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Final Report of the Working Group on Finance of the Mission Board of the Mission on Adaptation to Climate Change

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Background information

This report presents the findings of the Working Group (WG) on finance established by the Mission Board of the Mission on Adaptation to Climate Change in 2023. The report aims to provide recommendations on how private or blended (private and public) financing can be secured for projects addressing local adaptation to climate change by local and regional authorities.

The WG's recommendations have been developed following a review of existing successful financing schemes for local climate adaptation projects using private financing with or without public financing. The proposed portfolio of selected best practices intends to inspire other local and regional authorities in their efforts to secure funding for projects within the EU Mission on Adaptation to Climate Change.

More specifically, the Working Group has worked on:

1. Identifying a representative set of existing climate adaptation projects where financial blending methods were used (using private financing as well as public financing).

2. Analysing, why such financing was successful or unsuccessful.

3. Delivering a presentation to the Mission Board along with a document on selected best practices and recommendations for attracting private financing.

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Introduction

Accessing and securing financial resources for climate adaptation initiatives is a significant challenge most Mission Charter Signatories are currently facing. Consequently, local and regional authorities look to EU funding schemes to address these concerns. In this context, the Mission on Adaptation to Climate Change is expected to play a pivotal role in facilitating access to such resources.

Despite these expectations, the financial requirements for adaptation investments surpass the capacity of both EU funding schemes and the collective efforts of national governments. It becomes imperative, therefore, for both the private sector and individuals to contribute to financing climate adaptation projects.

This report presents examples from 12 interviews conducted by the WG members, primarily within their respective countries. These interviews highlight climate public-led adaptation projects where the private sector or individuals have been involved in financing. Finding such projects within the EU proved challenging. While several companies have established funds for these purposes, regional and local authorities have difficulty accessing them.

General findings

The projects featured here address different topics such as nature restoration in urban areas and forests, the strengthening of local economy or heat stress. In some cases, the aim is to construct new headquarters or ensure adequate water supply.

Noteworthy examples have been identified from various countries, each supported by different private sector entities, including private banks, foundations, crowdfunding, Voluntary Carbon Markets (VCM), blended funding with industry, lottery, and climate bonds. The Dutch water boards case presented at the end of the report is particularly remarkable. Even though it is unlikely that other countries will copy this model, it can serve as a promising example of what can be achieved.

The analysis, which tracks the financing sources for climate-related initiatives, reveals that private finance often stems from a combination of public interventions and is more prevalent in larger communities. At the same time, there is limited understanding among businesses and private entities, particularly at the local and regional levels, regarding financing dedicated specifically to climate change adaptation and the suitability of various adaptation options for private funding.

Discussions with governments and private entities show widespread confusion regarding investments directed at adaptation, compared to mitigation and disaster risk management. According to national authorities overseeing climate action funds, adaptation actions are not allocated funding separately, but they are considered to be components of other economic sector's budgets. Municipalities that benefit from these funds invest a lot of public finance in climate action, but they acknowledge most of these funds are spent on mitigation and disaster risk management. When asked to provide examples of investments in adaptation, they mention afforestation along riverbeds, investments in irrigation facilities, energy efficiency in (private) buildings and support for SMEs to introduce resource efficiency measures.

In addition, the framework is not favourable for investments due to the uncertainty surrounding the location and timing of hazards. It may take years for the benefits of actions to manifest, and more immediate issues often prevail. Citizens, businesses, and governments are biased towards short-term planning and succumb to what Mark Carney called "the tragedy of the horizon", as mentioned in "Breaking the Tragedy of the Horizon – Climate Change and Financial Stability".[i]

As indicated in the report of the Global Commission on Adaptation (2019) "Adapt Now: A Global Call for Climate Resilience Leadership, Most Decisions Still Don't Internalize Climate Change"[ii], even when risks are understood, knowledge about appropriate solutions, including successful or unsuccessful practices, costs and benefits of different options, is often lacking. Moreover, misallocation emerges as a problem because the short-term vision of public and private organizations leads only to successful short-term solutions.

Following the recommendations of the World Bank in its report "The World Bank Group Action Plan on Climate Change Adaptation and Resilience" (2019)[iii], the private and public sectors need to improve and harmonize resilience assessment metrics and systems to enable stakeholders to quantify costs and resilience. Benefits of investing in resilience and tracking progress are still not fully understood. Scaling up and building on efforts to account for and price climate risks – including the financial, economic and human costs of failing to manage that risk – will increase the supply of adaptation tools to meet rapidly growing demand. Investing in data and minified information will be critical if we are to integrate climate into the way we make all kinds of financial decisions.

Damages caused by climate-related issues are already causing businesses and operations to invest in climate change adaptation. However, private investors might require extra incentives to support such initiatives. Public financial resources can be leveraged to mitigate the risks associated with these investments, thereby encouraging wider participation from private investors. Investing in adaptation could be made an integral part of the investment plans of companies operating in natural capital-dependent fields such as agriculture, fishing, forestry, and tourism. These actions will increase resilience and profitability in their own operations and supply chains, while simultaneously contributing to wider climate adaptation needs (and resulting in more private investments in these areas).

Approximately 27% of adaptation financing needs are in the infrastructure and energy sectors. In cities, for example, infrastructure-based adaptation solutions (like improved insulation, air conditioning, ventilation, etc.) for combatting the urban heat island effect present clear business opportunities for companies supplying these products.

The voluntary carbon market is a viable financing lever that could be activated relatively quickly and scaled up to allocate capital flows for partially addressing the climate funding gap by 2030. According to carbon ratings provider Sylvera, 45% of the carbon credits available through VCMs today are nature-based solutions. Despite the risk of misuse of carbon, nature-based solutions supported by VCM credits have the potential to attract private financing and they are worth exploring further from a disaster risk reduction and climate change adaptation and perspective. In these endeavours, clearly defined requirements, early planning, and strict control of activities are crucial to prevent maladaptation.

Private investors can finance adaptation-related projects on fully commercial terms if they have confidence in risk-adjusted returns, such as a venture capital firm investing in startups offering climate risk assessments. However, this rarely occurs in reality, and most adaptation projects are still considered high-risk investments. Public administration can support financing to reduce the investment risk for private investors.

Conclusions

As 2023 has shown once again, climate adaptation must be tackled quickly and drastically. The mounting damage alone justifies our commitment.

The investments required for climate adaptation are enormous and can only be achieved by including climate adaptation alongside other socio-economic benefits such as recreation, agriculture, biodiversity and water security. Implementing adaptation measures requires specific knowledge, well-trained employees, actual implementation power, sufficient financial resources and sufficient leadership to have perseverance where necessary.

There are limited examples of climate adaptation projects within the EU, wholly or partially funded by the private sector or individuals. In spite of the fact that several companies have set up funds for the purpose of financing such projects, regional and local authorities have difficulty accessing them.

Our research confirms that blended finance remains the main route to increasing climate adaptation investment. However, the way to attract more private resources (how, from whom, for what) needs to be further explored.

Based on the analysis of successful cases of private financing in climate change adaptation, the following aspects can be considered enablers of success:

1 - Regional and local authorities must have sufficient knowledge of how to implement climate adaptation projects suitably and effectively.

2 - A network consisting of climate adaptation specialists should be established bringing together knowledge institutions, local authorities and companies from both Member States and EU.

3 - Awareness of the (financial) impact of climate change is of great importance for companies and individuals, especially now that insurers are concerned about the increasing costs of damages.

4 - A strong understanding of the costs and benefits of adapting to climate change is fundamental.

5 - Because climate adaptation often involves major infrastructural projects, including investments in the regional spatial planning plans allows long-term planning.

6 - Governments should continue to bear some of the unprofitable costs.

Project examples

Example 1 – Préstamo Sequía – Banco Santander

Name of project:	Prestamo Sequia (‘Drought Loan’)
Project holder:	Banco Santander
Location:	Spain
Budget:	EUR 5 billion
Type of financing:	Bank loans

- **What is the adaptation project about?**

Banco Santander offers loans to adapt agricultural and farm activities to the new climatic conditions of water scarcity and drought. Clients receive personalized advice from the bank's agricultural specialists so that they can know all the details and lines available and thus be able to boost their business. Banco Santander also allows the financing of other initiatives that address climate change challenges, such as investing in new technologies, genetic improvement, or new varieties to improve yields. In this regard, the Digital Field Notebook is a key tool offered. Clients can use it to records information about their farms, for a more sustainable and digital agriculture and which is also a mandatory element in the new CAP 2023-2027. Additionally, since June 2023, Banco Santander has made available to its farmer clients a loan that aims to help address the complex drought situation that the Spanish countryside is experiencing, as well as face other adversities engendered by climatic conditions, such as those caused by floods. The Drought Loan, which has preferential conditions, has a maximum term of six years, up to 12 months grace period, and quarterly, semi-annual or annual instalments.

- **Who is it financed by?**

Banco Santander made available EUR 5 billion to support the agricultural sector affected by droughts. This loan, already pre-granted to more than 100,000 clients, may be guaranteed, as required by the entity, by the an SGR (Spanish guarantee society) or SAECA (Spanish State Agricultural Guarantee Company).

- **Why did the private funders participate?**

The Banks sThe abnormal lack of rain and the deterioration of soil moisture during the first half of 2023 would have reduced the annual growth of the gross added value of the primary sector by between 3 and 4 percentage points compared to an average climatological situation. Thus, the entity seeks to ensure that these can cover the extraordinary needs that have occurred as a result of the drought and other inclement weather.

One of the key elements of this financing is the support of the government through the Royal Decree-Law 4/2023 of May 11, which adopts urgent measures in agricultural and water matters in response to the drought and the worsening of the conditions of the primary sector derived from the war conflict in Ukraine and weather conditions. With these public measures, the costs of the guarantee will be assumed by the Ministry of Agriculture, Fisheries and Food if certain requirements are met by its beneficiaries. The Sociedad Anónima Estado de Caución Agraria (SAECA) is a Spanish public company whose shareholders are the Sociedad Estado de Participaciones Industriales (SEPI), with 80% of the capital and the Spanish Agrarian Guarantee Fund FEGA with the 20% of the remaining capital, the Ministry of Agriculture, Fisheries and Food being its supervisory Ministry.

SAECA's activity is the provision of guarantees and bonds to facilitate access to financing for the entire primary sector.

- **Additional comments and recommendations**

Other Spanish banks such as BBVA or La Caixa are also starting to offer similar loans. The support of the Spanish Ministry of Agriculture is crucial to activate this kind of private support for the primary sector.

Example 2 - Urban Flood Park La Marjal – Aguas Municipalizadas de Alicante

Project name:	Urban Flood Park La Marjal
Project holder:	Banco Santander
Location:	Alicante, Spain
Budget:	EUR 3,307,855.56
Type of financing:	Public-private partnership

- **What is the adaptation project about?**

La Marjal is an urban green park which serves to prevent flooding, being capable of storing up to 45,000 m3 of water, while configuring a green recreation area, with a marked social and environmental character. Since its establishment, the park has effectively addressed the recurrent flooding issues in the region. At the same time, it serves as a sustainable green sanctuary, providing a habitat for native birds and flora. Additionally, it enables the utilization of stored water for irrigating parks and gardens, resulting in a threefold increase in the city's green spaces. Last but not least, the project contributes to social profitability being a public space that can be used and enjoyed by all citizens. The total cost of the project amounted to EUR 3,307,855.56.

- **Who is it financed by?**

The project is being financed entirely by the municipal water organization of Alicante, "Aguas Municipalizadas de Alicante". This is a public-private company: 50% public with the Ayuntamiento de Alicante, and 50% private with the company Hidraqua, Gestión Integral de Aguas de Levante S. A.

- **Why did the private funders participate?**

The main reason for participating in the project has been the recurrent losses and damages, including in human lives, due to the heavy flooding caused by intense rains (extreme weather effects). The investment has prevented losses and improved the management and control of floods. In addition, it has ensured the water management for irrigation during droughts.

- **Additional comments and recommendations**

The management of the park as a storm reservoir is carried out by the concessionaire company for the operation of the drainage net that, through a remote control and remote-control system, knows in real time the height of the water in the retention basin, the flow circulating through the stormwater network and the flow that is diverted, if applicable, to the park. In the event of rainwater entering, the acoustic and audible alarm installation is activated, and voice messages are issued to warn visitors.

The management and maintenance as a public recreational space is carried out by the City Council through the usual gardening and ornamental fountain services, having a computer system that integrates gardening irrigation and pond water conservation.

Aguas de Alicante is also responsible for carrying out important information work on the operation of the park, also providing an educational program with a guide service for this purpose, as a teaching resource for schools, with identification of the flora and fauna present in the park.

Example 3 - Reforestation, afforestation, and revegetation – Bulgaria

Project name:	Reforestation
Project holder:	Local public authorities, regional institutions, civil societies, and
Location:	communities Bulgaria
Budget:	To be determined
Type of financing:	Private investment based on the voluntary carbon market (VCM)

- **What is the adaptation project about?**

Projects for reforestation, afforestation and revegetation covering at least 20,000 hectares of non-agricultural and/or damaged land are being conceptualized in Bulgaria for climate change mitigation, adaptation and disaster risk reduction (DRR) purposes.

The concepts will be designed as multi-year interventions that will be implemented as projects through partnerships and collaborations with local public authorities, regional institutions, civil societies, and communities. The aim is to bring private investments into nature-based solutions (NBS) and biodiversity restoration, thus not only contributing to additional carbon capture, but also increasing ecosystems' resilience to climate change and promoting sustainable use of shared resources.

The projects are supposed to generate multi-faceted ecosystem services that restore and strengthen the local environment and reconnect people with nature. They shall also contribute to the EU Biodiversity Strategy under which Member States commit to planting at least 3 billion additional trees in the EU by 2030.[iv] The work will be then certified through independent standards, bringing the ecosystem services to market.

- **Who is it financed by?**

A young team consisting of representatives from KAYA Global and Carbon2Nature (C2N) by Iberdrola, will act as matchmakers between private investors and local governments who work in partnership with local stakeholders to deploy large-scale interventions. The projects to be developed (still in concept phase) are based on carbon finance provided in the form of carbon credits, which should enable the implementation of green solutions to capture and store CO_2 in natural ecosystems.

- **Why did the private funders participate?**

This is private investment based on the voluntary carbon market (VCM) and aimed at generating internationally recognized carbon certification ("Verra" and "Gold Standard"). If partnerships with local authorities and communities are designed appropriately, these projects can contribute not only to carbon sequestration but also to biodiversity conservation, strengthened ecosystems' resilience, and more sustainable development of local communities. Such co-benefits of project implementation should be encouraged while avoiding "green washing" through strict control of activities and proper accounting.

- **Additional comments and recommendations**

The voluntary carbon market is a viable financing lever that could be activated relatively quickly and scaled up to allocate capital flows for partially addressing the climate funding gap by 2030. According to a White Paper published by the World Economic Forum[v] in September last year, only in 2022 the VCM channelled around 1.3 billion USD in investment flows to mitigate carbon emissions, and this figure could grow to more than 50 billion USD by 2030.[vi] Global markets are developing in accordance with Articles 6.2 and 6.4 of the Paris Agreement, though increasing transparency and improving accounting are still necessary.

In the meantime, these investments could be brought into the climate change adaptation field? According to information by the carbon ratings provider Sylvera, 45% of the carbon credits available through VCMs today are nature-based solutions. The large majority of these credits (98%) are issued in

developing countries, providing funds where they are most critically needed. There is still a risk of misuse associated with carbon removals, but NBS supported by VCM credits can attract private financing. Further exploration of this should be encouraged.

Example 4 – Breathing Headquarters – Austria

Project name:	Grüne Erde breathing headquarters
Project holder:	Terrain: integral designs
Location:	Almtal, Austria
Budget:	EUR 11,6 million raised
Type of financing:	Crowdfunding (1800 lenders)

Crowdfunding has been shown to be an effective method of involving private sources in the funding of adaptation strategies. An excellent example of such projects is Grüne Erde-Welt designed by Terrain: integral design.

- **What is the adaptation project about?**

The project is located in Almtal, Austria and was completed in 2020. The ultimate purpose of the project was to create a built environment that is beautiful, safe for people and the planet, resistant to climate change, carbon negative (absorbing carbon dioxide) and self-sufficient with zero waste generation.

The project is energy independent and climate positive. It is powered exclusively by renewable energy (an on-site photovoltaic system with 310,08 kWp output). The building's footprint is identical to the previously existing production building while demolition concrete was used for foundations and base of path surfaces. The project uses 100% regionally sourced timber, plant-based insulating materials, and 98.5% petroleum-free building materials. All rainwater is infiltrated to enable balanced soil ecology in the vicinity of the site. Moreover, natural ventilation and cooling are achieved through "augmented plant performance", a process that could mark the end of air-conditioning as we know it. In addition to being environment-friendly, the project promotes human health and well-being, and the sick leave rate of employees has dropped to almost zero.

The costs of the project are not higher than those of a comparable conventional project, because the budged has been redistributed from conventional climate infrastructure to plant-performative breathing.

- **Who is it financed by?**

This project is a successful crowdfunding initiative led by the Grüne Erde company. With around 1,800 private lenders and EUR 11.6 million raised.

- **Why did the private funders participate?**

Grüne Erde's crowdfunding model for building its new headquarters is the most successful in Austria. The funds that were gathered by 400 lenders fostered local communities, created an organic farm, following the CSA principle of "community supported agriculture" with 70 gardening members, contributed to the development of biological-vegetarian gastronomy from on-site vegetable and fruit production, and helped create a garden trail, hiking trails, and bicycle rental. Moreover, the space created has a recognized educational value.

- **Additional comments and recommendations**

Augmented plant performance provides fresh clean air and oxygen, while cooling all spaces and fully substituting conventional climate machines.

Example 5 – F2C, Fondazione Cariplo per il Clima3 – Italy

Project name:	Bosco Clima
Project holder:	Fondazione Cariplo
Location:	Italy
Budget:	EUR 4.434.000
Type of financing:	Private foundation

- **What is the adaptation project about?**

The project aims to develop effective guidelines for forest management? and to implement adaptative measures in rivers valleys and mountain slopes. This is done by considering the habitats of interest for biodiversity and their natural function within the ecological network. Furthermore, the project organises climate change awareness events for citizens and a training course for experts to promote sustainable behaviours.

The project was led by the Comunità Montana Valli del Verbano in partnership with Parco Regionale Campo dei Fiori; Centre for Appropriate Technological Development – CAST; Italian League for the Protection of Birds ODV; Prealpine Geophysical Centre – G.V. Schiaparelli Astronomical Society; University of Insubria.

- **Who is it financed by?**

The Fondazione Cariplo F2C contributed EUR 1.790.000 and the local authorities contributed EUR 2.644.000 to the total EUR 4.434.000 budget.

- **Why did the private funders participate?**

“F2C program - Cariplo Foundation for the climate” aims to support mitigation and adaptation to climate change at the local level and disseminate scientific knowledge to institutions and citizens on the impacts of global warming.

These activities include the updating and revision of urban planning instruments, regulations and of sector plans of public entities, in alignment with the 2030 targets; an operational climate assessment aimed at identifying the vulnerability of the territory and the design of interventions for adaptation/mitigation measures; a range of climate change adaptation measures such as forestation actions, better management of the water resources, and communication initiatives and effective involvement of citizens.

- **Additional comments and recommendations**

The Cariplo foundation is a regional actor that does not fund projects outside of their region. They target small local administrations, aim to provide technical assistance, establish practical adaptation measures, and build a solid knowledge of climate change among citizens. A notable source of climate adaptation funding for small communities is private foundations (private entities usually derived from private banks, but with an independent role). Entities of this type are more likely to fund small, well-designed projects that fully align with the needs or risks of their territories. An important step is to involve the foundations in the initial design of the project in order to fulfil their general rules of working.

Example 6 - "Mutamenti, idee ed azioni per il clima" – Fondazione Compagnia San Paolo

Project name:	FruttADA
Project holder:	Fondazione Compagnia di San Paolo,
Location:	Italy,
Budget:	EUR 20 000
Type of financing:	Private foundation

- **What is the adaptation project about?**

The FruttADA project focuses on the crucial issue of climate change adaptation in the fruit sector. The project aims to develop knowledge, actionable actions and initiate a useful and replicable design for the fruit sector.

Initially, there are three main interventions planned: Introduce "minimum soil disturbance" practices to improve soil properties, preserve and increase soil organic components and thus contain erosion. Promote the adaptation of agricultural systems to climate change through diversification of the crops currently in use. Finally, to protect with the permanent organic coverage, some green areas to facilitate water drainage during extreme weather events.

- **Who is it financed by?**

Co-funded by Fondazione San Paolo and the European Mediterranean Centre for Climate Change Foundation – CMCC, the call aims to fund local public communities (of Piemonte, Liguria and Val d'Aosta hinterlands). CMCC provides the expertise for the preliminary risk analysis.

- **Why did the private funders participate?**

CMCC's activities were aimed at providing qualitative climate risk analysis support for local governments that were awarded the grant provided by the Company of San Paolo Foundation. Territories must equip themselves with ad hoc policies and tools, develop new economic, social and environmental models to adapt to a changing climate. Collaboration with these local authorities could continue outside of this call for proposals.

- **Additional comments and recommendations**

In addition to the financial support the Foundation can provide their scientific expertise in order to train the team leader of the projects or to provide the necessary data for a risk analysis or risk assessment. As in the case of one of the projects investigated, the project of the San Paulo Foundation "Mutations-ideas and actions for the climate - Call 2021", the CMCC offered technical assistance for risk assessment, historical data series, and risk analysis and training.

This project's strengths include the climate adaptation funding 12 small local communities received, the free training offered by CMC to team leaders, and the expertise provided by the private research foundations on risk analysis and data sharing. The private research foundations involved have the potential to gain additional publicity and grow their clientele. However, since the communities that benefited from this project were very small, it remains to be seen whether this project is scalable and replicable.

Example 7 - Nature restoration Fochteloerveen nature reserve (400 ha extra Nature)

Project name:	Nature restoration Fochteloerveen
Project holder:	RWE
Location:	The Netherlands
Budget:	N.A.
Type of financing:	Blended funding including industry

- **What is the adaptation project about?**

The Fochteloërveen is a protected nature reserve in the Netherlands. It consists largely of raised bog and of dry and wet heath and fens, some grasslands and some coniferous forests. The raised bog is particularly vulnerable and under pressure due to nitrogen precipitation, climate change and desiccation. A good raised bog consists of at least 50 per cent peat moss, but due to rainwater run-off, this plant thrives less and less. This can have serious consequences, because without bogs, endangered flora and fauna lose an important habitat. In addition, peat moss absorbs much more CO2 than forests, making it an essential tool to combat the effects of climate change.

RWE sought compensation for its CO2 impact when building a new power plant. The water board was looking for more space for water storage. The municipality wanted to enhance opportunities for tourism. And the owners of the site, the Vereniging Natuurmonumenten and Staatsbosbeheerwanted were interested in strengthening nature. 400 hectares of new nature were created.

- **Who is it financed by?**

  - Companies: RWE
  - Public: Municipality, Water authority, Provinces and Staatsbosbeheer
  - Private: Vereniging Natuurmonumenten

- **Why did the private funders participate?**

The owner of the natural reserve wants to improve the quality of the environment. The energy company is required by law to compensate the nature loss caused by expansion of the power plant.

- **Additional comments and recommendations**

At first glance it is mainly a nature restoration measure but the impact for climate adaptation is also significant. The peat land area is a buffer for water. Improved water management in the natural reserve will mitigate the effects of extreme weather also in the surrounding area.

Example 8 - Restoring and climate-proofing monumental estates

Project name:	Restoring and climate-proofing monumental estates
Project holder:	Monumental estates
Location:	The Netherlands
Budget:	N.A.
Type of financing:	Blended funding including industry

- **What is the adaptation project about?**

Due to climate change, green monuments in the Netherlands are facing increasing drought. To combat this, the minister of Research and Education gave local governments and civil society organisations scope to improve water levels on green heritage sites. One of her recommendations concerned the Baakse Beek area in the Achterhoek region, where many beautiful estates are suffering badly from drought.

The water board and province are working with the estate owners to improve water management. They do this by retaining water underground for longer, giving high-quality seepage water more influence.

The estates in the Baakse Beek basin are of unprecedented beauty, but climate change is visibly starting to take its toll. This is not only a thorn in the side of the estate owners, but also has an impact on the lives of the tenant farmers and the experience of nature of recreationists. By restoring the water level, the estates literally and figuratively flourish again and everyone benefits from this.

Several other estates are involved in this project. The knowledge and experience that the parties involved gain during this pilot will be useful later for similar projects and for the further development of government policy for nature restoration of green heritage. In the long term, this will create an integrated solution that takes into account the interests and expertise of all those involved and makes an important contribution to the climate challenge.

- **Who is it financed by?**

  - Public: Municipality, Water authority, Province
  - Private: Private owners of the estates

- **Why did the private funders participate?**

Future-proofing the estate. Making agriculture more sustainable and strengthening water management and nature restoration on the estate.

- **Additional comments and recommendations**

The unique feature of this project is that it has so many facets. The hydrologists calculate the consequences of potential measures for the water level and the landscape architect assesses the whole from the spatial quality and the experience of the landscape and cultural history. The tenant farmers were involved in the project as much as possible in this pilot phase. They have often lived and worked in the area for generations and therefore have a lot of expertise and knowledge. They know everything about the values and culture of the landscape and they know every spot in the natural environment. By recalling the morality, mentality and emotions in such an area, support was created for an integrated solution that fits better within the landscape and goes further than just adapting water systems.

Example 9 - AB InBev brewery improve groundwater levels Doode Bemde nature reserve

Project name:	Doode Bemde nature reserve
Project holder:	AB InBev
Location:	Belgium
Budget:	Blended funding including industry
Type of financing:	€400,000

- **What is the adaptation project about?**

The collaboration project between AB InBev and Natuurpunt focuses on improving the groundwater regime: in the event of persistent drought, it functions as a buffer for water scarcity. In the event of excessive rainfall, this project reduces the risk of flooding in the region. The Doode Bemde nature reserve acts as a strategic sponge for the broader environment. By adjusting the hydrological regime of the ditches and the detailed drainage systems, much more groundwater will be retained in the valley, which will increase the general groundwater level. These interventions have a positive effect on water retention. They increase the average groundwater level and improve the quality of the ground and surface water within the rivers Doode Bemde and the Dijle. In the long term, this will lead to more than 400,000,000 liters of water replenishment for the nature reserve and the Dijle river catchment.

- **Who is it financed by?**

An investment of more than EUR 400,000 in water restoration and water buffering by the brewery.

- **Why did the private funders participate?**

No water equals no beer. the effects of climate challenge in the field of water impact all Belgian brewery companies, including AB InBev.

The company has been committed to sustainable water use for years and is now moving one step further and setting up a water restoration project with Natuurpunt in the Doode Bemde. This involves a four-year partnership with the aim of restoring and improving the hydrological regime of the nature reverse and the Dyle through adjustments to the canals and drainage system.

In the long term this will lead to more than 400,000,000 liters of water replenishment for nature. This area suffers from climate change due to drought and intense rainfall. The strategic value of the Doode Bemde After drought periods and intense rainfall became more frequent in recent decades due to the effects of climate change, it was decided to strategically use the Doode Bemde as a natural flood area for the Dijle. In addition, increased urbanization in the Dyle basin causes an increase in the superficial runoff of precipitation water via discharge peaks in the Dyle River.

Example 10– Cool-AMmetropolis

Project name:	COoL-AMmetropolis
Project holder:	Metropole Aix-Marseille-Provence
Location:	Metropole Aix-Marseille-Provence
Budget:	EUR 999,000 = EUR 749,000 (ANR) + (* EUR 250,000 from other financing player and mechanism)
Type of financing:	Blended fund

- **What is the adaptation project about?**

Most of the world's population lives in cities, and this proportion will continue to grow over the coming decades. Urbanised and industrialised areas emit around 70% of fossil CO2, although these estimates need to be verified on a local scale. What's more, cities are often warmer than the surrounding rural areas due to the urban heat island (UHI), which can influence certain CO2 flows (e.g. those from heating in buildings, air conditioning in cars and those captured by urban vegetation). Cities are therefore strategic locations for reducing CO2 emissions, but also for lowering local temperatures.

The project aims to characterise and reduce CO2 emissions and UHI in the Aix-Marseille Metropolitan Area (AMm). It is governed by the Aix-Marseille-Provence Metropolitan Authority (AMPM). It is the second most densely populated area in France (1.8 million inhabitants), and is located in the PACA region, which is highly exposed to the risks of climate change.

- **Who is it financed by?**
  - National Research Agency: €749,000 (public research fund)
  - Co-financing MAGES Region Project: €50,000
  - Regional/ATMOSUD doctoral scholarship: €96,000
  - CIFRE LIEU/Métropole Aix-Marseille-Provence grant: €96,000
  - INSU-PYTHEAS / Observatoire de Haute Provence (National Observation Service ICOS-France, National Observation Service PHOTONS,
  - OHP-GEO Instrumented Site and ACTRIS-FR Research Infrastructure): €15,000 / year, excluding equipment

The project is partly funded by the ANR to encourage public-private partnerships in setting up a demonstrator. This funding covers 100% of the investment made by the research centers and associated start-ups, and between 40 and 60% of the investment made by the private sector. The latter can take advantage of the research import credit for year n+1, in particular to cover the time spent by human resources to initiate the participation of companies.

Added to this is the national endowment fund of EUR 2 billion in decentralised credits to the prefects, enabling the local authorities involved in the COol-AMmetropolis project (Metropole Aix Marseille Provence) and their public or private partners to co-finance demonstrators dedicated to adapting to climate change.

Lastly, the Fonds Barnier can be used as part of this project to carry out studies, works or equipment to prevent or protect against natural risks linked to UHI (health risks linked to UHI, etc). It can also finance preventive information campaigns on the risks (physical and health) caused by extreme heat waves, which help to raise risk awareness. The Barnier fund can also be used to help people living in particularly exposed areas to relocate outside risk zones and ensure that the sites they vacate are made safe.

- **Why did the private funders participate?**

Accelerate, via financing and public subsidy mechanisms, the involvement of private actors in the region (here the Metropolis) in order to initiate operationally oriented research projects and then enable the

implementation of business and economic opportunities (creation of start-ups), new professions, new service offerings, etc.) on a PPP (Public Private Partnership) model.

As a reminder, public-private cooperation to innovate in terms of research partnerships appears relatively underdeveloped in France, given the private funding of public research (5.2% in 2016) and the share of innovative companies using public research (17% between 2014 and 2016). On the other hand, France is ahead of other OECD countries for the share of joint patent applications between public research and companies (2.5% of applications filed at the EPO in 2016).

- **Additional comments and recommendations**

The ANR COoL-AMmetropolis project aims to bring scientific advances in several disciplines to the territory of the AMP metropolis.

Another societal contribution concerns operational town planning, with the strengthening of joint actions of research actors and civil society in the implementation of adaptation strategies. This involves finding the most effective way to integrate virtuous scenarios, defined in interaction with local stakeholders, into legal planning documents, associated legal tools, and practices, and to disclose the results to the general public. public to share the knowledge and results produced.

Example 11 - The Marker Wadden

Project name:	The Marker Wadden
Project holder:	Natuurmonumenten (NGO)
Location:	The Netherlands
Budget:	EUR 90 million
Type of financing:	Blended funding including private lottery

- **What is the adaptation project about?**

The Marker Wadden project is an initiative of Natuurmonumenten. In 2016, the first phase was started together with Rijkswaterstaat: the construction of five islands. The construction of two additional islands started in the spring of 2021. Together with the underwater landscape, it will cover a total area of 1,300 hectares. Their ambition is to turn Marker Wadden into a large natural archipelago of 10,000 hectares. Lake Markermeer (700 km2) was split off from Lake IJsselmeer in 1976, when a dam was built between Enkhuizen and Lelystad. Disconnected from the sea and rivers, the lake became a stagnant. The lake has barely any natural shores, and its waters are often extremely turbid as wind and waves churn up the accumulated sediments from the relatively shallow lake floor (2-4 m deep). As a result, fish and bird populations have declined dramatically. The construction of this archipelago has given nature a major boost with newly created habitats for water plants, shellfish, birds and fish. Islands with natural shores and spawning areas. This way a robust, clear-watered nature area emerges in the heart of the Netherlands: a natural jewel where migrating species thrive. This makes it one of the largest nature restoration projects in Western Europe. The ten islands also contribute to reducing CO2 emissions as a result of the new nature created. But strengthening biodiversity is a priority.

- **Who is it financed by?**

Public organizations: The project was financed by the Natuurmonumenten association and the National postal code lottery.

- Business: Arcadis, Boskalis, RHDHV, ING Bank.
- Private funds: The Adessium Foundation, Cultuurfonds - Brook Foundation - Dinamofonds - Haagvalken Foundation - Jaap van Duijn Vogelfonds and the Otterfonds.
- Government: ministries, provinces, and municipalities.

The costs of this first phase amount to EUR 90 million.

- **Why did the private funders participate?**

Compensation measures, publicity, and intrinsic motivation.
Natuurmonumenten is the largest private organisation for nature conservation in the Netherlands. They manage over 100,000 hectares (1,000 km2) of land and water, from large nature reserves to small natural areas of high ecological value and beauty.

- **Additional comments and recommendations**

Different values come together here. The starting point is the ecological restoration of this part of the IJsselmeer, but this also gives climate adaptation a boost and stimulates the regional economy.

Example 12 - The Water Authorities in The Netherlands

Project name:	Water Authorities Bank NWB
Project holder:	The Water Authorities
Location:	The Netherlands
Budget:	EUR 52 billion
Type of financing:	Public Bank

- **What is the adaptation project about?**

Water Authorities are their own government layer in the Netherlands. They have a lot of knowledge about water management, which is important because many adaptation measures mainly consist of water measures. In recent decades, the water boards have increasingly shifted their attention to climate adaptation. The Dutch water system is being adapted to the changing climate, both nature-based and artificial. A lot of money has been invested in prevention and adjustments. Dikes are raised, retention areas are expanded, and rivers are given more space. Water and soil are used as guiding instruments for spatial planning. Farmers are asked to increase the organic matter content of their soil in order to stimulate the soil's sponge effect. The Water Authorities accumulate a lot of knowledge in this way. They have their own civil servants (13,000) and therefore not only have a strong position but also implementation power. They are also seen as partners by the business community. Companies and municipalities count on the knowledge of the Water Authorities and are prepared to take their spatial planning instructions seriously.

- **Who is it financed by?**

The Dutch Water Authorities have their own bank the NWB Bank, the 5th most safest bank in the world and their own tax system, so the money is earmarked for their work. They raise more than EUR 3 billion annually. Through good cooperation with other parties, governments, companies and private individuals they are able to integrate different infrastructure projects into one multi-functional project through their projects,nsuch as: water resilience and nature conservation, climate adaptation projects with tourism projects. The acquired knowledge makes them a stable partner for financial institutions.

- **Why did the private funders participate?**

The NWB has a long experience working with companies, farmers, nature organizations and citizen initiatives. Their experience and knowledge is valued as aquality assurance for the private sector to participate in the NWB.

- **Additional comments and recommendations**

The Water Authorities have a large knowledge network, but also local experience, implementation power and earmarked money.

[i] Breaking the Tragedy of the Horizon – climate change and financial stability Speech given by Mark Carney Governor of the Bank of England Chairman of the Financial Stability Board Lloyd's of London 29 September 2015
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[iii] The-World-Bank-Groups-Action-Plan-on-Climate-Change-Adaptation-and-Resilience-Managing-Risks-for-a-More-Resilient-Future.pdf (worldbank.org)
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