

A GOVERNANCE VISION on adaptive estuarine management

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Summary

Estuarine dynamics are to a large extent unpredictable and show emergent behaviour. These dynamics have often been 'altered' in the past - at least in many cases in Europe - by human intervention. The reason for this is that estuaries provide the conditions for prosperous social and economic development, as can be seen in agricultural land reclamation, harbours and navigation, fishery and recreation. Due to the human caused alterations of the estuarine dynamics in the past, and the current need for space for both nature, social and economic spatial functions, estuaries have a strong multi-issue, multiactor and multi-level character. Many issues are at stake, with a lot of interdependent stakeholders with different perspectives and goals, and decision making that takes place on different interacting levels. However, the governance of estuaries is often not adequate to deal with this complex character of estuaries. This becomes apparent in the fragmented institutional structures of estuaries, the unclear allocation of roles, responsibilities and resources, patchy financial management, limited long-term strategic planning and poor economic regulation and legislation. This complexity makes it difficult to find sound and integrated solutions that are socially, economically and environmentally acceptable, and create an urge for adaptive and sustainable governance of estuaries.

Governance challenges

Within the three EMOVE-estuaries the most important pressures are (1) increased risk of flooding, (2) disposal of dredged soil, (3) tidal intrusion/amplification, and (4) salt water intrusion. Furthermore, estuaries encounter a dominant influence of navigation with ships that are still growing in size, and a general friction between space for, and quality of, both nature and agriculture. These pressures give rise to some pressing governance challenges. First, there is a mismatch between administrative responsibilities and administrative boundaries on the one hand, and the system boundaries, effects and complexities on the other hand. Together with the large number of sectors and spatial functions, this causes fragmentation in arena's, regulations and funds. Furthermore, involvement of stakeholders is lagging behind. In some cases, involvement appears to be institutionalised. In other cases, involvement seems more difficult. The most probable cause is the absence of trust and transparency between them and the tendency to strictly adhere to existing rules and regulations. Most stakeholders seem to be 'conditioned' to be reactive or offensive, instead of pro-active. In addition, integrating documents or visions on an estuarine scale seems to be mostly absent.

Good governance of estuaries

Earlier EU-projects and scientific insights have led to commonly accepted recommendations for good governance of estuaries. These recommendations consist of an integrated approach, involvement of stakeholders, an institutional structure that supports collaboration, an adaptive approach and shared learning. Still, a lot of these recommendations are not yet (fully) implemented within the European estuaries.

EMOVE: 'From stakeholders to shareholders'

In the EMOVE-project four partners from four different North Sea Region countries worked together to provide insight on adaptive and sustainable governance of estuaries and to turn the stakeholders into a committed community of shareholders that jointly maintain sustainable and accessible estuaries. 'From stakeholders to shareholders' was the EMOVE-motto. By turning stakeholders into shareholders of the estuary, the EMOVEpartners address the governance challenges within their estuaries and contribute to the implementation of good governance of European estuaries.

Building trust is the key

Building trust is the key element in this Governance Vision. Trust between stakeholders, trust between stakeholders



and government, and trust between stakeholders and experts. Trust can overcome difficulties introduced by fragmentation in institutions, regulations and funds. Building trust precedes joint goals and leads to sharing resources (capacity, knowledge, property rights and funding). Building trust starts between people, and should be institutionalised between organisations. Building trust between stakeholders, governments and experts in estuaries can be achieved by:

- initiating and stimulating an informal and continuous dialogue;
- developing a shared view on the functioning of the estuarine system;
- 3. an action-orientated approach, in which a long-term vision is combined with short-term action; and
- 4. enlarging the room for solutions and creating interdependency between stakeholders.

The development of trust can be combined with adjusting and developing more flexible institutions and regulations.

A promising outlook: from stakeholders to shareholders to guardianship

The EMOVE stakeholder-workshops have shown the ignition of trust induced by the above mentioned

recommendations. Still, this ignition of trust has to be implemented in the 'going concern' in all three estuaries, and in the existing realities of perceptions, reputations, deadlocks and (dis)trust. This raises the question of how this can be done successfully, bearing in mind that previous recommendations often have not - or not substantially - been implemented by estuarine governments. Implementation of these recommendations asks for political urgency. Only if politicians and governments have an urgency (and policy window) to act, implementation of recommendations for good governance and building trust can be expected. Political leadership is needed to do so successfully. A different strategy might however be more successful, and more fitting to the EMOVEmotto 'from stakeholder to shareholder'. This strategy comprises a bottom-up approach, in which stakeholders become engaged and empowered, form vital coalitions and go into action together. In this, a bottom up urgency from an area, region or multi-stakeholder group itself is leading, instead of a political urgency. Moreover, personal leadership - or even entrepreneurship - is needed: who is really taking care? The evolution of shareholders into vital coalitions should lead to guardianship. Guardianship includes aspects of care and responsibility for the estuary itself. Decision making is then also based on more altruistic goals to protect and care for an estuary for future generations.

About business-ideas and shareholders

This Governance Vision speaks of business ideas and shareholders. Both might indicate that this vision uses an economic perspective on adaptive and sustainable management of estuaries. And that economic profit is the main goal of shareholders in an estuary. This is not the case: this governance vision addresses adaptive and sustainable management of estuaries from the perspective of people, planet and prosperity. This means that shareholders have a share in the estuary which benefits both the estuary and themselves, from a societal, ecological and economic point of view. In this, business ideas should be beneficial for the participants and other stakeholders from these three perspectives as well. Business ideas generate advantages for people, planet and prosperity, and are focused on common, short term actions that generate these profits. The approach of ideas as business ideas should enhance the viability of these ideas and get stakeholders into real action.

1 Introduction to this governance vision



Estuaries are complex

Estuaries are dynamic areas at the interface of sea and river, and aquatic and terrestrial systems. This location results in a significant variability of environmental, physical, chemical and geomorphological conditions. This makes estuaries highly dynamic systems, subject to numerous risks and uncertainties¹. Estuaries show emergent behaviour and are to a large extent unpredictable.² Furthermore, estuaries have tipping-points: points which, if they are crossed, irreversibly alter the physical state of the estuary. These tipping points show the limits of the estuarine system. The location of estuaries also favours a wide variety of distinct values and functions, such as environmental, economic, social and cultural values and functions. These values and functions translate into goods and services of countless value. Due to these values and functions, human-induced activities have developed within estuaries, causing a concentration of diverse economic, social and ecological functions which are not always compatible. The concentration of these functions threatens the values and functioning of estuaries and the uses that depend on them. These threads are even more increased as estuaries are exposed to the cumulative effects of human activity both upstream (fluvial area) and downstream (marine area).

Estuaries have a strong multi-issue, multi-actor and multilevel character: many issues are at stake, with a lot of interdependent stakeholders with different perspectives and goals, and decision-making taking place on different interacting levels. Estuaries are institutionally fragmented³: a multitude of governmental agencies coexist, each with their own jurisdiction, tasks, responsibilities, legislation and instruments. Thus, estuaries often have an unclear allocation of roles and responsibilities, questionable resource allocation, patchy financial management, a lack of long-term strategic planning and poor economic regulation and poorly drafted legislation⁴. Estuaries are thus not only physically, but also socially complex.

The complexity of estuaries demands a governance approach

The complexity of estuaries makes it difficult to find solutions that are socially, economically and environmentally acceptable. The complexity of estuaries asks for integrated, collaborative and adaptive governance⁵. Governance describes structures and processes for collective decision-making involving governmental and non-governmental actors⁶. Governance is an answer to the inherent limitations of government. Whereas government denotes the institutions of rule and 'command and control'-like management, governance covers the activity, process, and quality of ruling. The core element of governance is horizontal and vertical cooperation between actors on multiple institutional levels. In adaptive governance long term strategies are formulated, which at the same time must be flexible and responsive to short term changes7. Collaborative governance emphasizes cooperation, relations between actors and gathering and sharing of knowledge⁸. Integrated governance takes it one step further. It departs from the coherence between actions of different actors and focuses on composed goals: contributions to goal A should contribute to goal B as well.



Workshop in Göteborg -Göta älv and Nordre älv estuaries.

- ¹ McLusky D.S., Elliott M. (2004), The Estuarine Ecosystem; ecology, threats and management, OUP, Oxford.
- ² Gerrits, L. M. (2008). The Gentle Art of Coevolution: a complexity theory perspective on decision making over estuaries in Germany,
- Belgium and the Netherlands. Bestuurskunde; Public Administration.
- ³ Lubell, M. (2004). Resolving conflict and building cooperation in the National Estuary Program. Environmental management, 33(5), 677-691.
- ⁴ http://www.oecd.org/governance/regional-policy/48885867.pdf
- ⁵ van Buuren, A. (2013). Knowledge for water governance. International Journal of Water Governance, 1(1), 157-175.
- ⁶ Neye, J. S., and Donahue, J. (Eds.), (2000). Governance in a Globalizing World, Brookings Institution, Washington.
- ⁷ Buuren, M.W. van, P.P.J. Driessen, H.J.F.M. van Rijswick, G.R. Teisman, (2014). Towards legitimate governance strategies for climate adaptation.
- Combining insights from legal, planning and democratic perspectives. Regional Environmental Change. 14 (3): 1021-1033.
- ⁸ Carvalho, T.M. and Fidelis, T. (2013), The relevance of governance models for estuary management plans, Land Use Policy, 34: 134-145



Estuaries on the MOVE (EMOVE)

Although all estuaries have their own specific institutional, natural and cultural settings, the issues that are dealt with are quite similar. Because of these common issues, the European project "Estuaries on the MOVE" (EMOVE) has been carried out. EMOVE deals with three different estuaries: the Weser (Germany), Schelde (Belgium / The Netherlands) and Göta Älv (Sweden). These estuaries share similar characteristics, such as the use of shipping channels leading to large ports, tidal influence, transport of large quantities of sediment and large areas designated as Natura2000 sites. In EMOVE four partners from four different North Sea Region countries worked together to provide insight on strategies to maintain accessible, flood safe and ecologically resilient estuaries.

Within EMOVE the main goal was to turn the stakeholders – representing the relevant organizations and communities around the estuaries of the Scheldt, Weser and Göta älv – into a committed community of shareholders that jointly maintain sustainable and accessible estuaries and find suitable adaptive strategies to do so. 'From stakeholders' to shareholders' was thus the EMOVE-motto. By turning stakeholders into shareholders the EMOVE-partners aim to contribute to the implementation of good governance of European estuaries. To achieve this several national stakeholder workshops were held to get stakeholders into action. To share the experiences within the different estuaries, transnational workshops were held. Interactive tooling was used to help stakeholders start a dialogue about the estuary and its functioning.

The EMOVE-project has resulted in a broad overview of estuarine pressures, governance challenges and business ideas, shared by the different stakeholders. The essential experiences of the EMOVE project are presented in the fore-lying European Governance Vision. This vision is based upon three pillars:

- 1. General recommendations on good governance for estuaries, following from previous European projects and scientific insights.
- Analysis of current governance challenges within estuaries: which physical pressures are present in the three estuaries within EMOVE and which governance challenges arise from them;
- 3. Recommendations coming from the stakeholdersworkshops to turn stakeholders into shareholders;

This governance vision starts with addressing common governance challenges in estuaries and general recommendations to obtain good governance. Next, the essential outcomes from the EMOVE project are given, leading to four concrete actions that contribute to building trust between government, stakeholders and experts. The vision finishes with a reflection on the results achieved.

This governance vision is supported by four appendices: a DPSIR-report on pressures, a governance survey, business ideas for each of the three considered estuaries and a reflection on an Estuary Game as Interactive Virtual Platform.



The three estuaries of EMOVE

The Weser is the second-largest river in Germany, discharging into the North Sea. Its origin is the confluence of the rivers Werra and Fulda at Hannoversch-Munden. The entire length of the Weser is classified as a federal waterway for the transport of goods by barges and sea-going vessels. Improvement and deepening of the navigation channel and the most modern quay equipment enable the currently largest container ships to call on Bremerhaven at the Weser estuary. Salt intrusion is recognised as a key issue in the Weser. It leads to problems in obtaining sufficient fresh water from the Weser for drinking water. The most important economic driving force of the Weser estuary is the transport sector. This puts additional pressure on the estuary due to commercial harbour activities, dredging, and saltwater intrusion due to tidal amplification.

The Schelde estuary is one of the few remaining natural estuaries in North West Europe. Agriculture, fisheries and recreation are also essential functions in the Schelde estuary. That is why Flanders and the Netherlands have a great interest in a sustainable and balanced policy that is focused on a maximum security against floods, an optimal accessibility of the Schelde ports, and a healthy and dynamic estuary ecosystem. It is therefore obvious that cooperation in the form of a common policy and management is essential. The Schelde has been modified during the last centuries. This has created difficulties, such as finding suitable sites for relocation of dredged sediment, increasing tidal ranges, ecological quality and saltwater intrusion.

The Göta Älv (Göta River) is the largest river in Sweden. The Göta River catchment runs from Lake Vänern in the north to Gothenburg in the south. In the south, two thirds of the river flow runs through the Nordre Älv and one third runs through Gothenburg, i.e. the Göta River estuary. The Göta River valley and the city of Gothenburg, have a long history of anthropogenic activities such as settlements, shipping, harbours, industry, and associated infrastructure including large roads and railroads. The river is used by many different stakeholders with various interests. The archipelago is highly populated with commuters using a number of ferry services on the river. Gothenburg harbour, Scandinavia's largest and most important port, is located In the estuary of the Göta River. The Nordre Älv and the Göta River estuaries are characterised by low-lying areas with deep clay deposits. Already today flooding occurs, which results in material damages and infrastructure failures. Increased precipitation will increase the contamination load in the Göta Älv estuary unless the capacity of the storm water system and the water treatment plant is increased. In addition there are major infrastructural activities in progress that will affect the Gothenburg estuary, such as the infrastructure project called the West Link project, which includes several tunnelling projects (producing lots of sediments) and discussions about expansion of port activities.

2 Governance challenges within estuaries



This chapter describes the main physical pressures and governance challenges present in each of the three EMOVE-estuaries. These physical pressures have been studied based on the DPSIR-method. DPSIR is a widely used concept enabling the organisation of information about the state of the environment. The governance challenges have been studied based on a governance survey following the aspects of fragmentation (spatial, temporal and institutional⁹), adaptation to new circumstance and change, and participation of stakeholders. The results give insight in the common challenges for governance in estuaries.

Physical pressures

Although there are differences between the three EMOVEestuaries, they are all subject to similar physical pressures. This is mainly due to the comparability of the dominant land use patterns (driving forces) in all estuaries. These driving forces are physical processes and anthropogenic activities (e.g. production, consumption, recreation, etc.). The most important pressures within the estuaries are increased risk of flooding (increased frequency and extended areas that are affected), disposal of soil (excavated masses and maintenance dredging of shipping lanes), tidal intrusion (amplification of the tidal range with related problems, such as increase of estuarine dynamics, import of fine sediments and a higher flood risk) and salt water intrusion (encroachment of salt water into groundand surface water bodies and soils). Furthermore, estuaries encounter the dominant influence of navigation with continuously growing bigger ships. This influence exceeds the scale of the estuaries and can only be influenced on an international, global scale. Finally, it can be seen that all estuaries encounter friction between space for, and guality of, both nature and agriculture. These pressures lead to pressing governance challenges.

Institutional fragmentation

Within the three EMOVE-estuaries there is an apparent mismatch between administrative responsibilities and administrative boundaries on the one hand, and the estuarine system boundaries, effects and complexities on the other hand. Within the estuaries there are a large number of sectors and spatial functions active. This is an additional cause for fragmentation as government organisations are organized along the lines of their sectors. For example, in one estuary it is difficult to realize an integrated approach because of a number of water boards that share judicial responsibility for only a part of the area. This fragmentation makes integrated and collaborative decision-making challenging.

Example Schelde

For the Schelde several separated formal platforms for coordination exits. For example, navigation has its own platform for decision-making, which complicates the process of finding integrated solutions.



^o Bai, X. (2007), Integrating global environmental concerns into urban management: the scale and readiness arguments. Journal of Industrial Ecology, 11 (2):15-29.

Stakeholder participation is limited

In all three estuaries stakeholders are involved in planning and projects at both the estuarine and the regional level. This participation is mainly done with a low degree of participation: stakeholders are (only) informed or consulted, instead of giving them a significant position in the decision making process. Due to the fact that many of the issues in the estuaries have been ongoing for decades, expectations of stakeholders have been strongly institutionalised: through the years, they are conditioned to be reactive or offensive, instead of pro-active. It is more common to speak of stakeholders 'that have a role in the governmental world', instead of 'real governance'. In one estuary for example, participation is mainly based on the formal regulations, and trust and transparency is limited. Furthermore, in all three estuaries there is little involvement from stakeholders at the European level. And in several estuaries the situation between stakeholders is polarized because of previous deadlocks and debates.

Adaptive rules and regulations

Formalised structures hinder the ability to find and develop new relations because existing regulations – such as Natura2000 regulations - often cannot (adequately in time and space) adapt to changing realities and improved understanding of the estuarine system. In one estuary stakeholders appear to be able to develop relations across formal structures. Yet, in another estuary it appears to be much more difficult for stakeholders to deviate from the established rules and regulations. On a European level long term planning is asked for – mainly based on EUframeworks and/or legal instruments. On the estuarine and regional level long term planning is more dispersed, sectorial and sometimes even absent. Often there are no integrating documents that bring short and long term interests together.



Pressures within the three estuaries

Göta Älv Estuary

Prioritised Pressure	Increased Flooding: Disposal of Masses:	increased frequency and extended areas affected excavated masses for sea disposal
Where?	Increased Flooding: Disposal of Masses:	river outlet of the estuary up to the branching to Nordre Ä $\!$
Why? Which drivers?	Increased Flooding: Disposal of Masses:	climate change, increased precipitation and sea level urban development of transport sector (tunnel)
How long?	Increased Flooding: Disposal of Masses:	new operable barriers persist on the long time scale ecological and morphological effects up to decades
Who? User group	Increased Flooding: Disposal of Masses:	of widespread recognition and known among public politicians on municipal level, industry, commuters
Impacts	Increased Flooding: Disposal of Masses:	damage tot infrastructure, increasing pollution ecological and morphological changes
Responses	Increased Flooding: Disposal of Masses:	building operable flood barriers assessment of alternative management strategies

Scheldt Estuary

Prioritised Pressure	• Tidal intrusion: amplification of the tidal range with related problems: Loss of estuarine dynamics, import of fine sediments, higher flood risk	
Where?	River outlet of the estuary up to the sluices at Ghent	
Why? Which drivers?	The loss of large-scale estuarine dynamics: reclamation of salt marshes, consolidating of embankments, sediment management, climate charge	
How long?	Amplification of tidal range occurs since ages. Increase due to maintenance for shipping (interacting with sand mining) is occurring since 1970's	
Who? User group	 Tidal intrusion has been appointed by the estuarine managers. Stakeholders frame the problem in terms of safety, loss of dynamics, ecological values 	
Impacts	 Rise of high waters, loss of large scale estuarine dynamics, strong currents, hindering shipping, sediment import, concentration of suspended sediments 	
Responses	Flexible disposal of dredged sediment, Nature restoration including controlled flooding, joint vision development of Flanders and Netherlands	

Weser Estuary

Prioritised Pressure	Salt Water intrusion: Encroachment of Salt Water into ground- and surface water bodies and soils of coastal landscape and river banks	
Where?	River outlet of the estuary up to the freshwater border	
Why? Which drivers?	 Natural process in the transition of marine and terrestrial coastal zone. The up-stream movement is triggered by deepening the estuary and climate change 	
How long?	 Accelerated Salt Water intrusion is directly time dependent to the deepening of the estuary. First great changes after deepening in 1890's 	
Who? User group	• The upstream movement of the salt/freshwater border is of widespread recognition. Particularly affected are farmers and water suppliers	
Impacts	 Salinisation of the water/soil: habitat loss and changes in species composition, affecting water suppliers, water management and agriculture 	
Responses	Assessment of impacts of deepening and compensatory measures, measures tot prevent deterioration of water bodies (WFD)	

3 Good governance for estuaries



Based on the results of earlier European studies¹⁰, a governance approach for sustainable estuaries must be based on an integrated approach, stakeholder involvement, an institutional structure that supports collaboration, an adaptive approach and shared learning. Each of these aspects of good governance is discussed below.

Integrated approach

Effective estuarine management demands strategies that consider the system as a whole. This can be achieved through cause-effect analyses that cover the whole estuarine system, and through creating a common understanding of the functioning of estuaries in relation to both ecological and social features. Strategies should pursue sustainable solutions that are both holistic and integrated, and agreement should be reached on common principles on which these strategies should be based. A downscale to a regional and local level is strongly recommended: strategies should be connected to regional and local initiatives. The ecosystem services approach can help to show the socio-economical values of estuaries and the production of social benefits¹¹.

Example Weser Estuary

Within the business idea of the Master Plan Wesermarsch it is suggested that broadening the scope of the plan could help, such as taking into account the requirements of nature conservation or tourism development. By broadening the scope of the Master Plan Wesermarsch new coalitions can be built and a broader basis for solutions could be founded.

Stakeholder involvement

Stakeholder engagement is essential in order to find synergies, to unite under an agreed vision, to overcome knowledge gaps and to increase the legitimacy of estuarine policies. The establishment of transparent, representative and coordinated stakeholder platforms, in which all stakeholders are invited, is necessary to achieve these objectives.

Example Göta Älv

Stakeholders at Göta Älv concluded that a cooperation group for structured coordination, collaboration and communication amongst different stakeholders is needed. This should include different policy and political decision levels (i.e. national-regional-local), several municipalities, different departments within the municipalities, several national-local authorities, the private sector and landowners. The cooperation and collaboration also needs to be time effective and needs to be perceived as relevant.



Göta Älv near estuary mouth and potential location of downstream barrier (view towards the sea)

¹⁰ TIDE, Deltanet, Coastal Communities 2150, Climate Proof Areas, SIC Adapt!, MARE

Hürter, D., J. Kreß, W. Heiber & K. Hamer (2013): Specific Roadmap for Integrated Estuarine Management (Weser Estuary).

Study in the Framework of the Interreg IVB Project TIDE. 21 pages. Bremen, Oldenburg.



An institutional structure that accommodates collaboration

Management of estuaries should be supported by a coherent structure of stakeholder and communication platforms, and by a coherent structure of policy programmes. These plans must support the common goals of stakeholders and encompass the European Directives. In this, all estuarine issues should be assessed as multi-issue problems, with appropriate multi-issue solutions – following the goals and perceptions of all stakeholders.

Adaptive approach

The complexity of estuaries leads to continuously changing circumstances and uncertainties. Therefore estuarine governance should be viewed as an adaptive approach, in which long-term uncertainties play an important role. For each new challenge the directions in which the objectives lie, should be considered within their new context. This requires an approach based on learning and monitoring. Data should be jointly gathered and maintained in a common and widely available database. Adaptive monitoring programs should be fit-for-purpose, allow evaluation of strategies and objectives, and allow understanding of the functioning and development of the whole estuarine system. Planning should be cyclic: monitoring and evaluation must lead to continuously adapting strategies and measures.

Aerial photo of the Schelde





Shared learning

Successful estuarine governance is based on learning about the functioning of the system, and learning about joint cooperation and coordination. Due to the dynamic character of estuaries learning experiences, instead of planning and setting pre-defined objectives, should motivate choices. Learning should include the basic estuarine processes, structures and demands, based on historical developments and appropriate techniques¹². (Inter)national networks should be created to improve the effectiveness of policy implementation in estuaries by exchanging experiences, improving policy instruments, optimizing current situations and developing common methodologies. In this, stakeholders work on joint research programmes, based upon joint fact-finding and multidisciplinary research, connected with the cyclic planning process.

The governance challenges in the EMOVE-estuaries, as described in chapter 2, indicate that these principles of good governance are not always and not sufficiently implemented through European estuarine policies. By turning stakeholders into shareholders the EMOVE-partners aim to contribute to the implementation of these principles, as is explained in the next chapter.



View from Harriersand at the Weser

¹² Hürter, D., J. Kreß, W. Heiber & K. Hamer (2013): Specific Roadmap for Integrated Estuarine Management (Weser Estuary). - Study in the Framework of the Interreg IVB Project TIDE. 21 pages. Bremen, Oldenburg.

E Essentials from EMOVE: turning stakeholders into shareholders

The EMOVE project shows the most important pressures in estuaries. These pressures lead to three basic governance challenges that need to be addressed in estuarine management: fragmentation (of institutions, judicial means and budgets), adaptation (to deal with the system-complexity) and a lack of participation. These challenges show that the principles of good governance are not always and not substantially implemented in estuarine policies.

Following the principles of good governance, this European governance vision seeks to improve the implementation of good governance by turning stakeholders into shareholders. We define shareholders as stakeholders who feel themselves responsible for their estuary, as if the estuary belongs to them. Shareholders perceive a strong interrelationship between the estuary and their own lives, based on the indispensable dependency of their lives on the values the estuary provides. Shareholders feel responsible for the people, planet and prosperity of the estuary. According to this, the EMOVE-project focused on dealing with stakeholders. By turning stakeholders into shareholders fragmentation can be (at least partly) overcome, and adaptation and participation will be strengthened. By turning stakeholders into shareholders partnerships can be developed, that address specific issues within the estuary which cannot be adequately dealt with on their own.

Building trust as a key element

The EMOVE project shows that building trust is a key element in turning stakeholders into shareholders. Trust between stakeholders, trust between stakeholders and government, and trust between stakeholders and experts. The results of EMOVE indicate that trust is an essential ingredient and can serve to overcome difficulties introduced by fragmentation in institutions, regulations and funds. Building trust precedes joint goals and leads to the sharing of resources (capacity, knowledge and funding). Building trust starts between people, and should – eventually – be institutionalized between organizations.

Building trust between stakeholders, government and experts in estuaries can be achieved by:

- initiating and stimulating an informal and continuous dialogue;
- developing a shared view on the functioning of the estuarine system;
- an action-orientated approach in which long-term visioning is combined with the short-term action;
- enlarging the room for solutions (also for argument's sake, letting go of set spatial claims and regulation) and creating interdependency between stakeholders.

It is important to note that the process of building trust never starts from a blank sheet. The existing situation, with a multitude of experiences, perspectives and reputations, including (dis)trust, complicates the development of trust.



Göta Älv estuary mouth (view towards the sea)

1.

Initiating and stimulating an informal and continuous dialogue

The basis of trust is found in an informal and continuous dialogue between stakeholders, between stakeholders and governments and between stakeholders and experts. This dialogue should be about issues, goals, ambitions and actions concerning the estuary. Governments should initiate such a dialogue and facilitate an informal platform where stakeholders, experts and governments meet. This platform can use the existing – mostly more formal - stakeholders platforms which already exist in several estuaries. At such a platform all stakeholders are sitting together at one table, instead of sitting opposite to each other. This platform facilitates early involvement of stakeholders and experts in agendasetting and issues. The dialogue can be strengthened if stakeholders are empowered to present and pursue their own ideas, instead of governments and experts setting the agenda. Furthermore, governmental management and NGO's should encourage their representatives and experts to speak at this platform from the beginning, in an open and informal manner.

Experiences from Göta Älv: towards a long term shared knowledge based solution

The planners of Göteborg are currently working on a proposal for the construction of operable barriers in the Göta Älv up- and downstream of Göteborg to protect the central parts of Göteborg from flooding. In the EMOVE workshops planners and stakeholders proposed to continue the dialogue between them. To achieve a long term shared knowledge based solution (that may, or may not, be the barriers), a stakeholder network is considered necessary: one with regard to the sea level rise, and one to improve the current network for sewage and 'additional' water management in the region.

Developing a shared view on the functioning of the estuarine system

Stakeholders, experts and governments should have a shared view on the functioning of the estuarine system, its developments and its uncertainties – now and in the long term. The EMOVE stakeholder workshops have shown that a shared view gets stakeholders to understand the functioning of the system and helps them to develop shared images of suitable and unsuitable solutions for perceived problems. This shared view should be integral and holistic, instead of sectoral, and encompass insights in the tipping points within the system's functioning.

Experiences from the Schelde: a shared view on the functioning of the estuary

Within the workshops on the Schelde-estuary stakeholders talked about the functioning of the estuarine system and shared their views on it. They drew a systems diagram, but this was not always easy. Finally their views were incorporated within a narrative about the historical development and functioning of the estuary. The narrative helped to comprehend a shared view among stakeholders.

Facts are the basis of a shared view on the estuarine system, but it is important to realize that all participants at the dialogue should accept these facts. Disputed facts can disrupt trust and ignite discussion, misunderstanding and debate. A continuous dialogue between stakeholders and experts, the method of 'joint fact-finding' and the use of interactive tools, like the Estuary Game, help to collect and share accepted facts and a shared view.

Joint fact-finding.

In the method of joint fact-finding coalitions of scientists and policy-makers and other stakeholders, with different points of view and interests, are working together in order to develop data and information, analyse facts and forecasts, develop common assumptions and informed opinions, and, finally, use the information they have developed to achieve joint decisions.

3. An action-orientated approach in which long-term visioning is combined with short-term action

EMOVE has demonstrated that progress can be made with an action-oriented approach, in which stakeholders are encouraged to jointly identify ideas and projects that address specific problems in the estuary and address their own ambitions. This approach helps to identify and initiate concrete actions that are supported by a wide range of stakeholders, rather than getting lost in the abstract world of formal policy making. In action-based 'doing' and 'learning-by-doing' stakeholders experience the power of cooperation and the benefits of shared success. In such an approach, governments should facilitate and initiate, but not automatically take the lead. The lead should be as much as possible taken by stakeholders and participation of stakeholders should be based on co-production, co-decision and even 'stand-alone' from governments (societal-private initiatives). The feasibility of such solutions can be increased if initiatives are developed as business ideas which are adopted by their stakeholders. Furthermore, fragmentation of funds could be overcome in instruments that could create a mutual fund: area funds or area cooperation.

EMOVE shows that a successful approach should have a focus on concrete, joint action, with the long-term perspective and uncertainties in mind. In this approach periodical renewal of a joint agenda with long-term perspectives (on estuary functioning and on the process of interaction between stakeholders, government and experts) is necessary. The EMOVE business ideas show that stakeholders can come into action without such a vision. Such an incremental approach helps to - step-by-step - develop an integrative document that brings both short-term and long-term interests together and give stakeholders the opportunity to develop a shared point at the horizon. But only when sufficient trust between stakeholders, experts and governments has developed, can such a document be developed. Furthermore, unfruitful discussions about a shared long-term vision that hinder the development of trust should be avoided.

Experience from the Weser: installing a stakeholder platform

The stakeholder workshops on the Weser Estuary have led to the conclusion that a stakeholder platform should be initiated. This platform should not be focused on the short term and individual projects, but on the long-term developments within the estuary. This initiative can use the experiences on the Elbe-river where such a forum is already installed in 2014, and where governments, experts and stakeholders are already experiencing the benefits of such a dialogue platform.

4. Enlarging the room for solutions and creating interdependency between stakeholders

The EMOVE-workshops showed that getting more stakeholders into the dialogue, enlarges the range of possible solutions, and therefore the chance of successful shared initiatives. The scope of the dialogue in estuaries is traditionally based on transport, ecology, agriculture and water-issues. Broadening this scope shows interesting perspectives. For example, combining ecological restoration with agricultural and recreational use, makes initiatives attractive to many more stakeholders. Ambitions on an estuarine level can then be connected with local initiatives. Thus, it is important to look outside the physically perceived boundaries of the estuary. For example, deep saline seepage can extend the influence of the estuary far beyond its visible reaches and urge stakeholders to look for solutions and changes far beyond them. Furthermore, combining and connecting functions and enlarging the room for solutions can create interdependency between stakeholders. If stakeholders need each other to reach their own goals, and need to work on shared initiatives, they are encouraged to cooperate.

Experiences from the Schelde: Growing Land by Shifting Reclamation makes stakeholders interdependent

The business idea Growing Land by Shifting Reclamation came up from stakeholders at the Schelde-estuary to be explored. In this business idea tidal dynamics are brought back in agricultural polders for 50 -100 years, to let the polder grow 50 - 100 cm in height with estuarine sediment. At the same time, agricultural polders are created from already high silted-up nature areas. In this way, and at the same time, fertile agricultural land, more safety against flooding and valuable ecological areas are created. And furthermore, ecological and agricultural stakeholders become more interdependent on each other: they need each other to reach their own goals.



Time plays an important role, and this can cause additional tensions

When developing trust the role of time cannot be underestimated. Trust, the development of trust and the institutionalization of trust take years till decennia to develop and institutionalize¹⁴. But this can cause tensions as well: developments within estuaries can lead to increasing pressures and urgencies to take action, while trust might not be sufficiently developed. Trust which is still fragile can be harmed by reckless action.

Provide room for cultural differences

In EMOVE it has been shown that room for regional and local differences within estuaries, following the institutional, historical and cultural differences of each estuary, is necessary. Developing trust in Germany, Belgium, Sweden or the Netherlands all have their own characteristics. Thus, there is a need for tailor-made approaches.

Personal leadership to bring stakeholders together and to overcome deadlocks and hick-ups

Personal leadership is essential in activating stakeholders. People that stand up at difficult moments, who are able to bring other people together and inspire them to make steps forward. Personal leadership can overcome deadlocks and hick-ups. These people are not necessarily people from out the government or politicians. People from stakeholders or citizens can take such a leading role as well.

Use of interactive tools that support trust, transparency and a joint-vision on the system

This use of interactive (communication) tools can enable stakeholders to internalize the functioning of the estuary and possible strategies. This internalization should be based on room for every stake and stakeholder, the possibility to play with, and learn about, the functioning of the estuary and about the impact of strategies. Interactive tooling and social media can support this internalization¹⁵.

¹⁴ Bauer, J., P.M. Herder, Designing Socio-Technical Systems, in: Dov Gabbay, Paul Thagard, and John Woods (Eds),

Handbook of the Philosophy of Science: Handbook Philosophy of Technology and Engineering Sciences, Elsevier Publishers, pp 601-632, 2009. ¹⁵ Roovers, G. (2012); De systembenadering van professionals als drager van de besluitvorming in het rivierbeheer

The system approach of professionals as foundation of decision-making in river basins; Technical University of Delft; Phd; ISBN: 978-90-5335-628; [In Dutch]



The Estuary Game

Within the EMOVE project an Estuary Game has been developed. Through the game stakeholders were able to be an estuarine manager, take measures and learn about the functioning of estuaries, including the pros and cons of estuarine measures. Within the game the impact of measures are visualised immediately, thus improving the understanding of stakeholders regarding the short term and long term effects of measures on the functioning of an estuary.

By playing the game:

- stakeholders can experience the cohesiveness and complexity of estuaries.
- the knowledge of stakeholders about dominant physical processes in estuaries is increased.
- stakeholders are urged to think about a comprehensive vision on sustainable development of an estuary.
- stakeholders are triggered to consider different views and positions regarding estuarine management.

Thus, an interactive tool like the Estuary Game supports:

- an open dialogue between stakeholders, and between stakeholders and experts.
- learning and internalizing the functioning of the estuary and the development of a shared view on its functioning.

By doing this, the Estuary Game helps to create a common ground for developing shareholders and – finally - guardianship.



5 Reflection



How to get 'from stakeholders to shareholders'

Supported by the experiences and results of the EMOVE project, this Governance Vision presents feasible recommendations to improve the governance of European estuaries and to come into action. The main feature of this vision is that integrated and sustainable estuarine management should be based on activating stakeholders to evolve into joint shareholders of the estuary. The EMOVE project shows that turning stakeholders into shareholders in essence is achieved by building trust between stakeholders, between stakeholders and experts and between stakeholders and governments.

Building trust between stakeholders, government and experts in estuaries can be reached by (1) initiating and stimulating an informal and continuous dialogue, (2) developing a shared view on the functioning and uncertainties of the estuarine system, (3) an action-orientated approach, in which a long-term vision is combined with the shortterm action, and (4) enlarging the room for solutions and creating interdependency between stakeholders. It is important that action and building trust come first. A shared long-term vision may come later, when trust is institutionalized. An incremental and cyclic step-by-step (planning) process is needed, with a process-orientated way of working. Governments should initiate and facilitate, but do not have to take the lead.

Trust can help to overcome challenges introduced by fragmentation, but it should be realized that adapting institutions and developing more flexible institutions could help to overcome fragmentation as well. Thus, searching for combinations of developing trust and adapting institutions might be of additional value to successful governance of estuaries. Furthermore, it should be realized that some social-economic drivers for estuarine complexity are on an international level and are difficult to address on an estuarine scale. For example, the ongoing development of bigger vessels puts more and more pressures on estuaries and is beyond the influence of estuarine stakeholders.

'From stakeholder to shareholder' as a bottom-up strategy

The EMOVE stakeholder-workshops have shown the ignition of trust, induced by the above-mentioned recommendations. Still, this ignition of trust has to be implemented within the 'going concern' in all three estuaries. This raises the question on how this can be done successfully, bearing in mind that previous recommendations of good governance often have not – or not substantially - been implemented by estuarine governments. This implementation requires political urgency. Only if politicians and governments have an urgency (and policy window) to act, implementation of recommendations for good governance and building trust can be expected. Hence, political leadership is needed to do so successfully.

A different strategy might be more successful, a strategy that fits the EMOVE-motto 'from stakeholder to shareholder'. This strategy comprises a bottom-up approach, in which stakeholders become more empowered, form vital coalitions and come into action together. Hence, a regional urgency is leading, instead of a political urgency. Instead of political leadership, personal leadership is needed: who is really taking care?

Becoming shareholders: transition from governance to guardianship.

The EMOVE project showed that governments do not automatically come into action and take the lead. The development of shareholders into vital coalitions thus might lead to guardianship: whereas governance deals mainly with the activity, process, and quality of management and decision-making, guardianship includes aspects of care and responsibility for the estuary itself. Decision-making is then not only based on formalised management structures but also on more altruistic goals to protect and care for an estuary for future generations. Governance based on compromise often only results in a preservation of the status quo. Joint fact finding and trust provide the opportunity to develop a vision about what benefits the various stakeholders, but also what is the best possible outcome for future generations. When stakeholders become shareholders they also share the responsibility for the guardianship to achieve such a desired vision, from which people, planet and prosperity benefit.



View on the Weser



A GOVERNANCE VISION

on adaptive estuarine management

Colofon

Ministry of Infrastructure and the Environment, the Netherlands Flemish Ministry of Mobility and Public Works, Belgium Federal Waterways Engineering and Research Institute, Germany

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