NAIAD

NAture Insurance value: Assessment and Demonstration

POLICY BRIEF

Engaging insurers to promote nature-based solutions and climate adaptation: Insights and recommendations from the NAIAD project

"NAture Insurance value: Assessment and Demonstration"

NAIAD

SC5-09-2016 Operationalising insurance value of ecosystems
Grant Agreement nº 730497

Deliverable 8.3

Second Policy Roundtable report and Policy Brief

Due date of deliverable: 30/09/2019
Actual date of submission: 14/11/2019

Start date of project: 01-12-2016 Duration: 36 months

Authors. Should you wish to use or refer to it, please cite as follows:
Weinberg, J., Thakar K., Marchal, R., Nanu, F. and Lopez Gunn, E. (2019): "DELIVERABLE 8.3; Second Roundtable Report and Policy Brief". EU Horizon 2020 NAIAD Project, Grant Agreement N°730497

Dissemination Level		
PU	Public	X
CO	Confidential	

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 730497.

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EXECUTIVE SUMMARY

This policy brief explores ways to engage the insurance sector in disaster risk reduction (DRR), Nature Based Solutions (NBS) and climate adaptation. It draws upon the results and insights of the EU Horizon 2020 project 'NAIAD'- Nature Insurance Value – Assessment and Demonstration. This summary highlights five opportunity areas and ten recommendations for effective engagement between the insurance sector and relevant stakeholders across the EU.

Opportunities to engage insurers as partners, innovators, providers and investors

Increasing scientific exchange and cooperation

The insurance sector welcomes increasing exchanges with scientists, private companies, governments and new partnerships with stakeholders. There is high willingness to engage directly in the assessment of green infrastructure and NBS. This includes both valuation of the avoided damages and possible valuation of green infrastructure as an insurable asset. The insurance industry can also play a key role in financing studies on nature-based solutions in risk reduction and for the longer-term monitoring of natural infrastructures.

Raising awareness on climate risks

Awareness raising activities related to the risks posed by climate change is viewed as a form of good corporate governance and social responsibility, as well as a market opportunity for service provision. In some cases, insurance companies will drive action where the sector sees risks to the sustainability of their business; in others companies will need to be persuaded more actively to engage as knowledge provider and investor.

Enriching policy dialogue on risk reduction and environmental regulation

Several reports have highlighted that environmental regulation is also one of the important drivers promoting the implementation of NBS in the EU and recommend finding ways to streamline relevant policies, plans and strategies to support NBS at each level. The inputs from insurance companies as risk management service providers in such a process could become a potential enabler for investment while also generating better knowledge on prevention.

Leveraging loss data for more resilient municipalities

Loss data collected by insurance companies can be an invaluable resource for municipalities to better mitigate their risk from natural hazards. Sharing this data, however, is not a simple proposition. Insurers require a combination of positive incentives and clear regulation to ensure companies to be equally required to provide data, as well as the guarantee that the privacy of customer data is duly protected. The different aspects surrounding this issue should be explored at the local, national and EU levels

Understanding the potential and limitations of the insurance sector as investors in DRR and NBS

The insurance sector represents the largest European institutional investor. While there is increasing interest in green investment, greater focus is on the climate mitigation and energy than adaptation and resilience for most insurance sector investors. Institutional investors also still consider NBS as high risk and bankability of projects often depends on appropriate risk mitigation for investors. Incentives are needed to make financing resilience (through NBS) equally attractive as other areas of green investment.

Enhancing clarity and direction for investment through dialogue and regulation

Insurers' investment strategies are highly influenced by regulatory frameworks. Insurance Europe highlighted three questions that need to be addressed in the development of new rules to enhance risk transparency and bring sustainability into mainstream business processes: Is it clear what sustainability means and, if not, how can it be made clear? Are enough sustainable investments available? Are there any regulatory disincentives to investing sustainably? The process of defining the EU 'green taxonomy' is one of the most important areas that can both inform and guide future investment, both in Europe and globally, and also provide one forum to address these questions.

Recommendations

- Take differences between countries into account when considering harmonization of linkages between DRR and insurance policies if and when the EC decides to engage insurance industry as part of the EU CCA/DDR Directives.
- Potential standards for NBS implementation should address challenges to assess the co-benefits of DRR measures whether disaster strikes or not.
- Promote partnerships between communities and companies to assess exposure to hazards and damage costs as well as to evaluate the effectiveness of preventive measures.
- Expand research on the potential utilization of loss data in urban planning processes, including barriers and enablers in different European countries.
- Inform public authorities on the value of engaging insurers for loss data and required steps to enable them to provide it.
- Develop step-wise guidance on where and how insurance companies may contribute to resilience planning and investment
- Consider quotas for the direct financing of natural infrastructure projects in initiatives such as the Europe 2020 Project Bond Initiative
- Create and enhance mechanisms to engage the insurance sector in the de-risking of investments, including specific guidance for de-risking investments in NBS.
- Ensure that the EU Sustainability Taxonomy (and the EU Sustainable Finance Action Plan) include relevant criteria for NBS, DRR and adaptation investments
- Make a strategy to incentivize and reward true engagement of insurance companies in the social protection and service component of insurance provision

Edition information

VERSION	EDITION DATE	MODIFICATION	WRITTEN BY	CONTROL
1	24/10/2019	FIRST EDITION	J. WEINBERG & K. THAKAR	
1.1	06/11/2019	REVIEW AND MODIFICATIONS	R. MARCHAL	D. MONCOU LON
1.2	06/11/2019	REVIEW AND MODIFICATIONS	F. NANU	
1.3	06/11/2019	REVIEW AND MODIFICATIONS	E. LOPEZ GUNN	
1.4	12/11/19	REVISED DRAFT	J. WEINBERG	

1. Introduction

This policy brief explores ways to engage the insurance sector (including both reinsurance and insurance companies) in disaster risk reduction (DRR), Nature Based Solutions (NBS) and climate adaptation. It draws upon the results and insights of the EU Horizon 2020 project 'NAIAD'- Nature Insurance Value – Assessment and Demonstration. NAIAD supports the European Commission in its current drive to look at sustainable finance in all its aspects, including the role of NBS in relation to insurance.

This paper builds upon the findings in the first NAIAD policy brief, which highlighted four priority areas and sought to increase understanding on how to:

1. Facilitate more ex-ante investment in disaster risk reduction under a changing climate;
2. Assess the potential of NBS to reduce disaster risk and address barriers to their uptake;
3. Utilize relevant EU regulations and strategies that can facilitate investment and better protection in DRR measures and NBS;
4. Identify potential paths for the insurance sector to expand support for resilient societies.

This paper expands analysis into the fourth area highlighted above and offers insights in how to effectively leverage the role of the insurance sector as a partner, provider, innovator and investor (Marchal et al. 2019). The analysis provided in the brief is based upon the results of a survey with 61 insurance sector professionals (Marchal et al. 2019); updated with elite interviews with eight experts from the re-insurance and insurance sector and the conclusions from NAIAD events at the 2018 International Catastrophic Risks Forum and 2019 World Water Week in Stockholm (August 2019), as well as a updated review of recent literature on the subject. Drawing on this material, the brief outlines key challenges and opportunities and offers a series of recommendations on priorities for action for effective engagement between the insurance sector and relevant stakeholders across the EU.

2. Engaging insurers as providers, innovators and partners

The first NAIAD policy brief highlighted how the insurance sector can support action to reduce risk and increase resilience to disaster as institutional investors (discussed in section 3); insurance providers; innovators of new insurance products; and partners bringing their risk management expertise (Joyce et al. 2018). In 2019, NAIAD performed a survey of 61 executives' active in (re)insurance companies and linked stakeholders aimed to develop insights on the insurance industry's perspective on its role, value proposition and potential contributions to eco-disaster risk reduction, climate change adaptation, resilience and ex-ante disaster risk management (Marchal et al 2019). Based on the results of this survey and findings from NAIAD policy roundtables, several key opportunities, challenges and recommendations are highlighted.

Opportunity: Increasing scientific exchange and cooperation

Survey respondents commonly viewed insurance companies as social actors that serve as institutional partners to support resilience in societies. There is a clear concern from insurance professionals that investments related to climate change and disaster risk mitigation need to be increased, and investors (both generally and specifically those from the insurance sector) see this as an area the sector will expand in future. The sector welcomed increasing exchanges with scientists, private companies, governments and new partnerships with stakeholders involved in eco-DRR. There is high willingness and on-going research within the insurance sector to engage directly in the assessment of green infrastructure and NBS. This includes both valuation of the avoided damages and possible valuation of green infrastructure as an insurable asset. The insurance industry can also play a key role in financing studies on nature-based solutions in risk reduction and for the longer-term monitoring of natural infrastructures.

Opportunity: Raising awareness on climate risks

Interviews further indicated that there is high willingness to increase the role of insurance companies in awareness raising activities related to the risks posed by climate change and loss prevention to respond to their customers. This role can both be a viewed as a form of good corporate governance and social responsibility, as well as a market opportunity for service provision. In some cases, the insurance sector will drive action where the sector sees risks to the sustainability of their business; in others the sector will need to be persuaded more actively to engage as knowledge provider and investor. There are cases where insurance companies act as partners, taking a lead to push for more practical actions and investments to reduce unsustainable (and un-insurable) disaster risk. Denmark Pensions and Insurance, for example, regularly engages with local authorities and has established partnerships with government and developers, so that their company can directly invest in projects to mitigate risks for properties and then recoup the costs for those investments. This form of leadership may be more of an exceptional case than common practice but underscores the importance of the regulatory environment and policy priorities set for the insurance sector and their interactions with other actors like e.g. local authorities, to function.

Opportunity: Enriching policy dialogue on risk reduction and environmental regulation

Several reports have highlighted that environmental regulation is also one of the important drivers promoting the implementation of NBS in the EU (Mayor et al. 2019, Stagakis et al. 2019). Previous studies also identified comprehensive lists of policies and regulations relevant to investment, promotion and implementation of NBS overall (e.g. Stagakis et al. 2019, Sarabi et al. 2019), though these studies have mostly missed including specificities of national insurance schemes and corresponding legislation. At the EU level, directives specifically relevant to driving investment into NBS effective to flood and drought risks were identified by NAIAD (Joyce et al, 2018) . These studies also commonly note the lack of a single method or regulatory framework suited to this process. Instead the analysis recommends

focusing on finding ways to streamline relevant policies, plans and strategies to support NBS at each level (Somarakis, G., Stagakis, S., & Chrysoulakis, N. 2019). When initiating such a process, the insurance sector should be considered and included. Here the inputs from insurance companies as risk management service providers can be leveraged, notably through their role in assessing risk and potential avoided damages. This could serve as an enabler for investment improve knowledge on prevention.

Opportunity: Leveraging loss data for more resilient municipalities

One area with potentially high value for engagement with insurers is on the provision of loss data. The insurance sector holds information on the historical impacts of weather events, with the most detailed data set on the location and level of damages incurred and how this has evolved over time. Loss data collected by insurance companies can be an invaluable resource for municipalities looking to better plan resilient communities and mitigate their risk from natural hazards such as floods, storm surge, cloud bursts and/or drought, etc. For example, experiences in Norway and other countries in Europe show use how the use of this data could greatly improve the capacity of public authorities to invest in risk mitigation measures (see e.g. Klima 2050 and Box 1). The different aspects surrounding this issue can be explored at the local, national and EU levels. Insurers require a combination of positive incentives and clear regulation to ensure a level playing field for all companies to be equally required to provide data, as well as the guarantee that the privacy of customer data is duly protected.

Challenge: Overcoming concerns over competition, privacy and complications in data sharing

The Klima 2050 project evaluated the different perspectives from Norwegian insurance companies towards sharing loss data (Hauge 2019). Seven of the eight insurance companies interviewed for the study were positive to sharing insurance loss data with municipalities. After the release of the report the eighth insurance company changed their perspective and agreed that sharing insurance loss data was of public value.

Sharing this data, however, is not a simple proposition. The greatest concern from insurance companies stems from how the data can be protected. Many of the articles reviewed and experts consulted referred to the difficulties due to European privacy laws to share address level data. Sharing data at the address level risks the identification of an individual person. In order to avoid breaching the EU General Data Protection Regulation (GDPR), data needs to be aggregated to a level where no person could risk being identified. Otherwise, it holds the potential to disadvantage or discriminate against consumers whose properties have experienced loss previously. Importantly, this should still be done in a way that the data does not lose its value. The aggregation of data at a larger scale, and the sharing of hazard or damage maps is considered as part of the expertise that could be provided by the insurance sector in the frame of contractual agreements with e.g. municipalities. Another important concern for insurance representatives is that data can become available to competitors. This can influence the competitive edge that many insurance companies gain from the ability to out predict their competitors. The public sharing of insurance loss data could also present risks that smaller or foreign insurers will be able to infiltrate the market with little risk or investment, creating an unfair advantage for the different insurance companies. The experience from the KLIMA 2050 project (Hauge 2019) in Norway indicated that companies became more positive to sharing their loss data following multiple rounds of dialogue but stipulated that this kind of data sharing needs to be done at the request of a higher authority. This is to ensure that all companies share equally - or are equally obliged - and guarantee insurance data will be handled appropriately.

[1] This included the following EU policy, directives and strategies: Cohesion Policy; Biodiversity Strategy; Environmental Liability Directive; Environmental Impact Assessment Directive; Strategy Environmental Assessment Directive; Adaptation Strategy; Mitigation Strategy; Water Framework Directive; Floods Directive; Habitats Directive; and Green Infrastructure Strategy.

Box 1: What is loss data and how is it collected and shared?

Loss data is the data collected by insurance companies to qualify and quantify the physical damage resulting in loss of use, or loss of income to an asset. Due to the nature of the policy holder-insurer relationship, this data is collected on a granular level tracking location/address, type of damage, damage costs, frequency of damage, etc. The collection of such data is of critical importance to the functioning of insurance companies. Meanwhile, the collection and processing of loss data on an address level is often either cost-prohibitive for most municipalities or simply not available to them. Several European countries have tested the sharing of insurance loss data with municipalities. A pilot by Finance Norway (Brevik et al., 2014, Ebeltoft 2016) showed that data collected by insurance companies at asset level has substantially improved the understanding of risk for municipalities. The access to such data was proven to be useful for both smaller and larger municipalities. It helped to improve collaboration across municipal planning and technical departments, provide new insights to previously unknown risks and highlight vulnerable areas. In 2016 the Danish Insurance Association provided all municipalities with access to cloudburst data from Danish insurers. These data were useful in improving and validating risk models, as well as identification of high-risk areas. Another example is the ONRN (Observatoire National des Risques Naturels), the, French organisation linked to the insurance sector for data exchange on hazards, assets at risks, damages (mean costs of different hazards per community), and prevention. Generally speaking, such data can help to support municipalities to better prioritize climate adaptation measures in land-use planning and to promote an improved understanding of how NBS work. The main challenge is the integration of scientific knowledge on NBS in the CAT insurance models.

Recommendations

- The **"insurance value of ecosystems**" could be misunderstood by the insurance sector. To avoid such misunderstanding, the use of "natural assurance value" is preferred to define the risk reduction provided by natural systems.
- **Take into account European differences in terms of harmonized linkages between DRR and insurance policies** if and when the EC decides to engage insurance industry as part of the EU CCA/DDR Directives, the EU would also have consider these differences from each national insurance scheme through dialogue and engagement with insurers on DRR.
- The potential development of **European and national roadmaps for sustainable insurance** could be considered, though there are not yet common views about how this should be done across the difference insurance schemes and types of insurance companies
- **Potential standards for NBS implementation** (including those presented by NAIAD to determine the natural assurance value) **should address challenges to assess the co-benefits of DRR measures whether disaster strikes or not.**
- **Promote partnerships between the communities and companies** to assess the exposure to hazards and damage costs as well as evaluate the effectiveness of preventive measures.
- **Expand research on the potential utilization of loss data in urban planning processes, including barriers and enablers in different European countries**. The number of articles published on this matter has increased over the past few years, however few countries have begun study in this area, indicating the need and potential of further exploration and development (Gradeci et al. 2019).
- **Inform public authorities on the value of engaging insurers for loss data, and required steps to enable them to provide it.** Public authorities need to take steps that can facilitate loss data sharing from insurance companies while maintaining an equal playing field. Legislation might be required to ensure that the sharing of address level data privacy is not infringed upon and data is appropriately handled. A data sharing framework must be established and operated by a trusted third party that allows for the input of address level loss data but generates an output that is aggregated to a higher level such that consumers maintain anonymity and avoid unfair pricing.

3. Engaging insurers as investors

The Global Commission on Adaptation estimates that an additional 1.8 trillion USD of investment is needed over the next decade to increase resilience worldwide (GCA 2019). The GCA claims that targeting this investment to specific areas like disaster risk reduction, water management, the natural environment and more resilient infrastructure would provide over 7 trillion USD in benefits and savings. The World Bank made similar assessments, estimating 1 trillion USD needed to be invested in resilient infrastructure in low- and middle-income countries to provide more than 4 trillion USD in benefits (Hallegatte, Rentschler & Rozenberg 2019). The general conclusion is consistent: investment in resilience now avoids higher costs long-term.

Opportunity: Understanding the potential and limitations of the insurance sector as investors

The insurance sector represents the largest European institutional investor with more than 10 billion EURO of assets under management and annual gross written premiums of over 1.2 trillion EURO (Insurance Europe 2019). Given the scope of their influence and assets, engaging the insurance sector clearly represents a very important opportunity to increase investment in resilience, including in nature-based solutions.

In the NAIAD survey, the need for increased investment in sustainability and resilience building actions (sustainable and responsible investments) to decrease their risks and costs (particularly under climate change) was frequently articulated. The propensity of insurers to purchase bonds makes investments in nature-based solution projects through green bonds a natural fit (Filkova et al 2018). Many respondents stated a strong willingness to issue green bonds, as well as to participate in sustainable finance and the circular economy. At the same time, many others indicated that it can be challenging for the insurance sector to directly invest in loss prevention.

The role of insurance companies as investors is best seen as separate from their role as an insurer and agent for disaster risk recovery or reduction. When issuing green (or sustainability) bonds, companies have interest in finding and showcasing socially responsible investment (SRI) and are keen to find good projects with operational models to fund them and include in their sustainable investment portfolio. This requires a clear demonstration of the benefits (e.g DRR impacts) and a viable business model from the borrower to pay back the bond. Like all investors, opportunities that offer a good combination of ROI, stability, and lowest level of risk are sought.

Challenge: Increasing priority for green investment in resilience, DRR and NBS

While there is increasing interest and activity in increasing green and sustainable investment, a recent report by Share Action (Uhlenbruch 2019) noted there is greater focus of among insurance company investors on the climate change mitigation side than adaptation. These priorities are echoed by even the most outwardly vocal insurance companies engaged in climate change and resilience issues (See Box 2). The report also stated climate-data was better available for the investment branches of insurance companies than for the underwriting branches for many of the interviewed companies (ibid). These are still obviously important steps being taken.

In 2017, the top 15 European insurance and re-insurance companies had total investments in fossil fuel sector of over 130 billion USD; and underwriting of fossil fuel projects and operation were of high importance (in terms the size of their total business) for a majority of those companies (Bousshard 2017). Actions taken to invest in green energy, and divest in activities as coal production and mining, are more straightforward to communicate externally and reduce reputational risks. They can also be viewed as less complex investments with lower perceived uncertainties and transaction costs than (for example, to invest in a solar panel installation project versus an NBS) those taken for adaptation and risk reduction. Incentives are needed to make financing resilience (through NBS) equally attractive as other areas of green investment.

Challenge: Overcoming perceived risks and uncertainties to financing NBS

NBS are promoted as strategic investments that can boost the overall performance and climate resilience of infrastructure. Numerous reports and studies have discussed enablers and barriers to the investment and uptake of NBS projects (Weinberg et al 2018; Stagakis et al 2019). Common observations highlight perspectives ranging from financial sector professionals stating a lack of access to viable projects ready for investment (e.g. a pipeline of projects), to developers claiming that the key barrier is to access capital investments to implement projects at the scale required (Browder et al. 2019). The truth is that these paradoxical conditions co-exist. Mobilizing investments require both the development of new and improved application of existing financing models, as well as interventions to improve the enabling conditions, like regulations, access to good data and management capacity of NBS projects at all levels.

Public institutions responsible for water resources and disaster risk management, such as utilities and local governments, are the main actors currently investing and implementing NBS (Mayor et al. 2019, Browder et al. 2019). A key driver is often to address risks and comply with national and supra-national environmental regulations, such as the EU Flood Directive, etc. (Mayor et al. 2019, Somarakis, G., Stagakis, S., & Chrysoulakis, N. 2019). The financing of NBS are hindered by their perceived risks on their key performance indicators and level of service that can provide, which can lead to reduced confidence by governments, utilities and local authorities to invest (Browder et al. 2019). These perceived risks frequently center around either the institutional structures and capabilities to manage them; or questions around accessing evidence that the NBS will provide the specific service stated (Ershad Sarabi et al. 2019).

In addition, unlocking private finance can involve overcoming multiple hurdles. Mayor et al. (2019) points out that financers and institutional investors still consider NBS as high risk investments. There is a high perception of risk of preconstruction and construction phases, and first years of operation. Bankability of projects often depends on appropriate risk mitigation for investors. Private financing can still play a role using refinancing vehicles, allowing entry options to institutional investors in less risky periods (e.g., post-completion of construction). In these cases, additional parties that can guarantee the financing (and have a higher ability to take on the risk), can be important.

Box 2: A brief look into Zurich's climate change position

Zurich (2019) climate change position includes eight areas of commitment (available at https://www.zurich.com/en/sustainability/our-role-in-society/climate-change) Only the first relates to actions to increase resilience (and risk reduction). This is also an indirect area of action done by supporting governments and companies in other sectors to inform risk management actions as part of adaptation plans. One other commitment that relates to integrating assessments of physical and transition risks into investment strategies was tied to commitments to reduce carbon emissions and low-carbon energy transitions and disinvesting in fossil fuels. All other commitments stated by Zurich, which span from target setting, company environmental impacts, investment and advocacy actions, are tied directly to energy transition and carbon mitigation. These commitments are prefaced by conditions that actions must be compatible with the financial objectives of the company, in line with client demand and bound by public policy.

Opportunity: Enhancing clarity and direction for investment through dialogue and regulation

Insurers' investment strategies are highly influenced by regulatory frameworks and require a continuous dialogue on issues regarding prudential regulation, taxation, collateral requirements on derivatives and other areas. This also extends to regulation of disclosure and risk underwriting. Zurich, for example, note in their position on climate change (see box 2) that pricing climate risk in investment and underwriting is undertaken "if and when possible". Ensuring that such actions as stated above are conducted to the fullest extent possible may require changes in regulatory conditions and disclosure requirements from EU, national and other relevant authorities. This could be considered for example, in the proposal for a regulation on disclosures relating to sustainable investments and sustainability risks and amending Directive (EU) 2016/2341 (EC 2018). The feedback from the "public consultation on institutional investors and asset managers duties regarding sustainability (EC 2018)" showed a majority of respondents believed current disclosures of sustainability risks are problematic, underscored by insufficient information and risk metrics to perform the assessments. Some call for standardization and using a "set of acknowledged metrics" to enable the mainstreaming of improved assessments and disclosure.

In its annual report, Insurance Europe (2019) identified priority questions for insurers in the development of new rules to enhance risk transparency and bring sustainability into mainstream business processes and functions: Is it clear what sustainability means and, if not, how can it be made clear? Are enough sustainable investments available? Are there any regulatory disincentives to investing sustainably? The process of defining the EU 'green taxonomy' is one of the most important areas that can both inform and guide future investment, both in Europe and globally, and also provide one forum to address these questions. The new criteria developed in this taxonomy is an opportunity to stimulate more investment in resilience, DRR and NBS.

Recommendations

- **Develop step-wise guidance on where and how insurance companies may contribute to resilience planning and investment.** This guidance may differ due to specific local, national, and project contexts. However, there are many common, large processes (e.g. in issuing of bonds, city-level adaptation investment planning, land-value capture strategies, etc.) where guidance and road-mapping can be refined and used. One such method is the NAS canvas developed by NAIAD. It is used to capture the full aggregated value of collective action by different actors (private and public) to then comprehensively evaluate the business case, potential financing, as wells as technical, social and economic viability of NBS projects to provide risk prevention and reduction.
- **Initiatives such as the Europe 2020 Project Bond Initiative could have quotas for the direct financing of natural infrastructure projects.** A key lever to explore in the EU for example is to promote policies that mandate investment in risk reduction to receive eligibility for certain forms of financing. This could begin with reviewing the Europe 2020 PBI and other viable funding sources where criteria can be added to ensure options to provide risk reduction, including through green infrastructure/ NBS, are included or at least considered.
- **Develop and enhance mechanisms to engage the insurance sector in the de-risking of investments,** including a specific guidance for de-risking investments in NBS/green infrastructure. The financing for de-risking may come from EU, investment banks or other sources, but the basis for the assessment may include the insurance sector. For example, a model where the insurance investor could act as the warrantor for the project, provided the project reaches pre-stimulated benchmarks is being tested in other regions like in the US and may be considered for replication. This can be done within a green or environmental bond, making a portion of payments to a project developer contingent upon reaching specific performance targets that can provide assurances to the financer . This should keep in mind that more complex financing mechanisms can increase transaction costs and make them only suitable for larger-scale interventions (Mayor et al, 2019).
- **Consider actions to improve oversight of institutional investors that are underwriting risks.** Currently, we face an environment of increasing levels of financial risk (due to climate change) taken on by the insurance sector; but also increasing cost-competition for underwriting those risks created by investors banking on turning over investments within a shorter time frame and selling their investments for quicker profit return. This strategy enables profit for some investors, but also places them at risk to go bankrupt (at the public expense if they are not solvent). This also undermines the ability of re-insurance to accurately price risk, in line with increasing climate uncertainty. This in turn undermines our ability to guide public investment for protection in line with actual risk levels faced and maintain solvency of insurance and re-insurance markets. Such fears were articulated by interviewed experts working within the re-insurance industry and may warrant more extensive research and analysis. Resolving this challenge is both complex and challenging and goes beyond questions on NBS investment. However, the potential crisis it can cause for the insurance sector cannot be ignored.

[2] Washington DC's Water and Sewer Authority issued a $25 million "environmental impact bond" in 2016 to finance green infrastructure designed to prevent rain and storm-water runoff from overwhelming the city's sewer system. The bond includes a contingent payment that reflects the effectiveness of the project in reducing runoff and includes a risk-sharing provision if it does not meet certain targets. (Referenced in seminar, source: https://www.goldmansachs.com/insights/pages/gs-research/taking-the-heat/report.pdf

- **Develop a strategy to incentivize and reward true engagement in the social protection and service component of insurance provision.** Insurance provision for smaller items (e.g. phones, cars, etc.) has a higher profitability and correspondingly a greater interest by non-life insurance sector professionals. This imbalance between reward (profit) and importance (contributing to protecting and restoring individuals lives from disaster) in the industry diverts financial and intellectual resources that could be better spent in contributing more to finding solutions to the climate crisis. This process of re-aligning these priorities is being driven both by shareholder interests in the social impact of their investments, as well as the policies and culture established within insurance companies from the board downwards. Any measures from the EU that can compel or encourage more engagement from the insurance professionals should be explored.
- **Ensure that the EU Sustainability Taxonomy (and the EU Sustainable Finance Action Plan) include relevant criteria for NBS, DRR and adaptation investments.** The EU Sustainability Taxonomy (and the EU Sustainable Finance Action Plan) will both widen the total amount of green capital (by gathering more financers and capital deployed) and deepen its impact (by specifying more criteria for investments that are green in specific areas). This means the explicit criteria for nature-based solutions, green infrastructure for climate adaptation (disaster risk mitigation) will be critically important. As will be the setting of criteria and guidance for the measurement and operation of these projects. This will enable more capital to be invested in NBS, and more of those investment to explicitly target the use of NBS to reduce water related risks.

About the NAIAD Project

'NAIAD' (Nature Insurance Value – Assessment and Demonstration) is an advanced, first of a kind, EU Horizon 2020 applied research programme focused on Nature Based Solutions (NBS) in risk management strategies, with a focus on water. NAIAD aims to operationalize the insurance value of ecosystems to reduce the human and economic cost of risks associated with water (floods and drought) by developing and testing - with key insurers and municipalities - the concepts, tools, applications and instruments necessary for its mainstreaming.

References

Bosshard, P. (2017). Underwriting Climate Chaos: Insurance Companies, the Coal Industry and Climate Change. Published by Friends of the Earth France, Greenpeace Switzerland, Market Forces, Re:Common, Sierra Club, The Sunrise Project and Urgewald. https://unfriendcoal.com/wp-content/uploads/2017/06/Coal-insurance-briefing-paper-0417.pdf

Brevik, R., Aall, C., & Rød, J. K. (2014). Pilotprosjekt om testing av skadedata fra forsikringsbransjen for vurdering av klimasårbarhet og forebygging av klimarelatert naturskade i utvalgte kommuner. VF-rapport, 7, 2014.

Browder, G.; Ozment, S.; Rehberger Bescos, I.; Gartner, T.; Lange, G.L.. (2019). Integrating Green and Gray: Creating Next Generation Infrastructure. Washington, DC: World Bank and World Resources Institute. © World Bank and World Resources Institute. https://openknowledge.worldbank.org/handle/10986/31430 License: CC BY 4.0.

Ebeltoft, M. (2016). Private-Public-Project: sharing insurance loss data to local and national authorities, (and scientists) in DRR and resilience work. NORDRESS Island, January 2016. Available at ***https://www.finansnorge.no/globalassets/presentasjoner/2017/nordress-island.pdf.***

Ershad Sarabi, S., Han, Q., Romme, L., Georges, A., de Vries, B., & Wendling, L. (2019). Key enablers of and barriers to the uptake and implementation of nature-based solutions in urban settings: a review. Resources, 8(3), 121

European Commission (2018). Feedback Statement: Public Consultation on Institutional Investors' and Asset Managers' Duties regarding Sustainability. May 24 2018. Downloaded at ***https://ec.europa.eu/info/sites/info/files/2017-investors-duties-sustainability-feedback-statement_en.pdf***

Filkova M., Frandon-Martinez, C., Meng A., & Rado G. (2018). The Green Bond Market in Europe. Climate Bonds Initiative. Available at ***https://www.climatebonds.net/files/reports/the_green_bond_market_in_europe.pdf***

Global Commission on Adaptation. (2019). Adapt Now: A Global Call for Leadership on Climate Resilience. Available at ***https://cdn.gca.org/assets/2019-09/GlobalCommission_Report_FINAL.pdf***

Gradeci, K., Labonnote, N., Sivertsen, E., & Time, B. (2019). The use of insurance data in the analysis of Surface Water Flood events–A systematic review. Journal of hydrology, 568, 194-206.

Hallegatte, S.; Rentschler, J.; Rozenberg, J. (2019). Lifelines: The Resilient Infrastructure Opportunity. Sustainable Infrastructure Washington, DC: World Bank. © World Bank. ***https://openknowledge.worldbank.org/handle/10986/31805 License: CC BY 3.0 IGO***

Hauge, Å.L: Attitude in Norwegian insurance companies towards sharing loss data. SIWI World Water Week, Stockholm, Sverige, 25-30.08.2019. Downloaded at ***https://static1.squarespace.com/static/54ff1c6be4b0331c79072679/t/5d778390fe618371434635f3/1568113557410/WWW_Attitudes+to+sharing+loss+data_25.08.2019_%C3%85LH.pdf***

Hindlian, A., Lawson, S., Banerjee, S., Duggan, D. and Michael Hinds. (2019). Taking the heat: Making cities resilient to climate change. Published by Goldman Sachs Global Markets Institute. Downloaded at ***https://www.goldmansachs.com/insights/pages/gs-research/taking-the-heat/report.pdf***

Insurance Europe (2019). Annual Report 2018-2019. Downloaded at ***https://insuranceeurope.eu/sites/default/files/attachments/Annual%20Report%202018-2019_WEB.pdf***

Joyce, J. Marchal, R., Graveline, N., Thakar, K., Altamirano, M., Tacnet, J-M., Zorrilla, P. Weinberg, J. and López-Gunn, E. (2018): "DELIVERABLE 8.2; First Roundtable Report and Policy Brief". EU Horizon 2020 NAIAD Project, Grant Agreement N°730497

Leach, A. Grey areas can't be allowed to overshadow a green taxonomy. ***https://www.insuranceassetrisk.com/content/news/grey-areas-cant-be-allowed-to-overshadow-a-green-taxonomy.html***. Published November 26, 2018.

Marchal, R., Piton, G. Lopez-Gunn, E. , Zorrilla-Miras, P. Van der Keur, P. Dartée, K. Pengal, P. et al. 2019. "The (Re)Insurance Industry's Roles in the Integration of Nature-Based Solutions for Prevention in Disaster Risk Reduction—Insights from a European Survey." Sustainability 11 (22): 6212. ***https://doi.org/10.3390/su11226212***.

Marchal, Roxane, Guillaume Piton, Elena Lopez-Gunn, Pedro Zorrilla-Miras, Peter Van der Keur, Kieran Dartée, Polona Pengal, et al. 2019. "The (Re)Insurance Industry's Roles in the Integration of Nature-Based Solutions for Prevention in Disaster Risk Reduction—Insights from a European Survey." Sustainability 11 (22): 6212. ***https://doi.org/10.3390/su11226212***.

Somarakis, G., Stagakis, S., & Chrysoulakis, N. (Eds.). (2019). Thinknature: Nature-Based Solutions Handbook. ThinkNature. EU Horizon 2020 programme grant agreement No 730338.

Stagakis, G. Somarakis, D. Poursanidis, N., Chrysoulakis, S. Enzi (CNR), A. Bernardi, N. Mortimer, N. Nikolaidis, M. Lilli, E. Goni, S. Van Rompaey, & J. Jurik. (2019). Policy proposals and decision-making mechanisms for risk management and resilience. Deliverable 5.4. ThinkNature. EU Horizon 2020 programme grant agreement No 730338.

Uhlenbruch, P. (2019). Insuring a low-carbon future: A practical guide for insurers on managing climate-related risks and opportunities. Published by Shareaction. Downloaded at ***https://aodproject.net/wp-content/uploads/2019/09/AODP-Insuring-a-Low-Carbon-Future-Full-Report.pdf***.

Weinberg J., Kjellen, M. and Coates D. "Enabling Uptake of Nature Based Solutions" in Coates D, and Connors. R. (eds). World Water Development Report 2018: Nature Based Solutions for Water. UN World Water Assessment Programme. Geneva, Switzerland.