

JOURNAL

PROJECT

GreenQuays - Urban
River Regeneration
through Nature
Inclusive Quays

📍 Breda, The
Netherlands

TOPIC

Sustainable use of land
and nature based
solutions

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GreenQuays Journal 1: the seven major implementation challenges

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website



The first Journal of GreenQuays explores how the project deals with seven major implementation challenges of innovative projects.

The GreenQuays project delivers inspiring nature-based solutions in a dense urban setting. Thereby, it faces all the seven typical implementation challenges that have been identified by Urban Innovative Action. Being aware of these from the beginning, the project lead and partners have found effective strategies to tackle them and continue exploring options to manage them even better. The COVID 19 pandemic has added an extraordinary and not expected challenge on its own and to all the others, in particular communication and collaboration. It has urged the partners to find completely new ways of delivering and co-creation. While work definitely has been hampered by the pandemic, dealing with the crisis has also boosted new, digital solutions and mobilised new target groups that will remain very useful even after the crisis.

Executive summary

Like many other cities in Europe, Breda is struggling with the choices of unsustainable urbanization from the past, deterioration of urban ecosystems and a lack of resilience to climate change. This requires innovative solutions to ensure a liveable city for residents by rebuilding public space and by boosting green infrastructure with its many benefits for human health and well-being.

Decades ago, Breda has covered its river Mark in the inner city. That made the city centre even more covered by concrete, stone and asphalt and reduced green space. With the Nieuwe Mark project, the river shall be uncovered and the quays re-established. As part of this broader urban development, GreenQuays stands out. At a particular river section, new technologies for Nature-Inclusive Quays (NIQ) are developed. Introducing green infrastructure, where space due to dense urban development is limited, requires however innovative solutions. Accordingly, GreenQuays develops quay walls that can be invaded by nature - herbaceous plants, ferns and mosses and are grown with bended trees. Various techniques are used to achieve this, such as tree sections in the quay walls, specific material choices and drainage system. The combination of these different techniques applied in an inner-city context makes this project unique.

This nature-inclusive design will boost the attractivity of public space for citizens, offer a pleasant stay, allow for physical activities, buffer the impacts of climate change and offer space to wildlife in the inner city. It thus increases, together with its surrounding space, the quality of life.

Expected results of GreenQuays are:

- new technological solutions and approaches for urban renewal around the river Mark;
- a participatory planning process for inclusive co-creation of public space to adequately address the needs and desires of citizens, and to contribute to the strengthening of local communities;
- an optimal green environment for flourishing flora and fauna through renaturing the grey infrastructure currently surrounding the river, based on technological solutions and participatory inputs;
- a network of green public areas alongside the river establishing a living cohabitation between nature and people;
- optimization of the solutions to be scaled-up throughout the Nieuwe Mark urban renewal strategy adopted by Breda and to be replicated elsewhere in Europe;
- showcase a sustainable urban river renaturation process in densely built urban areas aiming at the restoration of ecosystems; the greening of urban environment.

Broad and different expertise for the innovative solutions are necessary and the project builds therefore on a diverse and well-balanced partnership of practitioners, scientists, public, non-profit and commercial partners:

- Municipality of Breda
- The Baronie Area Federation of Nature Associations
- Delft University of Technology
- Wageningen University and Research
- Waterboard Brabantse Delta - regional water authority
- Van den Berk Nurseries - private company
- RAVON – NGO
- BLAST - NGO

GreenQuays in the context of EU, national and local policy

GreenQuays develops and tests innovative nature-based solutions (NBS) in a dense urban setting. This solution will bring more diverse nature and natural features and processes into the city. It serves as an inspiring showcase for other cities in Europe and elsewhere that still struggle to introduce those solutions due to financial, knowledge and political barriers. As such, it informs and contributes to the implementation of multiple European policies and initiatives that recognize the broad benefits of nature-based solutions and green infrastructure for nature, health and well-being, flood protection and climate change adaptation.

The EU Green Infrastructure Strategy explicitly promotes the use of green and blue infrastructure solutions and the EU Biodiversity Strategy 2030 aims at systematically integrating NBS into urban planning to stop and reverse the loss of green urban ecosystems. The EU Urban Agenda, kicked off by the Pact of Amsterdam, has included a specific partnership on Sustainable Use of Land and Nature-based Solutions to foster their use and ensure that the changes in urban areas are respectful of the environment, improving quality of life.

Beyond that explicit policies, NBS are key solutions in other EU policies such as the Floods directive, the EU Adaptation Strategy and the Covenant of Mayors for Climate and Energy, while they can also contribute to social, health and economic policy. By considering all these aspects in the solutions of GreenQuays and the broader Nieuwe Mark development, the city of Breda demonstrates impressively that a multitude of benefits can be realized by NBS even in a dense urban setting, which will be a valuable contribution also to the latest EU policy developments, the European Green Deal and New Cohesion Policy with one of its main objectives targeting on a greener, carbon-free Europe and explicitly supporting locally-led development action as well as the Green City Accord, a movement of European mayors committed to making cities cleaner and healthier.

NBS like GreenQuays fit also directly into local and national policies. Breda is part of a wider city deal with the central government and other Dutch cities. The efforts are aimed at raising awareness in the city and actively dealing with spatial adaptation. Spatial adaptation is not only about the climate challenge: it is, among other things, linked to nature in public space (in and around the city), health, economic opportunities and is part of "Breda, International Link City": City in a Park.

Nature-inclusive development is also an important local policy objective of the municipality of Breda. Local policy sees Breda as a 'city in a park'. Making nature inclusive quays is a wonderful example for bringing nature back into the city centre. GreenQuays, as a pilot, is completely embedded in the revitalization of the river – the broader Nieuwe Mark project – and will deliver inspiration and concrete solutions on maximise nature here.

State of implementation

The objective of this project is to design and build Nature Inclusive Quays to address unsustainable urbanisation, degradation of urban ecosystems, and lack of resilience to climate change in the city of Breda. To develop the design, lab tests and a small-scale pilot to test different wall materials, constructions and vegetation have been established and are running. Monitoring of the small-scale pilot started in May 2020 and first results are coming in. The experience and knowledge gained from the monitoring results (bricks construction, mortar and tree growing) of the lab tests and small-scale were used as input for the design of the Real-Life pilot, which is finalised

now and will be procured shortly. Furthermore, the project managed to design the public spaces and green spaces next to the river in which GreenQuays is integrated by the successful cooperation of the partners. At the end of September 2020, the launch event could finally take place. It had to be postponed twice due to the COVID-19 pandemic.

GreenQuays' implementation challenges, approaches and options to tackle them

The following table provides an overview on implementation challenges and key observations. The chapters below provide an in depth exploration of the challenges, current approaches to tackle them and options to explore in the future.

Challenge

Observation

Leadership

Challenge level



Current leadership by the city council and alderman is very supportive to Green Quays. Politicians embrace the project also due to its innovative character, which brings them high visibility. This strong support needs to be nurtured and sustained in the future by, i.e., further involving the City Council in all major decisions on the Real-Life Pilot.

Public procurement

Challenge level



The main public procurement is for the construction of the Real-Life pilot. As the technical design and with it the exploration of innovative solutions is already done by the project team, the tender description can be very specific and follow easily business as usual procedures according to national rules. Nevertheless, the project team needs to observe if everything develops as intended.

Organisational arrangements within the urban authority

Challenge level



The collaboration between partners and departments is generally smooth. Team members have a high motivation to contribute to this project as they can test exciting new technologies and approaches, and the project brings many different partners together to learn from each other. While shared responsibilities between partners increased the feeling for ownership, it currently bears the risk to work only on the own assigned tasks in isolation. This needs the attention of the project lead to manage if necessary. Different expectations and languages between partners are acknowledged and potential conflicts are solved in steady collaborations. COVID-19 restrictions have challenged the collaboration and have delayed some work, like the development of the technical design as it is a highly interactive processes.

Participative approach for co-implementation

Challenge level



Breda has already a vast experience in participative approaches and, actually, participation started already with the broader project Nieuwe Mark of which GreenQuays is part of. This foundation buffered to a certain extent the impacts of COVID 19 restrictions, where most collaboration happens online now. This encouraged new target groups (often younger people) to join but excluded other target groups. Informal and personal interaction is mostly lacking. While there is a steep learning curve in using online collaboration, lacking physical interaction still limits participation.

Monitoring and evaluation

Challenge level



Challenges and opportunities ahead are to integrate the different pieces of monitoring that are developed so far. The approach to retrieve capacity for the health monitoring by brainstorming and collaborating with other stakeholders, like the Municipal Health Service, should be continued. A major challenge is the short project duration which does not allow to have strong monitoring results to be used for the design of the Real-Life pilot and for fully demonstrating the effectiveness of the implemented solutions. Time is too short compared to vegetation growth. The project has chosen a flexible approach, where monitoring results that have a significant positive impact can still (to some extent) be implemented in the construction or maintenance of smaller parts if the results suggest so. Breda decided to continue the monitoring after the project ends.

Communication with target beneficiaries and users

Challenge level



Communication is broadly challenged by the COVID 19 pandemic as most has to be done online only now. There is continuous learning on how to do that best. The detailed stakeholder mapping is not yet finished which would allow to target communication to different groups more systematically than at present.

Upscaling

Challenge level



For effective scaling up the solutions of Nature Inclusive Quays the team faces some knowledge gaps on the market for such solutions despite expressed interest of several cities. This situation will hamper a broad upscaling beyond the city of Breda. An analysis of the market and of potential followers is planned now as is the identification of information needs for the different identified users. On that basis a more systematic and effective exploitation strategy can be developed. On the local level, there are plenty of upscaling opportunities in the broader Nieuwe Mark development which is expected to go smoothly as GreenQuays works as a pilot for this.

1. Leadership

The innovative character of the GreenQuays project with its innovative solutions requires a visionary and supportive leadership. Currently, leadership is considered as very good. The Alderman for city development is strongly engaged in climate inclusiveness and the City Council is very much in favour of sustainability and nature-based solutions. Both are enthusiastic about the project and the overarching Nieuwe Mark project, which GreenQuays is a part of, and support it actively.



Alderman Paul de Beer at the launch event. Photo: Peter Jeucken.

The challenge in the coming phases of the project may be to keep and even extend that level of enthusiasm and leadership. So far, the project lead tackles this challenge successfully by constantly informing the political level about new developments in the project. Every step in the decision-making process is brought up to the City Council and approved by it. In this way, the Council has taken the final decision on resource planning, preliminary and final design. Despite everything going well so far, there are however potential risks as elected representatives as well as priorities could change over time. Therefore, the project lead should keep an eye on the potential leadership challenge and seek for a strategic approach to identify risks in time and strategies to tackle them.

The innovative character of the project poses some general challenges in terms of uncertainties - whether the developed solutions will work as supposed or would need to be altered. This concerns the construction and material for the pilot quay walls, the selection of the right mortar and joint design or the plant selection. Further uncertainty is added on the maintenance needs to ensure the aimed quality in the long term. However, the political leaders are not afraid to take such risks as they experienced that the project follows an iterative approach that enables learning and adjustment during its implementation. For example, the small-scale pilot delivers valuable information and evidence to inform the design of the Real-Life pilot; or plants can still be changed, if the first selection does not thrive properly. Rather, the political leaders are in favour of innovative projects. It provides them the opportunity to shine as an excellent example of city development across the country and across Europe. Furthermore, for politicians, this project is something nice and encouraging to show during all the negative news of the COVID 19 pandemic.

GreenQuays is not planned and implemented in isolation but is completely embedded into the broader city development of the Nieuwe Mark, which in itself is very ambitious and inspiring. This provides the project an important advantage as the ground for an innovative setup is already prepared. With its new and innovative technical solutions, GreenQuays will also support the design of other stretches of the Nieuwe Mark. This inclusive approach is assumed to ensure well the active support by political leaders in the long term and in upscaling the developed solutions.

At the project level, strong leadership is requested as well as very different partners have joined the project, each having their own perspective and ideas. The project leader and project manager are required to balance between the different partners' views; thereby, using them as valuable input in the development of the design and implementation of the project, while knowing that not all ideas can be implemented, and keeping up and communicating the overall vision on developing really innovative, inspiring and workable Nature Inclusive Quays. This co-creation process, in particular in work package 4 – the design of the Real-Life pilot – has not always been easy due to the high number of persons working on it and the constraints in collaboration due to the COVID-19 pandemic. One way to keep up a common vision was that the work package leader has asked regularly, partially uncomfortable questions and has checked if all partners have a common understanding. Despite the challenges, the final design was agreed and is supported by all partners.

In the coming months of construction work, the project lead will face a new situation as the co-creation work on the design is finished and the results will only be visible after a longer period. This may challenge the project lead

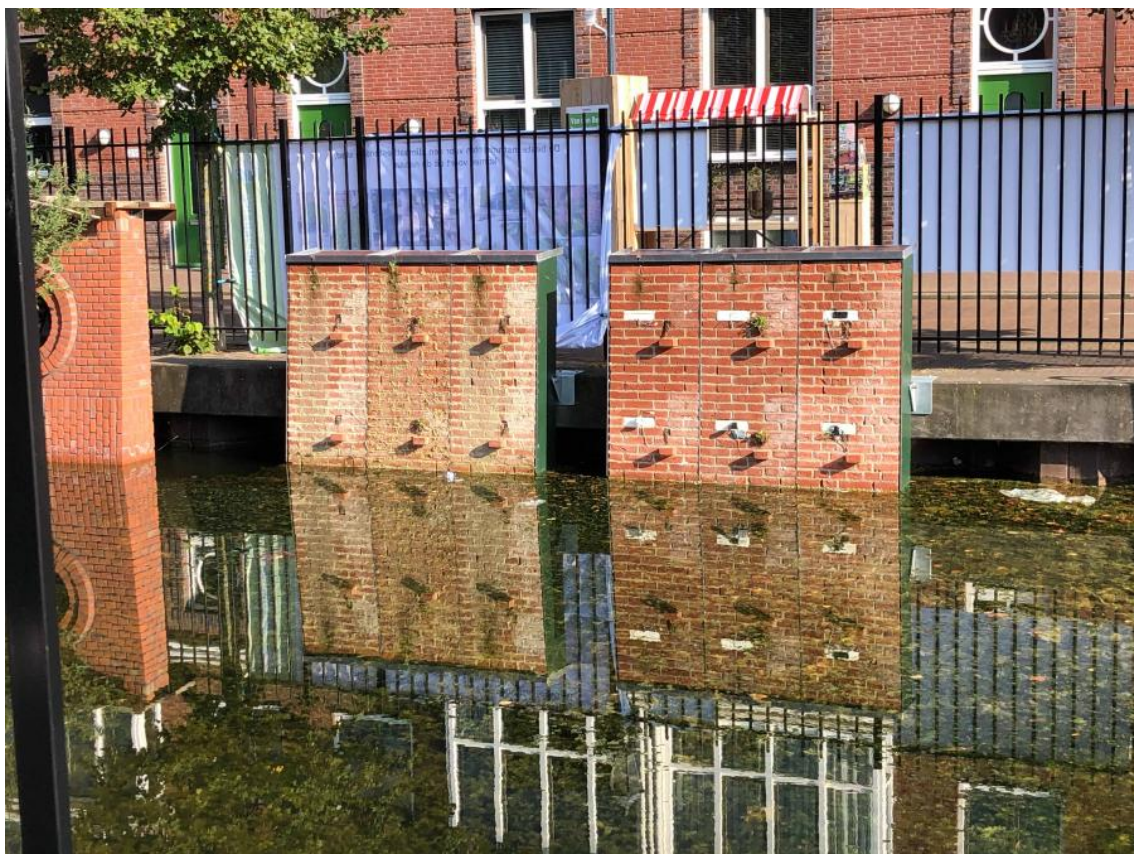
to keep up the motivation of partners during that time and keep the enthusiasms for the work in other work packages.

Options to act:

- Constantly inform and involve the political leaders;
- Keep embedding / linking GreenQuays into other urban development projects and initiatives;
- Use the monitoring results as evidence for the success and communicate this to leaders;
- Despite shared responsibilities between project partners, ensure and support the integration of tasks and results by the project lead.

2. Public procurement

The main procurement of GreenQuays is for the construction of the Real-Life pilot. Such major infrastructure investment requires permissions – a process that needs time. The project has been aware and tried to start that process early; however, it can only start now when the definite design was agreed. Nevertheless, the ongoing planning had been known by the authorities and it is part of the broader process of the Nieuwe Mark development, meaning that no major problems with the permissions are foreseen.



Different wall designs and plants are tested at the small scale-pilot . Photo: Birgit Georgi

The procurement of the Real-Life pilot will be done as part of phase 1 of the broader Nieuwe Mark project and starts in spring 2021. Comprehensive national procurement schemes are available and rules to be followed. Different compared to many other UIA projects, no specific challenges due to the innovative character are expected. That is grounded to a substantial part in the situation that only the construction itself is procured. The intensive process of applying for UIA funding has forced the project partners to think about the design and implementation of the nature-based solutions already before its official start. Then, the detailed design was developed inside the project by the partners themselves. The different partners brought together their knowledge, consulted other cities on quay construction such as Amsterdam and Rotterdam and tested potential solutions at the small-scale pilot. The latter one has produced first results on the feasibility and effectiveness of different potential construction solutions and plant growth. This meant that most questions concerning innovative solutions have been discussed and decided on inside the partnership and the procured construction work is business as usual work. Nevertheless, the project and work package lead need to observe, if the implementation of the pilot works out like planned or if adjustments are needed. To certain extent, uncertainty is part of the plan - nature is supposed to take over and further construction and maintenance needs to be adjusted as needed.

Options to act:

- Monitor the procurement process and implementation to eventually make adjustments.

3. Organisational arrangements within the urban authority

The collaboration in projects with many different partners can pose challenges, but in the GreenQuays project the collaboration runs generally smooth. Partners are engaged and excited. Their curiosity for new solutions and the options to learn from other partner's knowledge and experience and expanding their own expertise has been a main driver for their motivation. Partners see the project as a business opportunity. The project lead needs to pay attention to this asset by further keeping these favourable conditions where sharing, co-creating, mutual respect and thus learning is possible.

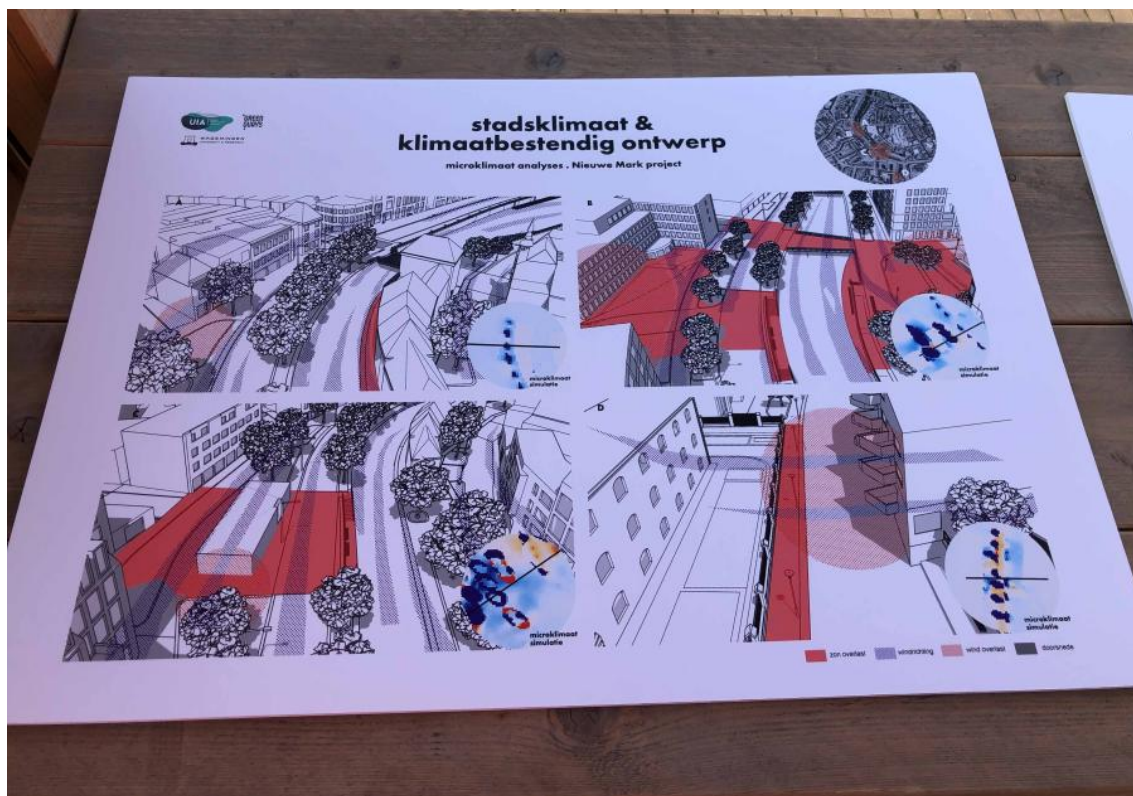
During the initiation phase, there had been challenges in collaboration as everything was new for the partners; they had to learn about the project, the different work packages and procedures. Frequent internal communication has helped, so that there is a common understanding now, which is satisfying at the current stage. For small partners, the collaboration is of particular interest as they can become part of a much bigger development, they get new contacts and areas of expertise opening up more business opportunities. See also: [An innovative partnership for innovative GreenQuays in Breda](#).

The lead partner's approach from the start has been to share responsibilities and having clear roles between them. It has created enthusiasm and pride with each single partner and apparently better teamwork, which is extremely important for the project implementation. The overall project management is perceived effective by the different partners. The setup of the partnership and the distribution of tasks and responsibilities is, however, not completely balanced as one partner – BLAST- came later into the partnership when the main responsibilities had already been distributed. As a result, it is not responsible for any work package while playing a decisive role in monitoring and in the participatory approach but not having resources in communications. This will require some flexible solutions to balance and making optimal use of the different expertise in the partnership.

This generally successful approach of shared responsibilities involves, however, a few challenges. Despite a general common understanding, the specific perspectives and engagement between partners differs due to different shares in the project, different views, interest, workload etc. The shared responsibilities bear the risk that partners only concentrate on the task they are responsible for and fall back into isolated work losing the overarching vision and understanding. Integration and exchange between tasks and work packages is then rather limited in the form of providing comments and feedback but not using the potentials of real co-creation processes. Depending on the task – usually simpler ones – that may, however, be justified and appropriate. Finding proper resources for collaboration is particularly an issue for partners with a smaller share of working hours. Their transaction efforts to keep up with all developments and engage are comparably higher than for partners with bigger shares of working days.

It will require continuous efforts by the project lead to find and enable a balanced approach, in informing and coordinating while still sharing responsibilities. The limits of the current setup have been shown in combining the different partner's contributions into joint reports. Here, it needs clear lead and instructions to get all partners on the same understanding of the content and direction of the report, which is currently evolving. The learning will be relevant for later reports.

The number and diversity of partners has been a challenge for the design team for the Real-Life pilot. The partners had many different, partially contradicting ideas. Different languages between, e.g. scientists and practitioners, have added another challenge. Scientists have been forced to work short-term on solutions due to the project duration, which meant basing their work on too little evidence from a scientific perspective. In the process it helped that the municipality reassured that it would take the responsibility for the risk that a solution would not work; the scientists will not be held responsible for eventual failure or weakness. Early and intense inclusion in the design work enabled a mind change and growing together. It was important to take all these different views seriously and showing the wider picture and broader benefits. Coping with the challenges meant to have regular meetings to discuss the ideas, show respect and good will, speaking out conflicts and finding real compromises, thus, moving on stepwise. With this ongoing collaboration and integration of results (e.g., monitoring results of the small-scale pilot) the different partners gained deeper insights, knowledge and inspiration.



Poster with climatic effects of different design options. Photo: Birgit Georgi

A specific challenge is the size of Breda's municipal administration and the staff involved or related. In particular, sometimes other partners experience difficulties in finding the right contact person. For example, the staff working on the URBACT project Health&Greenspace or the project itself was hardly known to GreenQuays partners, although an exchange would be highly beneficial. For such gaps, solutions or procedures may still be found.

On the technical side of collaboration, the partners use Basecamp as their platform for exchange. It has proven well to work for storing the different deliveries and contributions at one place. However, it is not the best tool for collaboration, e.g., jointly working with different partners in one document. Other tools are thus used in parallel for specific tasks, like Sharepoint. These additional individually chosen tools add complexity to the collaboration although it is working. Nevertheless, if starting over, the project would probably choose another tool than Basecamp.

A challenge linked to the platforms is the amount of information collected over time that can be overwhelming for single partners as well as for task leaders and makes it harder to stay on top of the latest activities and see the big picture still. Definitely, the regular meetings and further ad hoc exchange in between help, but the process needs observation and adjustment by the task / project lead.

Finally, the COVID 19 crisis challenged the collaboration. In particular, co-creating the design of the Real-Life pilot, was strongly hampered as creativity does not flow well in online meetings as it does in physical contacts. There is also the perception among partners that the number of online meetings is too high and exhausting. New staff members that joined in 2019 have never met physically, which complicates the communication and collaboration. Further stress is added as not everybody has comfortable home office conditions at hand.

In summary, to keep and extend the smooth collaboration, the project lead needs to systematically analyse the valuable lessons learned from the first months of the project and try to develop a systematic approach to tackle the remaining challenges.

Options to act:

- Keep the positive climate and high motivation of partners by further enabling them to share experience, mutual learning, co-creating new solutions, broadening their expertise;
- Take care that shared responsibilities will not lead to work in silos;
- Keep attention on maintaining the common understanding on the project, main objectives and how the single tasks fit in;
- Continue identifying potentials for improvements of online collaboration – the platform and tools to use, number and format of meetings;
- Adjust management approach now as the type of tasks changes partially in the upcoming project period.

4. Participative approach for co-implementation

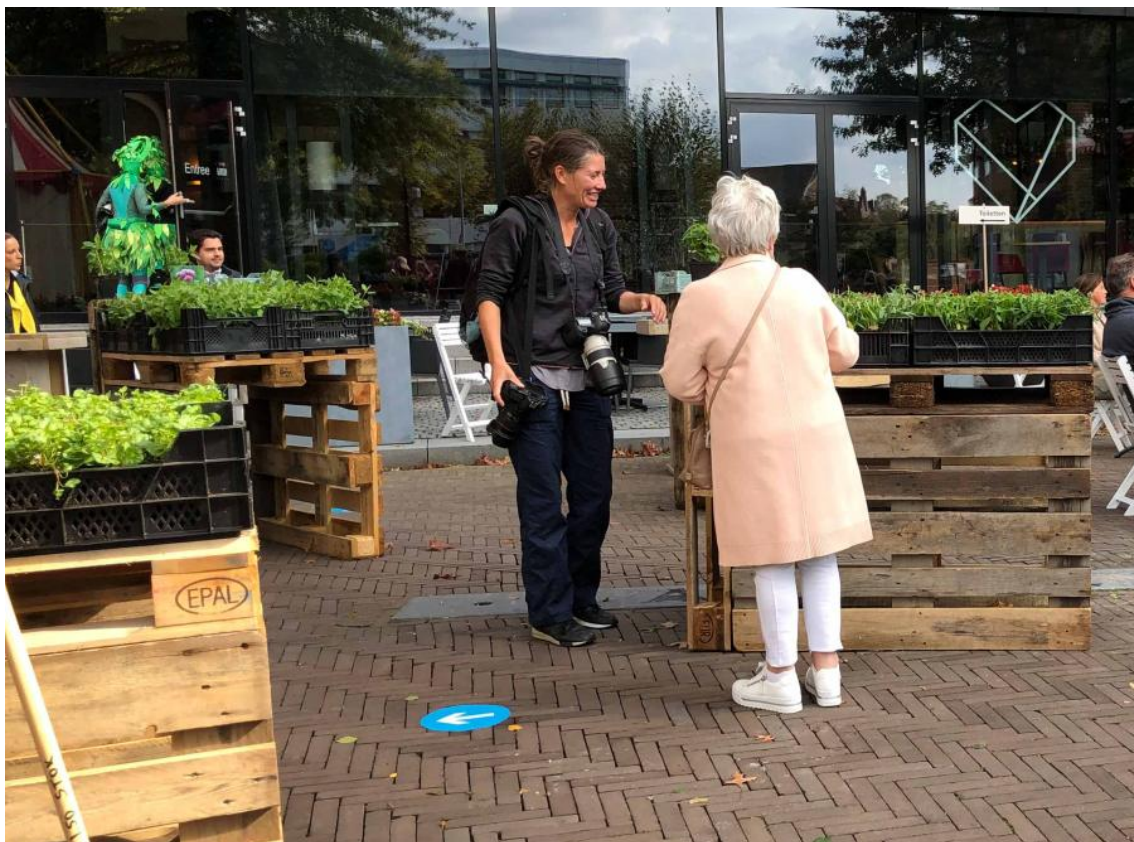
GreenQuays meets already a positive climate for participatory approaches in Breda, which reduces the challenges to organise such. An open mindset in Breda municipality for participation provides a good ground. Years ago, the city has started to consider open space as space for citizens and not only as a subject to manage by the municipality. As this mindset has established in the municipality already long time ago, experience with different participatory approaches and tools has grown. To ensure a proper participatory approach in GreenQuays, the partnership includes explicitly BLAST Foundation (offering a platform where experts and interested stakeholders can exchange on urban planning and architecture) as a partner with a lot of experience in this area and wide networks and relationships. For example, participatory action has been developed and tested in other projects such as to support residents in establishing small green gardens and green facades to boost green infrastructure in the city overall and thus link public and private green areas. The development of the participatory approach of GreenQuays benefits from these projects, their specific activities and gained experience.

In this regard, the current writing of the participation guidance for GreenQuays may come a little bit late in the project as the lessons learned are partially implemented already. Anyway, such guidance will be helpful for the future work still.

Participatory processes related to the interventions planned by GreenQuays have actually started before the UIA application as part of the broader Nieuwe Mark development in which the project is embedded. It has been the citizens themselves that have requested more green infrastructure in this reopening of the river, which then led to a greener design with GreenQuays. The general design of the Nieuwe Mark happened in co-creation with citizens and other stakeholders in the form of workshops and mood boards in advance of the project. Here, ideas have been brought up from both sides: citizens and the design team of the municipality of Breda. Hence, there is less but some participatory action now on the detailed technical design and construction.

The COVID-19 pandemic limited in the participation of stakeholders in the process. Instead of workshops all meetings switched to online formats. The participation was good with often 50 to 70 people participating. In particular citizens of the neighbourhood as well as members of local nature groups participated actively. The new format attracted in particular younger people, which earlier have been harder to include. It seems that this format suits them better. However, real co-creation is hampered by this format. Furthermore, the online format does not work well for other groups like elderly people, which get lost in this process, because of preferring rather physical forms of contact. When feasible again, a mix of physical and online participatory formats seems to be most effective to cover broadly all types of stakeholder groups.

Breda however was lucky to have at least some physical participatory action. While the launch event has been postponed from May to September 2020, it was indeed possible to have a physical event along the quay area, although necessary organisational measures related to the pandemic still constrained the participation. On the positive side, in particular elderly people and direct neighbours to the quays have strolled along the quay, picked up information and discussed the planned developments with the different project partners. Also, next to this event, the established small-scale pilot and explaining information boards have triggered some exchange between residents and the project, for example, people take pictures of the vegetation developing and sending these to the team. Overall, citizens and other stakeholders seem to be positive about the project, although few citizens have reservations against such new and experimental solutions. As soon as they hear that the construction is highly supported by EU funding rather than municipal budget, they feel, however, reassured about it.



Impressions from the launch event. Photos: Birgit Georgi

Another way of participation is handing over the task of biodiversity monitoring to volunteers. The nature NGOs RAVON and Natuurplein have already positive experience with this form and volunteers are experienced in such tasks. Some scientists argue about the quality. Whether that is an issue or not, it is definitely a great way to involve citizens actively. As monitoring is also time consuming, a challenge is to keep that motivation of volunteers. They need to feel a real benefit of their work. The joint elaboration of monitoring plans provides common understanding and, at the same time, the volunteers feel they can have an impact on the project results and not

just getting directions on how to perform the monitoring. Having the option to participate in sessions on the design of the quays encourages them and keeps up their motivation. This feeling of being part of the whole needs to be maintained over the coming months.

The participatory approach helped also to solve technical challenges in the project: There is the need to measure the health impacts of the nature-based solutions, but that expertise was lacking in the partnership. Close contacts have then been established to the Municipal Health Service outside the partnership, which itself got increasingly interested in the health and well-being improvements to be achieved by GreenQuays and how these can be used in wider health and well-being strategies of the city. This new collaboration is beneficial for both parts GreenQuays and the Municipal Health Service.

Options to act:

- Continue learning on the effective use of different online collaboration forms and tools as a supplement or replacement to physical interaction;
- Discover online communication as a potential for future collaboration when the COVID 19 crisis lightens;
- Keep the motivation of volunteers high by offering them having an impact on the project.

5. Monitoring and evaluation

While the project has been well on the way to develop indicators, monitoring and implementation for the technical and ecological parameters of the nature-based solution, the monitoring of impacts on health, wellbeing and social impacts has been found to be hard to organise. There was little expertise in the team. As this challenge was identified early in the process, creative solutions have been found. At the core it is the collaboration with other partners outside the partnership – in particular the Municipal Health Service. By exploring together what is already monitored at other places and which data are available, the project could progress on the concept to monitor health effects. Equally, social indicators haven't been considered for monitoring at the beginning. One solution is to make use of the information retrieved from the many online meetings, when participants registered or when polls have been used in these meetings. If that already delivers a consistent and sufficient baseline for social impacts needs to be checked and otherwise complemented with alternative information.

A major problem for the monitoring is the short project duration. The Real-Life pilot had to be designed and will soon be constructed, although the monitoring of the small-scale pilot (established in spring 2020) has just delivered very first data and does not even stand for one vegetation period. Monitoring on the small-scale pilot will continue while the full-scale is constructed. Results will be analysed during the construction of the Real-Life pilot and beyond and, if possible, will be adopted in the construction. And even if not, all results can be applied in the Real-Life pilot, the results will be taken into account when building the next part of the Nieuwe Mark, phase II. Robust monitoring results can only be obtained after a couple of years as the vegetation and fauna still develops. Therefore, the municipality has decided to continue the monitoring after the project will end.



Mobile measuring equipment presented at the launch event. Photo: Birgit Georgi

Several partners are involved in the monitoring with observing physical parameters, like humidity and temperature in the substrate and stones, the stability of stones and mortar used for the joints, the development of flora and fauna, health and social indicators. While that currently mostly happens in isolation – each partner has a clearly singled out section – bringing the pieces together reveals the true value of the monitoring. For example, RAVON has done vegetation monitoring also in other projects, but bringing these results together with the detailed parameters on humidity and temperature allows for much better conclusions on growing conditions. The project will need to pay more attention to that integration of data over the upcoming months.

Options to act:

- Foster the integration of single monitoring results;
- Learn from preliminary monitoring results and use this experience to integrate into the construction of the Real-Life pilot;
- Continue the approach to fill the lack of internal expertise on health monitoring by collaboration with stakeholders outside the partnership;
- Seek for creative approaches to monitor also socio-economic impacts as well as impacts of communication, dissemination and uptake.

6. Communication with target beneficiaries and users

The COVID 19 pandemic has also changed the communication approach massively with a major shift towards online communication. At least, the launch event could be organised as a physical meeting along the quays area. This enabled a direct exchange between the project partners and residents. The project was also fortunate in having and being able to build on communication lines and activities already established during preparatory work in the course of the development of the New Mark project. Furthermore, the tangible small-scale pilot and its information boards have a high visibility in the centre and citizens pick up the information and can directly see how vegetation takes over.



Information boards at the small-scale pilot. Photo: Birgit Georgi

The switch to online communication has made communication more accessible to technology-affine population groups, mostly younger people. An advantage is that forms like webinars are cheaper than physical meetings and can potentially reach a higher number of people. Nevertheless, it is not certain how much they can really replace meetings in person. At the same time, online events constrain the flow of communication to other population groups. These took advantage of the physical launch event. As a new way, the project has started to communicate via local TV, which works very well. By this way, also the elderly people and less internet-affine population groups are included as it is simple and no internet access is needed.

A project website was established. This provides information, but the way it is set up, does not allow a really two-way communication yet. All partners use broadly social media for communication. The single project partners further distribute the information in their own networks.

For the moment there is however no data or concept on measuring how this information is taken up and who reads it. Despite the pure dissemination numbers, the project should seek for ways to measure also the uptake in forms of, e.g., increased knowledge, levels of interaction, changed behaviour or perception.

The communication is currently broad, e.g., through Breda's general communication channels and does not yet use the whole potential for target group specific communication. A stakeholder mapping is not yet finished to use it systematically in identifying the specific interests and communication approaches for specific target groups. There are still opportunities to improve the communication.

Options to act:

- Use the learning on different online-forms of communication to further improve communication;
- Seek for optimising solutions to include groups less affine to online communication;
- Make use of a systematic stakeholder analysis to further tailor the communication's content and form to certain groups;
- Monitor the dissemination of information but also uptake of information, like feedback from groups, changed behaviour etc.

7. Upscaling

The strategy for scaling up (exploitation strategy) is currently in preparation. Obviously, the solutions of GreenQuays are highly relevant for upscaling at other sections of the Nieuwe Mark project. As Breda municipality is also in lead of this urban development, this upscaling is expected to happen smoothly and organically.

Ideas to upscale the solutions in other places of the Netherlands and in Europe are relatively premature and rather sporadic. There are some contacts and loose exchange with cities such as Amsterdam and Rotterdam but no

planned upscaling activities yet. At the moment, the limited knowledge on the market situation for these solutions in terms of how many/which cities or commercial stakeholders have a substantial amount of quay walls and could be interested and their information needs is a challenge. The project has recently recognised that lack of knowledge and plans to perform such analysis and potential user characterisation to then develop the exploitation strategy on. Thereby, the task could benefit from the experience of the commercial partners in the partnership, like the tree nursery Van den Berk. Driven by their commercial interest, such are probably more familiar with the market analysis and approaching potential clients. Concerning their own services, Van den Berk already spreads the solutions established in GreenQuays and other related project wherever they meet potentially interested users. This experience should be used, among others, for the overall exploitation strategy

Beyond the exploitation of the technical solutions of the Real-Life pilot, there are potentials to upscale other lessons learned, such as on collaboration, monitoring or new forms of communication. In order to do so, the lessons learned should be systematically checked for their upscaling potential. For Breda, this can be directly relevant, e.g., for the upcoming phases of the Nieuwe Mark project.

Options to act:

- Analyse the market for Nature Inclusive Quays; thereby, use also expertise of the commercial partners of the partnership;
- Analyse the information needs of potential users and ways to approach them;
- Develop a systematic exploitation strategy.

8. Other challenges

The impacts caused by the COVID 19 pandemic overshadow the situation of the past year. It definitely hampers communication and collaboration with team members, other stakeholders and the general public, even if new forms of online communication have been found. In particular, it has affected the creative process of the design development by restricting the informal and spontaneous exchange between the many people involved, which is usually an important factor for creativity. It led to delays of that work. Furthermore, COVID 19 has also complicated the communication with new team members.

A second major challenge for the project is its duration of only 3 years. This innovative approach and broad partnership need high efforts to get it running smoothly and find effective ways of collaboration. Monitoring of the effectiveness will be challenging as the solutions first need to be implemented and the remaining time to the end of the project will be short. In addition, if the solutions tested in the small-scale test turn out to be less effective, the design of the quay needs to be adjusted, which takes time as well. Including some flexible solutions, like developing a basic design that is suitable for different plants or the placement of gabions at different place than originally planned, can be a way forward.

Conclusions

GreenQuays faces all seven implementation challenges. Most of them are well under control, even as the COVID 19 pandemic has had a major impact on almost all working areas. While the participatory approach, collaboration and communication may not be optimal due to this situation, the project is on a good way to achieve the targets nevertheless. Even new opportunities and approaches became visible that will still be useful once more physical interaction is possible again. Currently, only upscaling is marked as challenge at high level, which is due to the fact that it is an unfamiliar task. However, the project has a strategic approach now on how to tackle this.

The other overarching challenge is also the project duration which is very tight for such an innovative project. That is even more pronounced due to the fact that the project works with nature-based solutions, which simply need time to develop, which cannot be shortened.

See for further information: [Project site GreenQuays](#)

Nature based solutions

See on UIA website

