Building with Nature solutions are innovations which are welcomed by some, and distrusted by others. Serious success factors are: understanding the basic mechanisms of decision making; organizing a dialogue with crucial persons, organisations and networks; and using effective arguments in interaction. The section ‘Stakeholder network management’ aims to increase the support for BwN in society.

For this, mapping of important networks, actors, processes and factors is crucial. A successful strategy to realise BwN starts with understanding how society works and with a few skills to map and monitor this social system. The figure below shows as an example a simple map of a BwN Consortium within its social system with a communication strategy for each ring.

**Scoping and decision making in society**

With the term ‘scoping’ reference is made to an assessment of the nature of a problem and the range of possible solutions. Scoping and decision-making processes in society can happen in many ways. Decisions with regard to infrastructure are prepared and elaborated with actors both from the government and from other actors in society such as citizens and private companies. Linkages between individuals, networks and organisations provide an important analytical perspective on this process.

**Tools**

- Stakeholder analysis

**Projects**

- Governance for sustainability - Øresund Fixed Link (DK)
- Sand nourishment - Sand Engine Delfland, North Sea, NL
Scoping and decision-making are not a clear and entirely rational processes which always lead to an optimal solution. There are always multiple rival perspectives, advocated by actors participating in different project phases. Power is not limited to actors who have the formal/legal right to decide, nor are the most powerful actors identical in each phase. Decision phases do not always appear in consecutive order: they may overlap; they may be unusually short or lengthy; the sequence of phases may be disrupted; the phases may unroll in a disorderly manner. During these phases challenges are explained in different ways (framed) and prioritised, fact finding goes on, joint learning proceeds, alternatives are framed, bargaining goes on and actors try to embed multiple perspectives and interests. Not only the issues at hand, but also the prevailing power relations play a role.

The figure shows a typology of different problems in society. In some cases there may be a lack of knowledge ('how?') on how to deal with an issue, whereas actors do share the same ambitions ('what?'). In other cases there may be disputes between actors with regard to what the problems to solve are and what the ambitions should be ('what?'), whereas knowledge ('how?') is considered to be sufficient and is not discussed. If actors in such 'structured issues' debate only the 'what' question, bargaining may help. For discussions with regard to the 'how' question, knowledge and learning may be of use. If both 'what' and 'how' - i.e. both the goals and the means - are discussed, however, often lengthy and disorderly decision-making processes occur in which it is hard to focus. Such 'wicked issues' are therefore harder to deal with than structured ones.

Furthermore, scoping and decision-making will vary per type of environment, as depicted in Sandy Shores, Estuaries, Lakes and Rivers, Tropical Coastal Waters and Ports and Cities. These differences relate to the characteristics of the socio-economic and socio-political systems in place and problems and ambitions that are typical of these environments. Understanding how these systems work is a prerequisite for defining strategies and actions.

Participating in the decision making 'game' requires awareness of some key characteristics of BwN-relevant decision making processes. These are explained in this section.

**Networks**

Individuals are grouped into organisations. Individuals and organisations cooperate in networks. The term network implies a cluster of interdependent actors. Each of these actors has an interest in decision making, and is connected to others by shared ambitions or resources. Which role actors play and how dominant they are depends on their motivation, position and resources. Resources in society are dispersed over multiple actors, networks and coalitions. All of these parties participate in decision making arenas, where they may hold strong power positions. Their power basis may vary between legal, expertise-based, financial or support-based. Also, the relevant arenas differ by project phase and not every actor is present/influential in every phase.
World views and ambitions of actors such as politicians, governors, government officials and contractors often focus on the short term, on vested interests, and less on 'what could be'. When involved in interaction processes, such actors will not easily step out of their comfort zone. This explains why rivalry of interest, lack of flexibility and scarcity of resources often dominate decision making. Moreover, decision-making arenas tend to recycle their previously used criteria and prefer to stay within their comfort zone of proven strategies and approaches. The present top officials may have been involved in creating the present solution, replacing an older situation, and so they may perceive the present solution as best practice.

It is usually wise to connect to and make use of the power structures in place, rather than trying to combat them in an uphill battle. An assessment of power relations and the position of and possibilities for the BwN developer therein is necessary before a BwN developer can sensibly think about choices and strategies. A focus on networks, embedded organisations and individuals offers a perspective for this (stakeholder analysis).

In the case of BwN, relevant networks

- are linked to socio-political or socio-economic life
- have a stake in BwN-relevant decision-making
- have competences and capacities to influence scoping and decision-making.

Depending on the situation, BwN managers may choose, for instance, to create new networks or to participate in existing ones. Different types of networks are relevant in the context of BwN, depending on the goals pursued and project phase: agenda-setting or realisation call for different strategies and a different type of network.

There are no silver bullets for governance problems. There will always be surprises that require further navigation, communication and updated decisions. However, with a basic knowledge of governance processes it is possible to avoid the most common mistakes that destroy public trust and thus a project. In the following sections some of these lessons are provided.

Guidance

The focus in this section is on how to become involved in the arenas where scoping takes place and decisions are prepared and taken. It is essential for the BwN-initiator and for the BwN-coalition not to overlook important networks, actors, processes and factors.

The ‘job’ for which guidance is offered is about:

- How to map and influence arenas, actors, agendas and decision making in society?
- How to advocate the BwN-approach and influence scoping and decision making in this direction?

This guidance in presented in seven paragraphs below, followed by the lessons learned so far from BwN case studies.

Note that the strategic question how to connect to society should continuously be asked. There is no single strategy that secures success in all cases. Sometimes it is better to focus upon one arena, one network or one actor, in other cases the best approach is a 'scattershot' covering multiple arenas, networks and actors.

The following seven points of guidance are given, based on experiences obtained, amongst other with the projects as described under Practical Applications (below):

1. Connect to political and societal agendas. A good start for the BwN developer is to find out what contemporary issues, problems and challenges are on the agendas. Read documents, talk to governors, city council members, and other stakeholders in society. Find out to what extent BwN is an option. And if not, how BwN-alternatives could enter the agenda and what critical success factors would be. The general rule of thumb is that the earlier one gets involved in a policy process, the better the opportunities to effectively promote BwN principles and
alternatives. Connecting to early process phases on a work-floor level may be facilitated through connections with appointed or elected politicians holding formal decision power. Having BwN acknowledged and valued by these actors is a positive asset which enables ‘sailing with the wind’. Visit the local area where BwN could be applied, talk to locals about the situation, its history, future visions, conflicts and dominant actors and don’t forget to keep track of personal data. You have started to build a network and it is important to uphold values like trust, respect and integrity in this first phase, because it will define the cultural rules that may be present in this network for a long time.

A relevant concept in this context is ‘path dependence’: this refers to the fact that the set of options is limited by the decisions one has made in the past. Technologies are linked to each other (sockets and plugs, hardware and software), investments are made and this is also the case for water infrastructure (ships and sluices). Geographically the previous choices may have varied in the past. For BwN this means that in most cases tailor-made solutions will be needed.

2. Track arenas and processes (backward mapping): Read more

Track down the relevant processes and arenas that might lead to acceptance or refusal of BwN project alternatives. Towards the end of a decision process different actors may become important and when their views and interests are not included in a design they may block the process and cast it into a new decision making cycle. Thinking the whole process through can prevent working with a scope that is too limited. This is most efficiently done by backward mapping, starting from the (yet unknown) final project-decision, and then working one’s way back in time. Individual processes and arenas in the chain can range from deliberation and consultation to formal decision-making and implementation. The overview over processes and actors obtained this way helps the BwN developer to identify arenas and actors and to connect to them. Drawing flow charts helps to structure the information and to keep an overview.

Rounds of decision making

Processes seem at first sight linear, i.e. following a straightforward procedure of consecutive steps. In reality, however, they often have a non-linear character and decision making is a complex cyclic and iterative process.

Adaptive management

A contemporary model of decision making, adaptive management, stresses unpredictability and perceives decision-making as the art of managing multiple functions, multiple actors, multiple preferences and multiple options.

3. Map actors, positions and stakes: Read more

Stakeholder mapping draws a scheme of relevant actors, their positions and their social relations. Think of:

1. Actors that cannot be ignored such as policy and decision-makers, authorities, coordinating civil servants and potential opponents with legal (blocking) power.
2. Actors that add knowledge and creativity, such as disciplinary experts, local system specialists, (opinion) leaders of local networks.
3. Actors that have a stake in the infrastructure to be realised, such as future users, beneficiaries or parties active in adjacent domains.
4. Actors that build, operate and maintain the infrastructure, such as designers, constructors, operators and government agencies.

Position the actors on a graph by considering aspects such as role, stake, preference and power position. Also include their relationship with the project and its proponents. This can be done by assessing how they perceive the potential of BwN principles and to what extent they have confidence in the BwN developer and his network. This overview helps to identify the actors that can and should be involved in the BwN project development. Visualising actors involved and their networks in flow charts helps to keep track of who plays what role in which activities.
Special attention should be paid to the role of politicians within this network. Depending at what level a proposed project extends, be it national or regional or local, politicians at these different levels have the task to decide on funding and implementation of the (pilot) projects within the regular democratic processes. To make sure that politicians fully understand the objectives, risks and opportunities of a project it is of utmost importance that they are involved early on, and are regularly updated when significant decisions are made within the project. Building trust between the project team and the politicians on one hand, and between the politician and the wider public on the other is an important aspect and can prevent project failure based on misunderstandings.

Decide whether the scope of analysis should be expanded to:

- **adjacent policy domains**: knowledge on adjacent policy domains becomes helpful if an alternative or additional approach route for BwN is needed that touches other policy domains, or if there are opportunities to include additional functions coming under those domains. This is often done by mobilising actors and resources from these domains and inviting them to the relevant arenas;
- **higher administrative levels**: knowledge on a higher administrative (e.g. supra-local) level than the expected intervention level can be helpful if exercise of power is needed to surpass a blockade. This provides opportunities to reframe the problem by appealing to higher-level perceptions of problems and solutions.

When mapping the actors, positions and stakes, it is important to be aware of potential conflict infection. Conflict infection is a social mechanism in which a conflict from another policy field disturbs the process in the policy process at hand. Although the policy fields are formally unrelated, a lack of trust is transferred because one or more of the same actors are involved.

4. Connect to actors and arenas: >> Read more

Some opportunities can be seized by just contacting persons, participating in meetings and actively presenting BwN principles and alternatives. Networking and communication is thus essential. BwN alternatives should be linked to the existing power game and the political and socio-economic context.

Connecting BwN as soon as possible to actors and arenas is a proven success strategy, be it that it requires continuous efforts. The alternative, to wait and see when there is an opportunity to plug in the BwN-approach is a risky strategy for two reasons:

- It may be that the window of opportunity never arrives.
- In case of rivalry of ambitions decision making easily gets politicised. Plugging in BwN aspects after the initial phase may then become difficult, especially if a ‘pressure cooker’ situation evolves: nobody wants to lose time during the process in order to add new ingredients.

Some issues to reflect upon as a BwN-proponent ‘in action’:

- Be adaptive to the arena you choose and be aware of the problems/issues already on the agenda.
- Reason from the perspective of the actors and argue accordingly.
- Be open and transparent, targeted but not manipulative.
- Think about alternatives and follow-up strategies in advance.
5. Organise BwN arenas: Read more

Initiating new arenas, new coalitions, and searching for new perspectives can also be part of the strategy of the BwN-proponent. Methods may range from ‘out of the box’ brainstorm sessions to communities of practice. Creative working sessions to reveal the BwN-potential should involve expertise in the field of engineering, hydrology, morphology and ecology, as well as generic and applied local knowledge about the socio-economic system. Out of the box thinking should be mirrored by expertise with regard to political issues, problem perceptions, local history and local rivalries. Obviously, actors from the arenas in which decisions are prepared and eventually taken should not be excluded, and the same goes for stakeholders, especially if they have a long-standing relationship with the relevant decision-makers. We recommend to use facilitators that are process-oriented and capable of building partnerships and trust.

A promising strategy is to look for and connect to one or more influential advocates or ‘champions’ that embrace BwN-principles in important arenas and networks. This task particularly suits regional politicians, preferably those actively involved in public administration, especially if they act irrespective of their regular policy portfolios. This practice, acting on behalf of the common good irrespective of formal portfolios, was observed in the case of the Delfland Sand-Engine. This experiment on the South-Holland coast would not have been possible without the continuous inspired support of one of the provincial political leaders. National champions may also be recruited to advocate innovations at the local or regional level.

In this phase it is worthwhile to be aware of a social mechanism called the ‘risk innovation paradox’. Individuals have varying affinity with risk: some people like it, while others will avoid it at any cost. An innovation involves the risk of failure, and some people will be willing to take the risk because they also see the huge potential if an innovative experiment succeeds. However, there may be opposition from risk-avoiding actors who will emphasise the accidents and damages of a failure. It is only fair to explore potential risks, to look for measures to reduce them and to develop an arrangement in which the burden of a failure is shared in an equitable way. Make sure that negative publicity does not get out of hand; listen and respond to the concerns.

There can also be a point where the conclusion must be drawn that BwN has little chance to be realised in a given area, for physical/geographical reasons and/or socio-political reasons. If no one in the area (government or NGO or company) is willing to support the idea, it may be better to invest one’s time and energy in other places and then it ends with step 5.

6. Organise connections to the power game: Read more

Do not hesitate to talk to relevant civil servants and governors. Ask for their policy agenda, important meetings and events and ask to be invited to them. Try to introduce some BwN-ideas into the regular policy and development processes and connect as early as possible to these processes. At the start of development, policy makers and professionals are more receptive to expertise, analyses, concepts, new approaches and innovation. Later on in the process they tend to become more focused on a certain line of reasoning.

The socio-political system tends to reproduce problem solving strategies that have proven to be successful in the past. Improved ideas are not automatically recognised in the political process, as political perceptions do not necessarily correspond with technical advancement. Therefore, invite yourself to the discussions and seize any opportunity to become part of the project group. Ideally the developer and his network work themselves gradually into the regular arenas for preparation and decision making. In order to embrace BwN and not to consider it as something ‘alien’, actors need to get acquainted with it and get into a guided process of joint learning about the potential of BwN in their particular situation.

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Harvest and expose political commitment

It is often hard to line up with civil servants and policy makers if these consider BwN as being ‘not in line’ with political agendas. Good results were achieved by having leading governors (politicians) express their support for BwN, for instance in the media or via a short movie which can be shown at meetings.

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Video: The promotional video made to illustrate political commitment to the Soft Sand Engine at the Frysian Lake IJssel Coast.
7. Monitor the arenas and the coalitions:  

Like natural systems, socio-political systems are dynamic and seldom in a long-lasting steady state. People change their preferences and positions without notice; circumstances change and are exploited during the process. Developments have to be monitored and strategies have to be reconsidered accordingly. Connecting to the appropriate experts, stakeholders and decision-makers therefore calls for continuous alertness, instead of a single moment of analysis. Keep a eye on the needs in an arena and its actors: do they need information? Do they need convincing arguments? Is cooperation with new players needed, for instance on fact finding or joint learning?

Also stay connected with the local public. Create a Facebook page where people can drop comments and make sure someone follows up on those comments; use Twitter to advertise progress; follow webpages of local newspapers.

Lessons learned

The pilot experiments executed so far in the Building with Nature innovation program have taught us the following lessons with respect to governance and networking:

Lesson 1: Bridging administrative scales and ecosystem scales:  

A BwN solution can have a positive impact at larger physical and biological ecosystem scale. This will require connections between local, regional and national administrative levels. BwN advocates should stress the positive effects of their solution at ecosystem level, not only at local level.

On the photo, Provincial political leader Mrs. Dwarshuis, ‘champion’ of the Delfland Sand Engine, shows ‘her’ project to Vice-minister Atsma (source: www.dezandmotor.nl)

Lesson 2: Bridging to politicians, finding champions:  

In the end, decisions are often taken by politicians with a mandate for a limited period of time (e.g. four years). In order to demonstrate their capability to their constituencies, they must show that the plans adopted by them are a success within that time frame. BwN-projects, however, function within the timescales of nature, and often take decades to come to fruition. This conflict between long-term effect and short-term demand for political successes can work against BwN. BwN designs should therefore be made attractive to politicians, also from a short term perspective: progress should be made visible. Intermediate results can be highlighted and celebrated in a visible way. Clearly, this means combining short-term goals with long-term objectives.

Actively look for influential individuals who can be a ‘champion’: individuals who are positive about the BwN principles and have influence in and access to important arenas and networks. These individuals normally are regional politicians, preferable governors. This is well illustrated by the case of the Delfland Sand Engine, which would not have been possible without the active support of the provincial governor. Champions may also be found among elected politicians (e.g. the municipal council), business leaders, NGO’s, journalists and writers.
Examples of such short term goals were successfully exploited by the Grensmaas consortium in Limburg. In this part of the river Meuse a consortium of commercial partners and a nature NGO mines gravel in a nature friendly way. The nature development will take almost a decade. In the meantime, a grave of military horses from the eighteenth century was found, and this was given a lot of publicity and a monument for the horses was raised. On another occasion, an ‘opera’ for excavators was written and performed with a large local audience.

Lesson 3: Bridging to civil servants:  
In general, both politicians and civil servants are needed to realise a project. Which of these two groups has priority depends on the situation and the project phase. If problems and solutions are controversial, or stated ambitions exclude a BwN-approach, connecting to politicians/governors/champions and political parties becomes essential. However, civil servants in the relevant parts of the administrative organisation play important roles in framing the problems and can exert a lot of influence. In the case of the Frisian coast pilots, for instance, a Community of Practice (CoP) for civil servants turned out to be an effective instrument to promote BwN among various administrative organisations.

Lesson 4: Bridging to the public at large:  
While connecting to politicians and civil servants is essential, connecting to the public at large should also be considered. NGOs and other stakeholders may be influential in public arenas, so it may be recommendable to align with them.

Some patterns found in the BwN-cases:

- Hardly any opposition against the overall principle of Building with Nature has been encountered. BwN is perceived to enable nature development; however opposition against a specific BwN plan is still possible and nature legislation can then be used to block the development in a later stage.
- When looking for partners in promoting BwN solutions, one would better concentrate on actors who are inclined to think in terms of dynamic nature instead of nature conservation. Organisations promoting nature seem to be obvious partners to align with and most of them are. Yet, some of them have a strict conservation attitude towards nature and they look at development-oriented approaches such as BwN with scepticism. Even the synergy with nature is sometimes objected to by these actors, because it is considered as ‘greenwashing’, i.e. abusing nature to achieve economic objectives. In some cases nature-organisations chose to enter the integral development coalition because they perceived this as unavoidable.
- Public opinion is volatile. The negative media attention associated with the Delfland Sand Engine because of swimmer safety, for instance, turned the public opinion from generally positive to negative overnight.

Lesson 5: Arguments pro BwN:  
The arguments that can be used to advocate BwN depend on the situation and on the arena, networks and actors addressed. This requires thinking from the perspectives, ambitions and interests of these actors and linking this to a contextual and flexible use of arguments.

Influential arguments in favour of BwN used in the cases considered can be categorised as follows:

- **Coping with regulatory settings**: the fact that the plans put forward in these cases all had significant effects on designated habitat areas (Natura 2000). This was most frequently the argument why BwN and similar approaches were welcomed. One may also perceive this as enabling human ambitions (in designated habitat areas).
• Lower costs and/or added value (compared to traditional solutions and approaches in use): in several situations this argument opened doors. One relevant category are lower implementation costs, another one are avoided future costs, i.e. costs that would have been incurred in the absence of BwN. A third category is added value, linked to additional functions such as fisheries, tourism and nature; the ecosystem services approach is a relevant tool to underpin claims.

• Transfer of costs: Sometimes BwN principles and solutions involve a transfer of costs across projects, programs and scales. Long-term maintenance costs of a BwN-alternative, for instance, may be lower than those of a traditional design. If construction and maintenance are financed from different sources or come under different authorities, this argument may not have much impact. Given the trend towards lifecycle costing, this should be a vanishing problem.

• Flexibility: If effects of climate change are more severe than expected, or unforeseen situations occur, BwN offers the possibility to make small incremental and if necessary adaptive steps. This implies that the authorities responsible can stay in control, the chance of early write-off of investments is minimal and the drive to costly over-designing is avoided.

• Controllability: rather than claiming that BwN "lets nature take its course", BwN-advocates should emphasise the steering possibilities offered by the design and show that BwN is anything but uncontrolled. For politicians, a project should be amendable and steerable, since in the end they are held responsible if anything goes wrong.

Lesson 6: Seek for integral development aims to connect to: **Read more**

In arenas with 'integral development' on the agenda, actors will take a more development-oriented view and will be more inclined to include novel dynamic approaches aiming at system transformation. The system itself is in transition, and creating new dynamics is less of a threat than in a static system. Be aware that there is always a conservationist coalition trying to keep the system in its present state or to restore a past state which they consider favourable.

Recreation areas offer many possibilities for an integral (multifunctional) design. The village Katwijk is now protected by a dike concealed as a dune, that also includes a parking garage, see figure.

Lesson 7: Enhancing support: **Read more**

There are different ways to introduce BwN and to enhance support. Participating in official hearings is the most obvious option, but not necessarily the most effective one, as such hearings will be held rather late in the process. More pro-active BwN-practices are, for instance, to start a community of practice (COP), or to have a series of talks with influential politicians and civil servants, or to organise ateliers with practitioners and policy makers. Ask a wide audience for input for the design. Companies and people living in the area will have inspiring ideas and endorsing their input will lead to more support for the final design.

Clever use of media may also work. A video on YouTube, for instance, worked well to expose BwN principles in the case of the Frisian coast pilots. The expression of support by regional governors who appeared in the video played a crucial role in getting the projects accepted. Playing an active role in project groups, steering groups and advisory groups gives direct access to information and networks and enables anchoring BwN principles.
Make sure that the public has the opportunity to live through and undergo the design. This can be done in two ways: 1. Visualise the design before implementation. Modern technology offers many opportunities to visualise the design in virtual reality, i.e. to show what people will see when the project is completed (and during the project realisation phase). 2. Make sure that the design adds something for the public, for instance additional nature that can be visited and enjoyed, or recreational opportunities. Be aware that the general public is more likely to value what is and is less focused on what could be.

**Lesson 8: Explicit commitment to BwN:**
Include all important actors from all relevant sectors and create commitment with regard to the procedure and the result. Also make committing appointments on who will be financially responsible. Division of costs should be clear at the project inception, not only when designs have been finalised. Commitment should be documented, for instance in a covenant. Alternatively, the project can be labelled as ‘experimental’, in order to secure additional financial means from for instance innovation-stimulating funds.

This lesson learned relates to the issue of how pro-active or project focused BwN advocates want to operate. Sometimes it might seem that dominant actors and coalitions embrace BwN. So why in such case spend energy on issues discussed in this section guidance? For several reasons: they might change their position, influenced by opponents and developments that they perceive relevant. This might for instance happen when opponents add new knowledge and alternatives to the agenda. Also political decision-making and procurement can easily endanger BwN projects. Elections may totally change the political landscape. So monitoring as referred to above should be done, keeping in mind the project phases. For instance with regard to management and maintenance often other arenas and actors are relevant, there are examples that their decisions hinder BwN effects to be realised. Also when BwN seems to be accepted, it is of importance to continue ‘spreading the news’ as opinions might change over time. New opposition can emerge for instance due to changes in strategic agendas, new knowledge and financing issues concerning appropriate financial arrangements.

**Lesson 9: Apply creative strategies:**
If things do not proceed as expected one can think of strategic interventions, such as introducing new actors that are process-oriented, so-called brokers. Also activating NGOs can be helpful, if they support BwN and the relationship is based on mutual trust. Look for opinion leaders that could become BwN champions in their networks. Another strategy is to connect to new arenas, or a joint stakeholder initiative, a platform, or a committee. These are all ways to bring in new information and expertise. Activating media can be very effective, but may also fire back. Coupling additional goals and resources to those under discussion can also be of help to bring this afloat again, or to reduce opposition against BwN (Bressers and Lulofs 2010: 27-31).

A certain level of persistence is needed in public decision making. Thinking in terms of years is more realistic than thinking in months. For the sake of innovation, it is also an option to retreat from some arenas and to look for more welcoming social environments. Once there is proof of concept the arenas with more risk averse cultures will become open to BwN.

**Practical applications - examples**

The efforts to inform society about Building with Nature ideas is dispersed over society and is not limited to actors having the formal right to decide. The challenge is to engage in chaotic and unpredictable decision making processes and to gradually convince the different participants. Understanding decision making and formal and informal power structures is a prerequisite for influencing decisions. A couple of illustrative examples is described below.

**Case IJsseldelta south (By-pass Kampen)**
To the southwest of the Dutch town of Kampen, in the province of Overijssel and bordering Lake IJssel (IJsselmeer), a new river branch is being designed in order to cope with the increased water discharge in the Dutch Rhine branches. The creation of this new branch for flood safety is combined with other developments such as housing, infrastructure, recreation as well as nature development. This is integrated into the large-scale integral development project IJsseldelta-South. Planning and design started in 2004; the final plan has been approved in the summer of 2012. An intensive participation process was part of the design process. The resulting plan largely coincides with the former sea-arm "de Reeve" and includes large-scale nature development. Overall, the plans have a high level of "nature inclusive" thinking in them and nature itself is considered essential for making the project a success.

In 2005 there was a political decision on the general direction of the IJsseldelta-South project which included nature development and a strong focus on creating a meandering and natural landscape (Projectorganisatie IJsseldelta-Zuid, 2005a). In the first plans for the area, principles similar to what we now call "Building with Nature" formed the basis of the plans and these have been broadly accepted since. In 2010 the terminology of Building with Nature and "nature-inclusive design" were in use by the project organisation. These basic principles seem to be beneficial not just for nature, but also for acceptance of the project as a whole, as they anticipate the judicial process related to nature legislation such as Natura 2000. Although this assumption has not been tested so far, it has reinforced the belief that natural development can go hand in hand with flood safety.

The network was managed in a successful way:

- From the start the project was managed as a cooperation between governments, stakeholders and citizens;
- The project group started with a voluntary environmental assessment, which was a good way to map many different aspects and risks of the project;
- The processes of knowledge development and spatial design were closely connected throughout the project.

This led to a Masterplan that was understood and accepted by all participants (see report of study, in Dutch).

Case Markermeer-IJmeer

Although the Netherlands are continuously developing, there are areas that stand still for several decades. One of them is the Markermeer, formerly part of the Zuiderzee, later the IJsselmeer, and separated from it by a dike, the Houtribdijk. The latter was built as part of a plan to reclaim the area, but this plan was abandoned when the need for agricultural land decreased. With the Markermeer and the IJmeer, the Amsterdam metropolitan area has access to a conservation and recreation area on its doorstep of nearly 80,000 hectares. The extensive open waters and the varied coastline possess unique qualities, especially given their urban surroundings. The potential value of this area for nature is beyond question. The lakes are a key resource in several bird migration routes. The presence of many thousands of birds is one of the reasons why this area enjoys protection at a European level (N2000). But nature in this area is under pressure and has declined significantly since the eighties. Turbidity has gone up, flora and fauna are on the decline and bird numbers have fallen. The question is whether and how this decline can be reversed.
The Amsterdam Metropolitan area is very dynamic. The city of Almere is set to double in size by 2030 to 350,000 inhabitants, Amsterdam and environs continue to grow and Utrecht is about to launch into a new phase of expansion. There will soon be more than 1.5 million people living around the two lakes. All these extra residents will create a growing demand for infrastructure, jobs and recreational facilities. This urban development puts huge demands on its surroundings. The landscape is a key distinguishing feature of the Noordvleugel, a metropolitan region that, in contrast to most other European metropolitan areas, consists of a network of cities instead of one large continuous urban area. The Markermeer and IJmeer could contribute significantly to this position, boosting this area’s international competitiveness. The potential is there, but it must be exploited wisely on the basis of proactive and sustainability-oriented policies. One aspect of this involves a renewed legal approach to conservation projects that goes beyond the current practice of species conservation and environmental compensation.

The Future Vision for Markermeer-IJmeer aims to enable nature in this area to gradually regain its vitality and resilience. The most notable proposals are the development of an extensive marshland area along the shoreline by Lelystad and ‘primary banking’ at Almere. The marshland and primary banking will result in a greater array of transitional zones, which will provide extra habitats and further increase the area’s biodiversity. The marshland is positioned to enhance the relationship between land, lake and conservation area for the benefit of birdlife. Another pillar of the plans is suspended sediment management. The realisation of zones sheltered from wave action, combined with sludge drains, are meant to create more areas of clear water around the lakes. This will allow water plants to reestablish, which will further clarify the water. The end result of all these measures will serve to increase biodiversity and landscape variation. In other words a landscape that is more appealing to plants, animals and people.

The need for integral development is recognised at the level of the national government, which has led to a more holistic approach as part of the National Programme for the Randstad (the urbanised city rim in the western part of the Netherlands). The provinces of Flevoland and Noord-Holland have been requested to manage an Integrated Development Perspective project for the Markermeer-IJmeer. This scheme was submitted to the Ministry of Transport & Public Works as an intermediate step towards a long-term strategy for the area.

The Integrated Development Perspective project claims that the ecological decline can be reversed with a systematic approach. This approach aims to create an ecological system that is flexible enough to absorb future changes without a substantial loss of quality. This will help to generate space for the urban and recreational dynamics of the Amsterdam Metropolitan area.

To realise the above, more work is needed in ecological terms than is legally required to maintain the conservation levels laid down in the European Natura 2000 programme. Natura 2000 and its Dutch legislative implementation have resulted in an ecological task which is drafted in terms of ecological support for specific species and habitats. This is not enough, however, to prevent that the ecological system as a whole remains vulnerable to natural phenomena (such as storms and climatic changes) and human intervention. The system approach of the Integrated Development Perspective project aims to create a robust ecosystem.

Case Markerwadden
After the damming of the Zuiderzee in 1933 and the subsequent construction of polders and compartment dams in the newly created IJsselmeer a large fresh water lake, the Markermeer, was created. After several decades the water of this 4 m deep, 700 km² lake was found to be very turbid, with a muddy lake bed, causing a declining fish stock and bird life. While more than 1.5 million people live around the lake the lack of natural shorelines reduces the potential of recreational use of the area.

In 2012 the Dutch NGO ‘Natuurmonumenten’ took the initiative for improvement of these conditions, by developing an archipelago of bird islands in an ecological dead lake, serving several eco-services at the same time.

- Resting / feeding area for migratory birds along active migration route where due to urbanisation less places are / become available (ecology improvement / provisioning of habitat)
- Controlled bird viewing facilities for public (recreation / ecotourism / social relations / sense of place)
- Island construction using soft sediments, reducing mass of sediment available of re-suspension (fresh water quality / beneficial use)
- Creation of wave sheltered area at ‘upstream’ side of lake, where soft sediment will settle naturally, further reducing mass of sediment available of re-suspension (fresh water quality / working with nature)
- Improved water quality will promote re-generation of fish life in area, enabling now declined fishing industry to slowly re-vitalise (economy food / income)
- Row of islands will reduce wave attack on dike structure, reducing future dike re-enforcement needs (economy / use of materials)
- Vegetation on island serving for carbon sequestration (air quality)
- Island harbour brings new destination for yachting, in empty lake area (recreation – ecotourism)
- Test / research area for building on / with soft sediments (future footprint)

In a Public – Private Partnership funding has been acquired by ‘Natuurmonumenten’, for large part by a gift from a National Lottery, with further contributions by National and Provincial Government, plus sponsoring by other stakeholders.

The execution of the project is undertaken by an Alliance of Natuurmonumenten and Rijkswaterstaat, plus a building team, led by contractor Boskalis.
The concept of the islands is based on use of the silts and fine sediments available in the area, protected by natural shorelines (sand beaches and dunes, wash-over zones), with only rock protection at most exposed stretches. The islands are made with specific surface gradients, stimulating different natural processes to create a variety of habitats, attracting a range of bird species.

Only the first island will be accessible for visitors, with a port, hiking trail, observation tower and bird watching cabins.

The first phase of the implementation of the project started with design and permitting in 2014; in 2016 the first group of islands (250 hectares) was made. In 2017 the second and third phase are under construction.

Further development of the archipelago will be dependent on financing, for which evaluation of first experiences will have to be made.

As a further ‘eco-feature’ of this project it is to be noted that the dredger (cutter suction dredger ‘Edax’) runs on biofuel, a novelty in the dredging industry.

So far, this development has shown that it is possible to go ‘from multi problem to multi solution’ through multi-disciplinary co-operation and team work, combining objectives with full public support.

For more information:

https://www.natuurmonumenten.nl/marker-wadden

various media: search web for ‘markerwadden’

no publications yet.

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> Read more

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