Interreg
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2 Seas Mers Zeeën
PROWATER
European Regional Development Fund

Future prospects on private & public payment schemes for Nature-based Solutions targeted at infiltration and retention of rainwater

An expert panel discussion

December 2021

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DISCLAIMER

COLOFON

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CONTENT

SUMMARY

Climate change is increasing the frequency and extremity of weather events, resulting in droughts and floods that have an unacceptable impact on society. There are Ecosystem-based Adaptation measures, a Nature-based approach to climate adaptation, that can increase downstream water availability during droughts and buffer water upstream during flooding, increasing the landscapes resilience to climate change. These measures need to be taken on both public and private land. However, most land-owners and managers will not implement them without (financial) incentives.

Success factors and pitfalls have not been clearly identified for private and public payment schemes for EbA targeted at increased water infiltration and retention. On 16 September and 21 October 2021, a high-level PROWATER seminar, panel discussion and expert workshop were organized on "How to incentivise Nature-based Solutions" within the 2 Seas area, including regions in the United Kingdom, the Netherlands, France and Flanders. We welcomed international experts to summarise (policy) recommendations for the design and implementation of payment schemes (including private Payment for Ecosystem Services schemes or PES, as well as public payment schemes) for EbA targeted at increased water infiltration and retention capacity of our landscapes.

Based on this PROWATER panel discussion with international experts (16 October 2021), this report reflects on success factors and pitfalls when designing and implementing payment schemes (including private PES schemes and public payment schemes) for EbA measures targeted at increased infiltration and retention of water in our landscapes. The resulting (policy) recommendations are applicable to the United Kingdom and the EU.

Many of the practice recommendations are targeted at local initiatives that wish to set-up a local PES scheme for EbA, targeted at infiltration and retention of rainwater. Although we also acknowledge the important role of larger scale payment schemes to generate large scale changes in management (e.g. integrated within the CAP greening measures). There are also important messages for (inter)national policy makers. Current policy and legislation can complicate the establishment of EbA-PES.

INTRODUCTION

Many landscapes in Western Europe have been altered for agricultural intensification and urban development. Groundwater recharge and water retention has decreased due to increased soil sealing, soil compaction, drainage of upland wetlands and intensified land-use in general. These changes have reduced the resilience of hydrological systems, making river flows less buffered and more responsive to anomalies in precipitation (floods and low-flow episodes). Moreover, climate change is increasing the frequency and extremity of weather events, resulting in droughts and floods that have an unacceptable impact on society.

At the European level it is of strategic importance to counter the impact of droughts and excessive rain by increasing resilience of our landscapes to such stressors (i.e., climate adaptation). To reach climate adaptation targets at the regional, national and European level it is important to increase the investment of private and public funding as well as dedicate areas of land to Nature-based Solutions for climate adaptation. This is embedded into several EU Directives and Policies:

- EU-strategy on adaptation to climate change 2050 COM ('13)
- Water Framework Directive (EU)
- The Drinking Water Directive (EU)
- Blueprint Water (EU)
- Green Deal (EU)
- EIB Climate Adaptation Plan (EU)
- Biodiversity strategy 2030 (EU)

A pro-active drought and flood strategy should not only prioritise building large dams, flood control infrastructure and huge water transfers between regions. Many examples have shown that such technical solutions have dramatic side-effects on both supplying and receiving ecosystems. We should make better use of periods with surplus precipitation to overcome periods with precipitation deficits. Storage and slow release of water should take place across the entire landscape, making use of natural features to enhance retention and infiltration. Increasing the landscape's water retention capacity is key to improve deep infiltration and can reduce our vulnerability to droughts (as well as floods during peak rainfall events). This is known as Ecosystem-based Adaptation (EbA), a Nature-based approach to climate adaptation. Moreover, by implementing Ecosystem-based Adaptation measures at strategic locations within the landscape, we will not only achieve climate change adaptation, but also improve the quality of the environment and the wider benefits it provides to society.

Large-scale implementation of EbA targeted at increased infiltration and retention of rainwater in our landscapes is an effective strategy to increase the landscape's resilience to droughts and flooding. But it is unlikely this will happen without both financial and policy interventions. These measures need to be taken on both public and private land, especially including agricultural land use and management. Investment in EbA implies a loss of land surface for (industrial/intensive) agriculture, forestry as well as urban and industrial development. It may also involve labour costs and a different mode of operation for (agricultural) land management (e.g. implementing bunds and terracing hillslopes).

The voluntary implementation of EbA measures by private landowners and managers, beyond what is legally required, is unlikely because the immediate direct benefits for landowners are often limited, especially upstream. The water retention upstream primarily benefits the recharge of aquifers and increased base flow to downstream rivers. Water is then not retained for private uses such as

irrigation. Moreover, measures often result in a relatively small but permanent loss of land for intensive farming, implicating a loss of other (e.g. production-based) subsidies. Their implementation also has a significant administrative and practical burden (i.e. transaction costs). On the other hand, these measures could contribute to the greening of agricultural landscapes, making them more resilient to droughts.

Providing financial incentives for the implementation of EbA measures[1] can work. There are prime examples where private drinking water companies are paying landowners, including farmers, to implement EbA measures and improve water availability and quality.

For an introduction on payment schemes for Nature-based Solutions targeted at increased water infiltration and retention capacity of our landscapes, please refer to the PROWATER online seminar on "How to incentivise Nature-based Solutions" by Dr. Laurence Couldrick (16 September 2021): https://www.youtube.com/watch?v=HwsRAWPMEms

Success factors and pitfalls have not been clearly identified for private and public payment schemes for EbA targeted at increased water infiltration and retention. On 16 September and 21 October 2021, a high-level PROWATER seminar, panel discussion[2] and expert workshop were organised on "How to incentivise Nature-based Solutions" within the 2 Seas area, including regions in the United Kingdom, the Netherlands, France and Flanders. We welcomed international experts to summarise (policy) recommendations for the design and implementation of payment schemes (including private Payment for Ecosystem Services schemes or PES, as well as public payment schemes) for EbA targeted at increased water infiltration and retention capacity of our landscapes.

To view the panel discussion on "How to incentivise Nature-based Solutions" and rewarding schemes for Nature-based Solutions targeted at increased water infiltration and retention capacity of our landscapes, please visit: https://www.youtube.com/watch?v=YbawysuIGVw&t=1s

Members of the panel included:

- Dr. Jan Staes as panel moderator - doctoral researcher, ECOSPHERE research group, University of Antwerp
- Prof. Trevor Bishop - Organisational Development Director, Water Resources South East
- Kees Boks - Policy officer & Project manager, commune Midden-Delfland
- Dr. Laurence Couldrick - CEO, Westcountry Rivers Trust
- Prof. Steven Van Passel - Professor, University of Antwerp
- Merel Hendriks - Nederlandse Waterschapsbank (NWB Bank)

Based on this PROWATER series of events and especially the panel discussion with international experts (16 October 2021), this report reflects on success factors and pitfalls when designing and implementing payment schemes (including private PES schemes) for EbA measures targeted at increased infiltration and retention of water in our landscapes. The resulting (policy) recommendations are applicable to the United Kingdom and Europe.

[1] https://www.youtube.com/watch?v=HwsRAWPMEms
[2] https://www.youtube.com/watch?v=YbawysuIGVw&t=1s

Designing & implementing payment schemes for EbA targeted at infiltration and retention of rainwater in our landscapes

To structure the results of the panel discussion, we will use the DEFRA (Department for Environment, Food & Rural Affairs) PES flowchart : https://www.gov.uk/government/publications/payments-for-ecosystem-services-pes-best-practice-guide

1. IDENTIFY SERVICE: Identify a saleable ecosystem service & prospective buyers and sellers
2. ESTABLISH PAYMENT SCHEME: Establish payment scheme principles & resolve issues
3. NEGOTIATE & IMPLEMENT: Negotiate & implement agreements
4. MONITOR & EVALUATE: Monitor, evaluate & review implementation
5. CONSIDER OPPORTUNITIES FOR MULTI-PES

1 IDENTIFY SERVICE

In preparation for the establishment of Payment schemes for EbA measures targeted at increased infiltration and retention capacity of our landscape, we need to know where, why and how to implement EbA measures (i.e. spatial planning).

Ecosystem-based Adaptation requires a new perspective for land-use planning that includes spatial objectives for the multitude of ecosystem services that need to be generated on the limited land surface available. A participatory approach to (spatial) planning for EbA would make this possible and is described in PROWATER Output 1, a report on 'Designing climate resilient landscapes'.

By following the phases described in Output 1, we can:

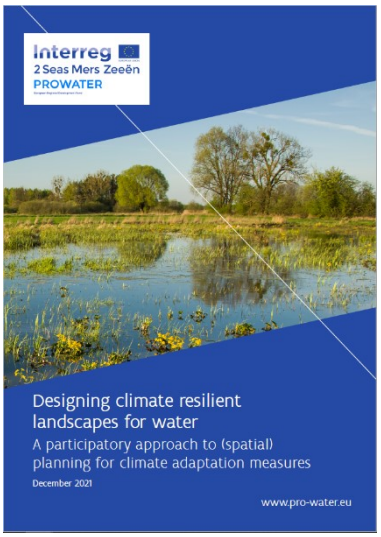
- target EbA measures within the catchment: know where, why and how to implement EbA measures at the catchment-level
- quantify the targeted Ecosystem Services to establish a scale of benefit
- identify and engage stakeholders.

For more information on our recommended participatory approach to (spatial) planning for EbA, you can read PROWATER Output 1 'Designing climate resilient landscapes'.

The phases described in Output 1 include:

- understand the catchment
- identify water resource risks & challenges
- identify & engage stakeholders
- target Ecosystem-based Adaptation within the catchment (know where, why and how to implement EbA)
- quantify the targeted Ecosystem Services (Establish a scale of benefit)
- monitor & adjust where needed

DOWNLOAD PROWATER OUTPUT 1 HERE[3]



[3] https://www.pro-water.eu/output-library

1.1 Where, why & how to act to generate change: the Landscape-based Approach

Some parts of the landscape are better suited to provide the targeted ecosystem services (ES). Especially for regulating services such as water retention, carbon sequestration or water purification there are geophysical criteria that influence the potential of a location for ES provisioning.

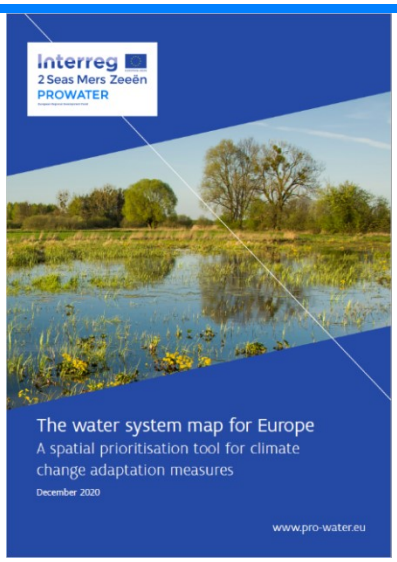
Yet, a targeted approach where only specific parts of the landscape/catchment are considered as eligible to generate payment for the targeted ES is not that common. In most cases, there are large perimeters without targeting specific zones or taking into account the suitability of specific locations for specific measures based on geophysical criteria.

Specific zones in the landscape/catchment could be given a suitability score for specific Ecosystem-based Adaptation (EbA) measures, based on geophysical criteria. This is known as a landscape-based approach to rewarding schemes. The same EbA measure applied in upstream or downstream sites could then result in higher or lower payments, reflecting the modelled impact of targeted ES.

To learn more about what EbA measures to (spatially) plan for depending on the locations in the catchment, you can consult the water system map for Europe.

The water system map is a tool that enables spatial planning for EbA measures at the catchment-level and across borders for catchments in the United Kingdom, the Netherlands, Flanders and France.

The manual[4] helps readers interpret the hydro-zones highlighted by the water system map and select what EbA measures to consider and plan for based on the type catchment (runoff dominated vs. groundwater dominated) to increase resilience to climate change and other pressures on water resources.



CONSULT THE WATER SYSTEM MAP HERE[5]

Is a landscape-based approach too complex to integrate into PES schemes & conventional subsidy schemes?

MAIN POINTS FROM THE PANEL DISCUSSION:

- It is important to have payment schemes at different levels of complexity.
- **Simple and easily accessible payment schemes can generate broad shifts in land management** for generic problems that can be solved through a uniform approach to EbA.
- **Targeted (more complex) payment schemes can maximize impact of measures on targeted ecosystem services** through a landscape-based approach to EbA (i.e. specific shifts in land management, tailored to the (micro-)catchment's hydro-geological and social-economic characteristics).

[4] https://www.pro-water.eu/sites/default/files/2022-06/O3.1_The Water System Map for Europe - A spatial prioritisation tool for climate change adaptation.pdf
[5] https://www.pro-water.eu/the-water-system-map-for-europe

- It is important to reorient farmers away from conventional subsidy schemes leading to intensification of production (i.e. production-based payments). **Easily accessible rewarding schemes for EbA can (partially) replace those production-based payments** and become a part of the income relied upon.

1.2 Establish scale of benefit: Management- vs. (Modelled) Result-based Approach

Added complexity can significantly increase the return on investment when investing in EbA measures targeted at specific Ecosystem Services. To give an example, many greening measures (integrated in the EU Common Agricultural Policy) do not deliver their intended effect due to lack of consideration of suitability of the EbA measure in a specific location. Such examples result in growing support for the idea of result-based payment schemes rather than management-based payment schemes.

Management-based Payment schemes with fixed payments for implemented EbA measures, regardless of the modelled or measured impact of the measure in that location, are currently the most common. These simply relate to a certain number or area of measures being implemented for a fixed price per amount/area. This approach can be applied on large scale and does not require a lot of administration. Quite often, governments already provide such subsidies to implement buffer strips, hedges etc. Measures are often recognised as implemented, and subsequently compensated or paid for, upon declaration of honour. In certain programmes checks for implementation do take place.

In most cases, their effective implementation is checked randomly. Poor or lacking implementation is usually not fined due to these limited random checks. However, when there is not really a strong motivation, except for financial opportunity, more regular checks and enforcement are needed. This would evidently increase the costs of the whole PES scheme.

in **Result-based Payment schemes** there are conditional payments based on the quantified impacts of the implemented EbA measures, measured (ex-post) directly or estimated through proxy indicators. This approach would increase the quality of EbA measures that are highly dependent on local geophysical characteristics (such as EbA measures targeted at infiltration and retention of rainwater to increase resilience against drought spells and extreme weather events).

Measured impacts may be considered as preferential from a buyer's perspective. However, the monitoring can be labour intensive & administratively overwhelming for the ES seller, the payment may only follow long after implementation and there is a higher risk of not getting paid (enough) for the ES seller. Moreover, the costs for the ES buyer are difficult to predict or budget, as this depends on the outcome of the monitoring. To facilitate quantification of ES, estimates of the impact of EbA measures could also be made *ex-ante* by using models, i.e. **Modelled Result-based Approach**.

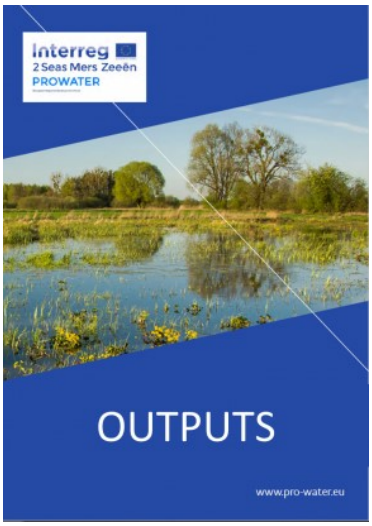
What are your reflections on the Management-based vs. (Modelled) Result-based Approach?

MAIN POINTS FROM THE PANEL DISCUSSION:

- There is great potential in a **hybrid approach with a fixed compensation of the profit-forgone for the management (preferably upfront), but where additional payments are based on modelled/expected results of the EbA measures**. Because it is hard to measure outcomes, especially on a large spatial or temporal scale, models quantifying the impact on targeted ES can be integrated into the Payment schemes. **Modelled Result-based Payment schemes** would make it possible to differentiate payment linked to locations that are expected to deliver more or less of the targeted ecosystem services.

- **Long-term payment** to keep EbA measures in place could be linked to strictly Result-based approaches, where certain levels of ecosystem service provisioning are measured in the field (directly or by proxy) and linked to certain levels of payment. This could ensure maintenance and monitoring by sellers.
- For buyers (Modelled) Result-based Payment schemes are more attractive. **There needs to be value creation** with clear and repeatable metrics, e.g. KPI's (Key Performance Indicators). Modelled Result-based Payment schemes can make this possible for ecosystem services that are difficult to measure in a short time-frame, such as infiltration and retention of rainwater in our landscapes.
- The outcome of many EbA measures is uncertain as benefits may only be measurable under certain conditions and after certain time frames, making it difficult to implement strictly Result-based Payment schemes. However, sellers want to ensure that their investments are rewarded. We need to better balance the risk and reward between outcomes and inputs. **Modelled Result-based Payment schemes** can provide an answer to this hurdle.

PROWATER developed a tool that enables the quantification of Ecosystem Services (ES) resulting from EbA measures based on modelling (PROWATER Output 4). The tool can be applied at the local level, at the catchment level and across borders for catchments in the United Kingdom, the Netherlands and Flanders.



Currently, the PROWATER ES quantification tool aims to model the impact of EbA measures (and resulting land use and land cover change) on:

- Water provisioning (or 'water yield')
- Water evaporation
- Water runoff
- Water infiltration
- Water retention
- Carbon content in soil

The tool may include more ES indicators in the future.

LEARN MORE ABOUT OUTPUT 4 HERE[6]

1.3 Identify prospective / potential buyers, sellers & brokers

Stakeholders can be segmented into functions of prospective Payment schemes for EbA, including buyers of ES resulting from EbA measures, sellers of ES resulting from EbA measures, and brokers (i.e. stakeholders who hold the knowledge and understanding of the area to help inform the planning and implementation processes involved, including the negotiation of agreements and facilitating relationships between buying and selling parties).

[6] https://www.pro-water.eu/output-library

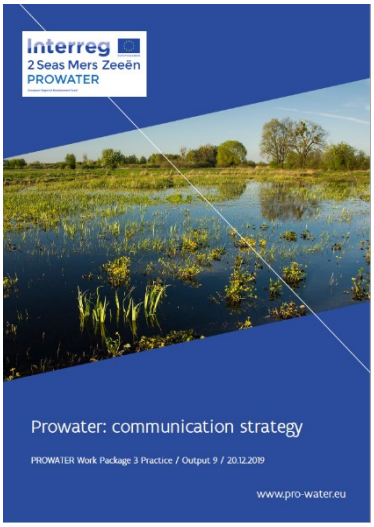
- **Buyers**: who will benefit from the ES resulting from EbA measures? Who wants to fund EbA measures? What are shared interests between buyers, or elements of competition?
- **Sellers**: who owns/manages the land where the EbA measures could be implemented? Who can deliver EbA measures on the ground?
- **Brokers/Advisors**: who holds the knowledge to inform processes involved in designing and implementing payment schemes for EbA? Who is organising groups of potential buyers and sellers, or has the potential to reach many of them?

Possible stakeholders to engage with for prospective Payment schemes for EbA can include the private (first sector), public sector (second sector) and the non-profit sector/trusts (third sector). However, with regulations such as state-aid and procurement rules at the national and international level, Payment schemes for EbA are rather pushed towards the private sector and non-profit sector/trusts that are independent from public funding and as a result have more flexibility than public institutions to engage in Payment schemes for EbA. These state-aid and procurement rules are implemented to avoid over-subsidizing certain activities, disturbing the international market. Although necessary to avoid such problems, the strict rules may limit the potential for climate adaptation through Payment schemes for EbA.

For more detailed information on how to identify stakeholders as potential buyers, sellers, brokers and tailor communication to them, you can read PROWATER Output 9 'Communication Strategy'.

This comprehensive Communication Strategy developed by PROWATER will:

1) guide and support readers as they seek to build a participatory long term vision for EbA measures in their regions
2) allow the readers to monitor and evaluate the participatory processes being undertaken and deduce the lessons-learnt



DOWNLOAD PROWATER OUTPUT 9 HERE[7]

Is there a role for private sector companies and organisations (i.e. first sector) within payment schemes for EbA?

A lot of companies made profits by ignoring the externalities from their activities. However, there is a growing willingness as well as realisation of the need to account for these externalities, reduce them and hopefully offset the remaining negative impacts of externalities. The realisation of the need to offset negative impacts on water resources was strengthened by the recurring displays of extreme drought spells and rain events due to climate change and its impact on industrial and agricultural production activities. This offsetting can certainly be facilitated and guided by participation in Payment schemes for EbA.

[7] https://www.pro-water.eu/prowater-communication-strategy

Currently, private initiatives are mainly targeted at offsetting the production of greenhouse gasses (e.g. CO_2 production). Carbon offsetting is easier, especially for global companies, as there are mechanisms in place and pricing is determined. Thus, **there is still an enormous gap for Payment schemes for EbA targeted at increased infiltration and retention of water in our landscapes.**

MAIN POINTS FROM THE PANEL DISCUSSION:

- **Private companies** using water resources (e.g. water production companies, industries relying on a continued supply of water for production, tourism sector relying on public water features, companies prioritising environmental concerns in their company policy, etc.) are likely to engage as **buyers in Payment schemes for EbA targeted at increased infiltration and retention of water in our landscapes.** This can ensure the production regions for the resources that they sell are adapted to the changing climate and thus ensuring the continued supply of those resources.
- **Private landowners, especially farmers,** should engage as sellers in Payment schemes for EbA targeted at increased infiltration and retention of water in the landscape and get paid equitably to infiltrate and retain water on the large land surfaces that they manage. **Especially in regions with a high water exploitation index and many competing demands.**

The voluntary implementation of EbA measures by farmers beyond what is legally required, is unlikely because the immediate direct benefits for farmers, especially upstream, are often limited. The water retention upstream primarily benefits the recharge of aquifers and increased base flow to downstream rivers. Water is then not retained for private uses such as irrigation. Moreover, measures often result in a relatively small but permanent loss of land for intensive farming, implicating a loss of other (e.g. production-based) subsidies. Their implementation also has a significant administrative and practical burden (i.e. transaction costs). On the other hand, these measures could contribute to the greening of agricultural landscapes.

Providing financial incentives for the implementation of EbA measures works. There are prime examples where private drinking water companies are paying landowners, including farmers, to improve water availability and quality**.** There have been several examples of how 'Payment for Ecosystem Services' (PES) facilitate implementation, where landowners are paid to implement EbA measures to deliver climate adaptation services to society.

Should we simply focus on the private sector (first sector), or is there still a role for the public sector (i.e. second sector; local, regional, national, international authorities) within payment schemes for EbA?

The concept that we need more EbA targeted at increased infiltration and retention of water in our landscapes through amended policy, regulation and incentives is embraced by the public sector, but they face barriers as well. It is not easy to change administrative-juridical systems within a few years, especially not when this affects power-relations.

MAIN POINTS FROM THE PANEL DISCUSSION:

- The public sector should **first invest in policy and regulation (besides payment for EbA) in areas where there is an underused potential of policy and regulations to reach a benchmark of ES-supply**. We should remain/be strict on the matter that the agricultural sector and companies comply with environmental regulations.
- Public and private **Payment schemes for EbA should be implemented where the full potential of policy and regulation has been deployed**, i.e. to surpass the legally required benchmark of ES-supply.

- **Awaiting optimisation of policy and regulations, Payment schemes for EbA have a disproportionally important role to reach climate adaptation objectives**. Optimising policy and regulations for integrated catchment-based EbA implementation targeted at increased infiltration and retention capacity of our landscapes may take a significant amount of time.
- **Payment schemes for EbA can involve the public sector as buyers** (e.g. through European and National public funding programmes, EU Common Agricultural Policy, etc.), if it can be proven that the payment for EbA implementation and the EbA measure itself does not result in private economic benefit or a disturbance of international markets. Payment would usually be limited to compensation of **profit foregone**, including the cost of implementation and the reduced economic activities.
- We must link EbA implementation to the large public budgets within **agricultural policy of Europe** (approximately 50 billion Euro per year for the whole EU). Most is going to direct subsidies that are straightforward and production-based (pillar 1). Pillar 2 is more complex and requires some greening efforts (e.g. EbA measures). This pillar is cost-based and does not (yet) allow a hybrid form of payment schemes, such as a Modelled Result-based Payment schemes. However, with the reform of the CAP (and the growing momentum to reward value creation) this may become possible in the future.
- There should be **more flexibility in the EU Agricultural Policy to enable payments for EbA beyond profit forgone** as most EbA-measures do not result in any private economic benefit for land-owners. These benefits of EbA will only emerge after many years/decades when a critical level of implementation is reached at catchment/landscape scale. The risk of disturbance of international markets through payments for EbA measures is extremely low.
- In addition to partaking as buyers in Payment schemes for EbA, the public sector has a crucial responsibility to **facilitate the implementation of Payment schemes for EbA measures through integrated catchment-based policy and regulation** (breaking down silo-thinking). Currently, the institutional complexity due to siloed thinking makes it difficult to implement (Payment for) EbA measures that infringe on multiple domains such as water course management, agricultural management, environmental management, spatial planning, etc.
- For **large-scale climate adaptation measures** such as rewilding river valleys and maximising ES like retention, carbon, biodiversity, it may be necessary to buy out or trade land-uses. **Public spatial planners need to set up an efficient land-banking database** to enable necessary land-use shifts, through trading or buyouts. Sometimes you only need to buy out 10 % of the land, which is still in agricultural use to unlock a whole system rewetting and rewilding.
- When spatially planning for EbA measures, we have to be careful that we **do not shift demands for food production to elsewhere**.

Is there a role for the non-profit sector (i.e. third sector) within payment schemes for EbA?

MAIN POINTS FROM THE PANEL DISCUSSION :

- The third sector, non-profit sector/trusts, can fill the gap as **brokers of integrated catchment-based planning and implementation of (Payment for) EbA measures**. This role should include efforts in breaking down siloed thinking by enforcing collaboration across the first, second and third sector and pushing forward EbA approaches (complementary to the technical end-of-pipe solutions, often still pushed forward by the private sector).
- The **offsetting of externalities by the private sector (e.g. for water consumption) should be guided by the non-profit sector in a broker/advisor role**, to ensure the wider benefits from potential ecosystem services are generated and activities not limited to the ecosystem services needed for offsetting.
- In **the EU**, the third sector (non-profit sector/trusts) should **establish more as a separate sector**, i.e. independent from public (governmental) funding. Private funding would make it easier to set up attractive enough and integrated catchment-based projects, applying Payment for EbA.

Is there a role for the private insurance & banking sector in payment schemes for EbA? E.g. can we benchmark a minimal level of ES-supply in return for benefits?

The financial sector is still very much focused on financial aspects and not sustainability. The notion of value is not extended to social and environmental value yet. But awareness of social and environmental value is growing. The financial sector is assessing what the banking sector can and should do to address such issues. So far, we mainly looked at Payment schemes for EbA. Alternatively, meeting the minimal level of ES-supply could also result in getting reductions on insurance fees or interest rates.

MAIN POINTS FROM THE PANEL DISCUSSION:

- There is a lot of pressure on **financial institutions** to take aspects other than profit into consideration, such as climate change mitigation & adaptation, biodiversity, etc. One way of doing this is by integrating **lower interest-rates** for spatial development projects integrating EbA measures/sustainable practices (e.g. leasing ground for regenerative farming)
- The **insurance sector** would benefit from investments in EbA measures, as it owns a lot of land and pays for damage claims resulting from droughts and flooding. One way of doing this is through **reductions on insurance fees** for clients integrating EbA measures on their insured property.

2 ESTABLISH PAYMENT SCHEME

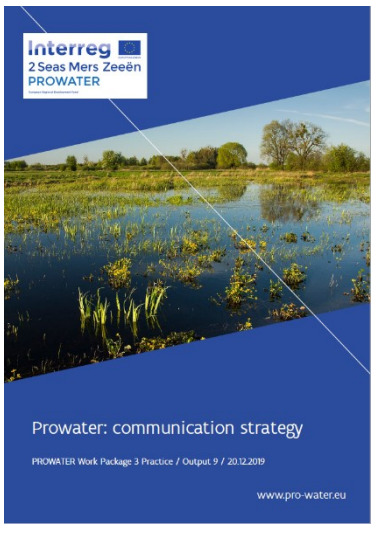
Knowledge gathered on the catchment characteristics, its water resource risks and challenges, and the potential for EbA measures to alleviate these challenges (cf. section 1.1.1 and 1.1.2) help create a mandate for action. The next stage of the engagement process, the 'awareness raising' is where the mandate for action is communicated to the identified stakeholders (cf. section 1.1.3).

For more information on how to match audience-message-channel to tailor communication to the identified stakeholders, please read PROWATER Output 9 'Communication Strategy'.

This comprehensive Communication Strategy developed by PROWATER will:

1) guide and support readers as they seek to build a participatory long term vision for EbA measures in their regions
2) allow the readers to monitor and evaluate the participatory processes being undertaken and deduce the lessons-learnt

DOWNLOAD PROWATER OUTPUT 9 HERE[8]



To target the engagement to specific audiences it is helpful to segment stakeholders according to certain characteristics. **Depending on the scale of the payment scheme**, audience's characteristics

[8] https://www.pro-water.eu/prowater-communication-strategy

may change, and different communication tactics (audience-message-channel) may be recommended. Successful engagement is important to gather support for the final business model and payment scheme principles.

2.1 Setting boundaries to rewarding schemes for EbA

What scale of payment scheme do we need for Ecosystem-based Adaptation? Are we looking for large scale payment schemes at (inter)national level with more generic EbA approaches or do we need multiple smaller scale initiatives that tailor EbA approaches to (micro-)catchment characteristics?

MAIN POINTS FROM THE PANEL DISCUSSION:

- It is important to have payment schemes at different scales, as they serve complementary purposes.
- To **maximize the impact of EbA measure on Ecosystem Services** through a landscape-based approach (i.e. specific shifts in land management, tailored to the (micro-)catchment's hydro-geological and social-economic characteristics), a **local or regional approach (NUTS 2-3)** is recommended.
- To **generate broad shifts in land management** for generic problems that can be solved through a uniform approach to EbA, **national or even international payment schemes (NUTS 1)** with simple and easily accessible scheme principles may be recommended to increase seller participation.

3 NEGOTIATE AND IMPLEMENT

The approach to setting or negotiating the price for targeted ecosystem services **may differ depending on the scale of the payment scheme for EbA**. The approach may also differ depending on the ES that is being paid for. With management-based payment schemes for EbA, the payment is due for the implementation of the EbA measures. With (modelled) result-based payment schemes for EbA, the payment is due for the measure or modelled impact on targeted ecosystem services.

3.1 Negotiate agreements: price setting

What are your thoughts on the different approaches to setting a price on EbA measures and/or the resulting ecosystem services?

MAIN POINTS FROM THE PANEL DISCUSSION :

- Management-based Payment schemes with **fixed payments (based on expert assessments) for the implemented EbA measures**, can be applied on **larger scale and do not require a lot of administration** (e.g. public subsidy schemes to implement buffer strips, hedges etc.). These simply relate to a certain amount or area of measures being implemented for a fixed price per amount/area.
- **Reverse auction,** where sellers set the price on implemented EbA measures and buyers can negotiate these quotations (e.g. NatureBid[9]) **can work well at the local scale**, when a particular EbA measure is needed on a specific location to solve a catchment-specific issue. This can bring

[9] NatureBid is an environmental matchmaking platform. It brings together buyers with sellers. A core offering of NatureBid are reverse auctions which ensure value for money in delivery of environmental outcomes, but the platform can also support alternative approaches, such as a prize fund, or simply using NatureBid as an engagement tool.

buyers and sellers together at a relatively low transaction cost and lead to better value for money (i.e. allowing to implement more with the same budget).
- When applying reverse auction through **online auction platforms**, it is important to remain inclusive and consider the limited access to online auction platforms for certain potential sellers. **Advisers on the ground** can compensate for this.

There are other approaches to setting a price on EbA (cf. Table 1). These were not discussed during the panel discussion (i.e. Fixed price, 1 to 1 negotiation, trading platforms, prize fund).

3.2 Minimise friction/transaction costs

While negotiating agreements on prices, required administration, contracts etc. it is important to minimise friction/transaction costs. Payment schemes for EbA may come at a higher transaction cost, due to excessive paperwork, administration, permits, forms, etc. required by the scheme. As a landowner you may think twice about joining a PES scheme. Reducing the transaction costs will increase acceptability with potential sellers.

MAIN POINTS FROM THE PANEL DISCUSSION:

- Transaction costs can be lowered by **advisors/brokers** (usually from the public or non-profit sectors) that identify and streamline public and private payment schemes that can be accessed and combined **(i.e. bundling rewarding schemes)** and can **point out opportunities** for both farmer and environment. This is especially important in **local and regional payment schemes**, to reach the targeted ES and effectively solve the catchment-specific problems.
- **Payment schemes at the local and regional level** should be invested in building stable partnerships (also across local and regional borders for border-crossing catchments) and involve communities in resolving the catchment-specific problems. This is especially important to help **sustain the implemented EbA measures in the long term**, potentially diminishing the expectation for long term payment by appealing to a sense of involvement and ownership, leading to voluntary upkeep of certain EbA measures by local communities.
- The developed payment schemes for EbA need to be communicated and promoted to **minimise friction and increase acceptability** through better understanding and familiarity with the proposed payment schemes. **Talking to landowners and field visits** are the most effective way to generate lasting connections, increase understanding and acceptability of payment schemes for EbA.
- **Bundling rewarding schemes** (identifying and streamline public and private payment schemes that can be accessed and combined) can result in more attractive payments for ES and smooth/streamlined processes for buyers and sellers.
- Advisors take up an additional role in (modelled) result-based payment schemes, **guiding the ES quantification**. ES quantification **models can greatly reduce the cost of this role**, while maintaining the quality of the assessment. The ES quantification model developed by PROWATER (learn more about Output 4, the ES quantification tool, here[10]) is such a tool that advisors can use to (help) implement more targeted payment schemes for EbA at the (micro-) catchment scale.
- When working with **private advisors**, it is important to avoid turning to subsidy hunters that prioritise exploiting all loopholes in the system for profit, rather than improving the impact on climate change adaptation and the environment.

[10] https://www.pro-water.eu/output-library

- **Payment schemes at the international level** need to consider the differences in competitiveness and costs across the regions and nations by equivalent differences in pricing for the delivered ecosystem services across the regions and nations.

4 MONITOR & EVALUATE

After implementation, we need cost-effectiveness reviews through monitoring and evaluation of payment schemes and their impacts on the targeted ecosystem services. This can lead to adjustments of the payment schemes for EbA, where necessary.

Approaches to the measurement of targeted ecosystem services and monitoring of the (transaction) costs, should be discussed well in advance.

5 CONSIDER OPPORTUNITIES FOR PAYMENT OF MULTIPLE ES

Can the stacked rewarding be a way to facilitate payment for the multiple ES delivered while reducing the transaction costs?

MAIN POINTS FROM THE PANEL DISCUSSION:

- With **stacked payment schemes**, sellers can score on multiple KPI's (Key Performance Indicators) linked to different eligible ecosystem services integrated into one easily accessible system that is clear to the sellers and takes into account state-aid regulations (capping the maximum payment). The higher the score, the higher the payment. This is applicable for **smaller scale payment schemes, involving a limited number of buyers and sellers**.

CONCLUSION

Through expert consultation and experiences within the partnership we have identified a number of key aspects that require consideration when implementing a PES for Ecosystem-based Adaptation measures. Not all issues can be solved or avoided. But being aware of these potential pitfalls and solutions is already a key-advantage.

Many of the practice recommendations are targeted at local initiatives that wish to set-up a smaller scale PES schemes for EbA, targeted at infiltration and retention of rainwater (amongst other ecosystem services). We invite readers to look into applications of the spatial prioritisation tool and ES quantification tool applied to the 2 Seas region for PROWATER. Resulting qualitative and quantitative categorisations of areas within a catchment can help target funding towards location with the largest expected impact on infiltration and retention of rainwater. A reverse auction approach to setting a price on delivered ecosystem services, is a promising approach to set a fair price on the targeted delivery of ecosystem services (as the price is determined by the seller, i.e. landowner/land manager) while at the same time taking into account regional social-economic differences.

We acknowledge the importance of larger scale one-fits-all payment schemes, often relying on public funding, to generate large scale changes in management. However, these also deserve a critical review to make sure implemented measure do result in the targeted ES through qualitative measures implemented in the right locations for impact.

We push forward the potential role for the insurance sector to invest in EbA measures, as the sector owns a lot of land and pays for damage claims resulting from droughts and flooding. One way of doing this is through reductions on insurance fees for clients integrating EbA measures on their ensured property.

There are also important messages for (inter)national policy makers. Current policy and legislation can complicate the establishment of EbA-PES. Because EbA-measures often have very broad societal benefits, the most evident buyers are tax-payers, and the public sector represents those buyers. Yet it seems that payments by the public sector towards private land-owners is the most complex. One of the most important messages is that there should be more flexibility in the EU Agricultural Policy to enable payments for EbA beyond profit forgone as most EbA-measures do not result in any private economic benefit for land-owners. These benefits of EbA will only emerge after many years/decades when a critical level of implementation is reached at catchment/landscape scale. The risk of disturbance of international markets through payments for EbA measures is extremely low.