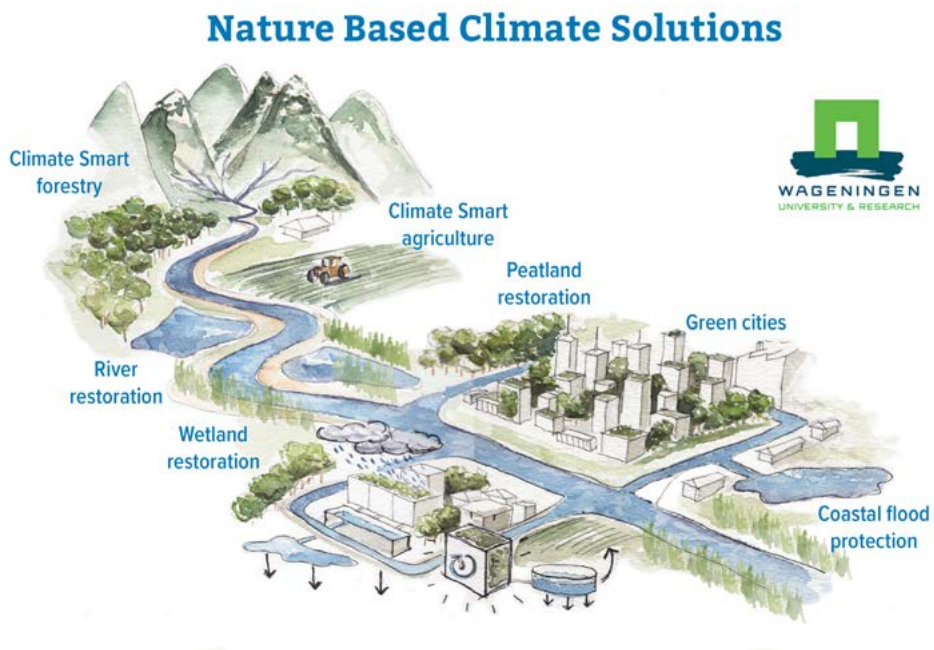
There are many sorts of Nature-based Solutions which are able to deliver biodiversity benefits and positive impacts for human well-being. Many of these solutions can also be related to solutions for climate change mitigation and adaptation.

Examples of Nature-based climate Solutions are:
- Climate smart forestry and agriculture;
- River restoration;
- Coastal flood protection;
- Wetland restoration;
- Peatland restoration;
- Green cities.

6 https://ec.europa.eu/research/environment/index.cfm?pg=NbS

Figure 5: New way of viewing the economic, social and ecological aspects of the SDG's Source: Rockström, Stockholm Resilience Institute, 2018

Figure 6: presented Wageningen University & Research at VBDO round table in November 2019



Nature based Solution in cities: green cities

Cities are the engines of economic growth. One in four world's largest cities are already water stressed. This is why we have to change the way we think about water in cities: city as a catchment.

There are many different solutions for nature inclusive cities, that also create business opportunities. These Nature-based city Solutions make use of different types and degrees of technology:

- No-technology NbS (parks, urban forestry);
- Low-technology NbS (green roof tops, day lighting river, water reservoirs, rainwater harvesting);
- High-technology NbS & smart water technology (water irrigation, smart urban farming, re-use of wastewater integrated heat/cold systems)

Nature-based Solutions offer many and different types of socio-environmental and economic benefits that lead to improved quality of life and ecosystem benefits, such as carbon storage, climate resilient buildings and infrastructure, treatment of wastewater, enhancement of biodiversity and thus, for example, higher property value.

Socio-environmental resilience is a key driver for economic benefits and offers many investment opportunities. The co-benefits of NbS for systems such as cities, deltas or river basins are known, and we have the resources to implement them. However, although the urgency of solutions such as NbS is undisputable, we somehow fail to unlock the enormous potential for both public and private investment. This illustrates the systemic failure we have created, which cannot be solved by the private sector in isolation, but in which the private sector does have a crucial role to play. As money is not flowing at the scale needed to address this systemic failure, a collaborative and inclusive approach is essential to accelerate and mobilize funding into more climate-resilient and cost-effective solutions.

7 https://cdn.gca.org/assets/2019-09/GlobalCommission_Report_FINAL.pdf

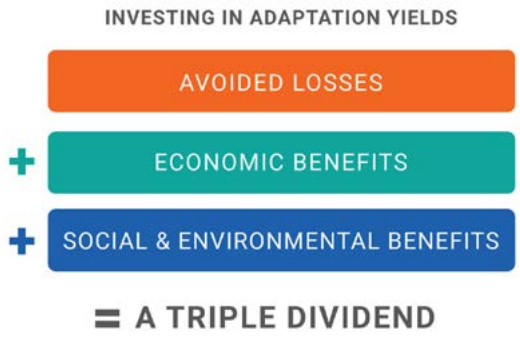
Investing in climate adaptation

The Global Commission on Adaptation (GCA) estimates that global net benefits of $7.1 trillion are to be gained by 2030 from investing $1.8 trillion globally from 2020-2030.[7] Not all adaptation actions are investable yet, therefore public and private parties need to work together and start to value the avoided losses and share benefits. Throughout their report several examples of adaptation related investments are presented, such as mangroves, flood protection and disaster mitigation.

The GCA has divided the economic case for worldwide adaptation in terms of a triple dividend:

1. Avoided losses | The ability of the investment to reduce future losses, for example through early warning systems;
2. Positive economic benefits | Benefits attained by reducing risk, increasing productivity, and driving innovation due to the need for adaptation, for example, as a result of making investments that would otherwise be too vulnerable to climate risks more viable;
3. Social & environmental benefits | The third dividend is social and environmental benefits, also called non-market benefits.

Figure 7: Three dividends Source: Adapt Now, Global Commission on Adaptation (Adapted from ODI, GFDRR, and the World Bank)



Wrap-up

Only by working together, in joint efforts from central and local governments, development finance institutions, private sector investors and companies, scientists, and civil society organization we will be able to turn around the systemic and market dynamics that have brought us into this state of our planet. We have solutions know to us and only need to become better at directing our thinking and acting to realize this solutions and ensure the liveability of our planet.

Present at the Round Table

Expert speakers

Cicero	Sophie Dejonckheere
Carbone 4	Florian Gallo
WUR	Tim van Hattum
WNF	Aron Vermeulen
APG	Derk Welling

Participants

Philips Pensioenfonds	Arian Borgers
Spoorweg Pensioenfonds	Sietse Brouwers
Ministry of Foreign Affairs	Pieter Copper
VBDO	Jacqueline Duiker
IUCN NL	Romie Goedicke
Detailhandel Pensioenfonds	Henk Groot
Actiam	Ruud Hadders
Aegon	Olaf van den Heuvel
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a.s.r.	Marjolein Meulensteen
GCA	Michael Mullan
Willis Towers Watson	Carlos Sanchez
NN IP	Nathalie van Tooren
Wereldhave	Tim van der Weijde

We would like to thank all participants and especially the expert speakers for their contributions to the Round Table. Our special thanks to GCA for hosting the event.

VBDO

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