Malmö Water Plan, From Idea to Practice Workshop

7 May 2015
This workshop was planned with the hope of bringing experts together to the city planning office of Malmö municipality and giving them the opportunity to discuss the Plan for Malmö water with focus on the water governance. On the May 8th Malmö stad organized a conference on Malmö water and climate in which the important target group was the politicians and officials who usually do not work with water and climate change issues. The goal was highlighting the necessity for the city of Malmö to adapt to the climate change. Kees van Leeuwen, from University of Utrecht in Netherlands and KWR Water Cycle Research Company was invited, among other speakers, to give a presentation on water governance. This workshop was organized on May 7th through strong collaboration between Lund University, Sweden Water Research Company, Malmö stad and VA SYD. The suggestion for the workshop came from Tyke Tykesson from city planning office of Malmö stad. The planning came from Misagh Mottaghi from Va-teknik at Lund University, when she was doing part of her research studies in the Netherlands at KWR. The goal was achieving a broader perspective of the ongoing work with Malmö water plan and weighing up the pros and cons of the current framework. Below are the list of speakers and participants that were from different departments and specialties which are somehow involved in the future Malmö water plan.

Speakers:

Kees van Leeuwen is a principal scientist from KWR Watercycle Research Institute, in the Netherlands. He studied biology and is a professor of water management and urban development at Utrecht University. He used to work at the European Commission as a Director of the Institute for Health and Consumer Protection of the Joint Research Centre in Ispra, Italy. He currently coordinated the City Blueprint action group of the European Innovation Partnership on Water of the European Commission: http://www.eip-water.eu/City_Blueprints

Stef Koop is from KWR Watercycle Research Institute, in the Netherlands. He has reviewed and revised the city blueprint assessment framework for sustainable water management.

Misagh Mottaghi from VA-teknik Lund university, is an architect, urban designer and leader of the two projects, “Adaptive urban landscape and solutions to water challenges in Europe “and “Water resilient cities of Sweden“. Both projects are addressing the role of physical and spatial planning in tackling the flood issues in urban areas.
**Participants:**
Tyke Tykesson, Tor Fossum, Åse Andreasson and Mikael Ström Remin from city planning office of Malmö stad
Rasmus Fredriksson from environmental department of Malmö stad
Andreas Nordin and Anders Nilsson from streets and parks department of Malmö stad
Christian Röder from real estate department of Malmö stad
Kristina Hall and Christopher Gruvberger from VA SYD, water utility
Kees Van Leeuwen and Stef Koop from KWR, water cycle research institute
Misagh Mottaghi, Karin Jonsson and Salar Haghighatafshar from VA-teknik Lund University

**Thursday 7 May 2015 13:00-16:30**

**Introduction**
This workshop was part of the two ongoing research projects called “Water resilient cities of Sweden” and “Towards adaptive urban landscape and solutions for water challenges in Europe” lead by Misagh Mottaghi at VA-teknik Lund University.

Tyke Tykesson, who is responsible for the Malmö water plan, welcomed the participants and emphasized the role of water governance in the process of providing the Water Plan for the city of Malmö.

The workshop started with an introduction part. Kees Van Leeuwen, together with Stef Koop, held a presentation on governance challenges in integrated water resource management. The presentation was continued with a short presentation by Misagh Mottaghi about different approaches taken by Dutch cities of Rotterdam, Amsterdam, Dordrecht, as well as Copenhagen which have been flooded severely in their history. The focus was on how water governance should work and what will happen if we do not have the appropriate framework, legislation and water governance.

The definition of Water Governance was emphasized in the introduction part. According to the UN, “water governance encompasses the political, economic and social processes and institutions by which governments, civil society and the private sector make decisions about how best to use, develop and manage water resources“.

As required principles to water governance, the five principles of “taking the initiative”, “emphasizing outcomes”, “seeking consensus”, “being reasonable” and “maintaining credibility” were mentioned. As a general conclusion on the introduction part, cities require a
long-term vision and implementation plan. If political leaders wait, the cost of inaction will be very high and more expensive adaptation measures will be necessary.

In order to achieve effective water governance, cities need to become aware of the existing gaps and try to bridge them. According to the OECD multi-level governance framework (OECD, 2011; OECD, 2015), the gaps are divided to the seven categories:

- **Administrative gap**: “the ecological dimension of water cuts across spatial scales, but institutional, functional and hydrological logics affect its governance in cities. “
- **Information gap**: “information asymmetries and difficulty in collecting and sharing data can affect the decision-making process. “
- **Policy gap**: “several policy areas influence water governance in cities; policy coherence is often overlooked. “
- **Capacity gap**: “limited scientific, technical and financial capacities of the local actors make it difficult to implement water policies and strategies properly.”
- **Funding gap**: “unstable or insufficient revenues undermine the effective implementation of water responsibilities at the sub-national level. “
- **Objective gap**: “conflicting objectives across water uses (agriculture, energy, etc.) and stakeholders can compromise long-term targets for integrated urban water policy. “
- **Accountability gap**: “difficulties in ensuring transparent practices across the different constituencies affect engagement, deliberation and decision-making. “

After the introduction part, the participants had a 20 minute discussion about challenges that the city of Malmö deals with. It was mainly about extreme events such as cloudbursts and sea level rise as well as the difficulties of ongoing work with the water plan.
Challenges:
What are we facing? What kinds of flooding related issues do we have in Malmö? Will the problems increase?

We do not exactly know what we are facing in Malmö. Our knowledge goes back only two years, when in 2013 the city had been flooded not only from the sea level rise, also from an extreme rainfall. The main challenges which have been realized so far are divided into:

- **Climate change**
  Malmö, as well as many other cities in Northern Europe, is facing extreme climate change which may worsen water services and the quality of urban life. We know the climate change is getting more intense and unpredictable and we have enough scientific evidence for this. Modeling studies, such as the one done by IIASA, show that the extreme weather events will increase 5 times from now until 2050 (Jongman et al., 2014). We are already experiencing serious problems here in Malmö since we are witnesses of both sea level rise and heavy rain events. The height of recent tides was the largest since the past 130-140 years.

- **Two major types of floods**
  Malmö mainly deals with two kinds of floods. Flooding from the sea level rise and flooding from the extreme rain events. Flooding from Risebergabäcken (stream) is not a real problem except in some specific areas where it causes serious problems.

- **Public awareness**
  There is limited public awareness in these issues and people are convinced that they do not have any power or possibility to do anything themselves. They rely on the municipality too much when dealing with these issues. People can do a lot to protect themselves and avoid many issues. We could see that people did not understand the magnitude of the rainfall so much and instead e.g. they just drove their cars without even thinking that they could get stuck when the water is too deep. Bus drivers drove straight into the heavily flooded underpass and all the people had to be evacuated. Some people invest a lot in their basements and sometimes fill them with high-tech audio-video facilities without even thinking about protecting it from the flood. They think it is municipality that needs to handle it. They should have taken some responsibility for their own safety and their house. They can e.g. invest around 5000 Euros more and have waterproof walls. If they are aware enough of the threats, they will never arrange an expensive basement without preparing it for the worst case flood situation.
○ **Political awareness**  
It is surprising that the initiative did not come from Swedish politicians after the last rain compared to Danish politicians which took initiative after the big flood in Copenhagen. Politicians often react on issues only if the issue affects people, who vote for them. It seems the issue was not yet close enough to affect those people. They usually look at the current severity of the event. Fortunately the events were not as heavy as many other cities in Europe. Nobody died and there were only some damages, including cars and properties. This indicates that we also need to invest on increasing the awareness among the politicians.

○ **Educational gap**  
When it comes to water challenges we really need to improve the educational system. It is necessary even among the politicians. To most of them, the only problem is the size of pipes. Thus they give signals that the solution is having the bigger pipes. Unfortunately this is the perception of majority of people, even some of those who work with water challenges or those who have important role in shaping the urban environments. Bigger pipe is not the solution since it is expensive and inflexible. It is also not an environment friendly solution. A calculation is done by VA SYD on the minimum size of the pipe system that would be able to handle the last rainfall in August 2014. The 2000 km pipe, one meter in diameter, is needed for the extra water from Rosendahl and Turbinen drainage areas which cover approximately a third of Malmö. This is an enormous investment and entails a huge infrastructural change which makes it understandable that the smart solution is not only burying the bigger pipes.

○ **Time matters**  
It is essential to go through all the different stages of “being convinced with facts”, “putting the plans in place” and “getting support from third parties and other stakeholders” in which timing is crucial. We need to be considerate of time and reduce it between idea and implementation as much as we can. E.g. in the new planning of Malmö, we are not supposed to build less than 3 meters above the sea level, due to the sea level rise. Although the decision was made almost seven years ago, it was addressed in the comprehensive plan just one year ago while many constructions have been going on without considering this rule for seven years. Unfortunately most of the newly built areas in the city are actually below this limit, central city and the old city, western harbor where lots of money have been pumped in during the last couple of years and the northern harbor where industries will be concentrated for the next 50 years.
- **The Streets**
  After the Sven storm in 2013, in which the water rose almost two meters, one run-off modeling was provided by the municipality. In this model, Malmö is imagined to undergo the same rain event as Copenhagen went through in July 2011. It shows that if the rain had fallen evenly, it will mainly remain on the streets, especially in central Malmö. Although the map is completely unrealistic and without the knowledge of the exact magnitude, it gives us some ideas of what will happen.

- **Insurance companies**
  According to reports like IIASA, insurance cost for flooding have increased 5 times more in the last 10 years and expected to increase more in the next decades. Malmö needs to avoid the situation where insurance companies refuse to insure people’s properties. Insurance companies made a calculation on the cost of flooding in 2014 and it was 100 million Euros. They estimated that the price for insurance for 6 hours of rain in Malmö in 2014 was around 30 million Euros which means a third of the total cost for one year.

- **Sufficient material**
  The materials such as risk assessment and economic model are of crucial importance for increasing the awareness between different stakeholders. Malmö needs risk assessment in order to show that if we do not react now and such crisis happens again, it will cost much more. Unfortunately, at the moment, there is no awareness of the necessity for thinking long term among the economists. On the other hand we need to be aware of the fact that many of economic models are lousy. There are institutes like IIASA or JRC or the European Environment Agency in Copenhagen, which work on such predictions and they can provide us with lots of information. Through using right materials the politicians will also become more aware of the situation. Sometimes we can use the materials and experiences of other cities as shortcuts. E.g. after hurricane Sandy in New York, the city made a very comprehensive study. They concluded that artificial infrastructures such as pipes are not the solution. They realized, in order to reduce the combined sewers’ overflow there is a need for greener solutions. In some cases we can also use reports from such cities, to convey that message.

- **Involvement of different parties**
  There is a need for involvement of different parties (OECD, 2015). The challenge is a multi-dimensional one which requires a strong collaboration between different sectors and parties such as insurance companies. Through such involvements, it would be even easier to convey messages to political use. We need to take initiatives. We really have to think about ways to absorb their attention and convince them.
○ **Lessons from Copenhagen**

Copenhagen is a very close neighbor to Malmö, just on the other side of the Öresund Bridge. Copenhagen and Malmö went through very similar crisis which means Malmö can learn a lot from it. Although there are some differences between these two cities, they are very similar in many aspects which make them comparable. From the climate point of view, they are quite similar but at the same time different in many ways. Copenhagen sewage system is older than Malmö and in Malmö we have more separated systems. Malmö has around 35% combined system and 65% separated system while Copenhagen has almost 90% combined and only 10% separate system. The rain flooded Copenhagen should also have affected Malmö, but that day Malmö was lucky enough. A summary of the experiences in Copenhagen has been published (Leonardsen, 2012).

○ **Magnitude**

Of course, the size of event will be very important for cities to react. The magnitude of what was happening in Copenhagen made the population aware of the necessity for changes in the laws. Besides, it is also crucial which priority the government is putting on the city. E.g. Copenhagen is capital, which means the Danish government is focused on it while our government is focused on Stockholm, where issues of this kind are rarity. Accordingly, sometimes there are big differences between the cities. Copenhagen has stronger possibilities and of course higher awareness among the people also makes the necessity for changes more understandable.

○ **The costs**

We know it will cost a lot of money. On the other hand, the costs of inaction are much higher, and that has been the reason why Copenhagen has started an action to make the city more resilient. Next step is finding the way to make people understand that this will cost and they need to provide the money for this. We have to find understandable solutions for the economists and politicians which make it easier to implement the measures.

**References**


**Workshop questions:**
The participants were divided into three working groups and each group was discussing all the three questions for one hour. Each working group had a chair person who had the responsibility to report as well. At the end the rapporteurs talked about the key answers to the questions.

The workshop was addressing the three following questions:

1. Where does Malmö stand today? Where should it go? What have we done so far? What has been achieved?
2. What is missing? Who are the main stakeholders? What is the strategy for the community involvement? How do we include other stakeholders?
3. What can we learn from other cities? Do we need a central coordinating unit in Malmö? Any other recommendations?
Question 1
Where does Malmö stand today? Where should it go? What have we done so far?
What has been achieved?

- **Threats.** Malmö, as well as many other cities, is going to face extreme climate changes and it is also likely to suffer from enormous damages from catastrophes if it does not get prepared to deal with water challenges. Recently it has also experienced two extreme events that revealed some vulnerability.

- **Climate resilience.** Malmö municipality is aware enough that it needs to be climate proof as well as water proof and comprehensive planning plays an important role within this process.

- **Win-Win situation.** Malmö wants to stay attractive, by being secure. To get there, different plans need to work together which requires strong collaboration between different departments. E.g. Cloudburst plan needs to be matched with the plans for transportation, green infrastructure and etc.

- **Densification.** Since we do not want to expand the city over the farmlands, we decided to go for inner-city densification. The decision is already applied in the comprehensive plan, which might not necessarily be matched with solutions for the water challenges. Since densification usually leads to thinning of the city greenery and replacement of parks with buildings, we need to focus on roofs, edges of the streets as well as multifunctional open and public spaces. We also need to regulate the design of the streets in development plans as well as being aware of the difficulties of addressing multi-functionality in the planning stage.

- **Influence on land owners.** We have to rely on actions both on private properties and public lands. Municipality does not have the ownership of most of the lands. The only control that municipality has over these lands is during the planning phase. Accordingly, providing the cloudburst plan is very important.

- **Impact study.** We have made rainwater modeling “Översvämningskaraktärisering” which can be used as input in planning on different levels.

- **Cloudburst Plan-initiation.** We know what we need to do, but we have not done much yet. The Cloudburst plan was already decided and started just two months ago.
Cloudburst plan and action plan can give us some input when discussing localization of important functions.

- **Awareness.** We have achieved more awareness but it started recently and has a long way until satisfactory. Besides, Swedish records gave us more information on the amount of reported incidents.

**Question 2**

**What is missing? Who are the main stakeholders? What is the strategy for community involvement? How do we include other stakeholders?**

- **Plans.** The key is comprehensive plans which should be provided before any other measures.
- **Budget.** Most probably, we need a separate funding for climate adaptation. We also need to find out how to finance the measures.
- **Enough awareness.** Even if the plans are in place, awareness inside municipality, among politicians, private and public sectors, etc. need improvement.
- **Legislation.** There is need for updating the legislation in regards of the ability to defend against flooding. We need synchronized policies and set of laws. E.g. If we want land owners to take the responsibility of security, in some cases we need to do against the national law.
- **Implementation of rules.** There is a delay between setting rules and implementation. Also some of the cities’ critical infrastructure are not still covered by any new rules e.g. in terms of sea level rise new buildings should be at least 3 meters above the sea level, while the city tunnel is located much lower.
- **Tax system (paying).** With current legislation we are only allowed to develop the specific area where the money is allocated to. Usually areas with more water issues have inhabitants with lower income.
- **Social economic models.** We need to improve our social economic modeling to see if there is any cost benefit in investment. Benefit analysis is crucial.
- **Risk assessment.** Risk assessment is needed, e.g. in Augustenborg eco-city no evaluation has been made to show the exact differences with or without such investments.
• **Coherence.** There is scattered responsibility among a series of different authorities.  

• **Stakeholder’s involvement.** It is difficult to collect the responsibility in one function accordingly and thus the shared responsibility is needed. There are some main stakeholders such as lands’ private owners, the government and politicians and etc. Of course the insurance companies are among the most important stakeholders. We can also observe and learn from other successful cities and see how they improved their involvement. Maybe some parts of their approach can be useful for Malmö.

• **Community involvement.** The power of communities should not be underestimated. Although the goal is to work with community involvement in the intended cloudburst plan, it will be very limited and needs more initiative.

• **Urban farming.** There are some companies and parties who work with this topic and we need to take advantages from their activities. They can be very effective on people’s view on urban farming as well as avoiding some possible problems. E.g. there are some people who apply measures in their gardens while they don’t even realize how necessary it is to consider how they affect other people’s properties.

• **Education.** We need to work more on different levels of education through climate adaptation courses, programs, even games and so on. This will help to fill the gaps as well as increase the awareness among people.

• **More implementation.** In order to become more experienced we need more implementation. Besides, such projects would be very useful to transfer messages to the society. We need more implementation of icon buildings, innovative storm water solutions etc.

• **Communication group.** In order to make the process more efficient, communication through media, website, mobile application and such is necessary.

• **Controlling.** We have to plan both for new urban areas and existing ones while having more control over the implementation process. Gaining the control over the implementation protocol requires modification of laws. E.g. by the current law, the municipality is only responsible for a 10-year period and no more, while if it turns to a 100-year period, it will be more long term responsibility for the municipality.

• **Follow up.** Municipality needs to follow up the procedure.
Question 3
What can we learn from other cities? Do we need a central coordinating unit in Malmö? Is there any other recommendations?

• **Combining values.** We need to combine different values and develop check list for the comprehensive plan. E.g. we need to show the benefits for the cloudburst plan clearly which is not addressing only water challenges, also other challenges that city needs to deal with.

• **Looking ahead.** It is important not to only look at the current situation but also plan for the future.

• **Coordination unit Yes and No.** We are still not sure if we need a separate department such as Climate unit. In Malmö stad, we have decided to start with working in existing groups and it is obvious that we need coordination and understanding in and between the groups. When we get to implementation and communication phase, we will see if we need any coordination office.

• **Right language.** In order to get supports from politicians, we need to find the right language to convince them. Also for communicating with people, we need to do the same.

• **Trust.** Communities need to trust the municipality. If they make sure that the city will do everything to protect them, they will collaborate more and we can get use of it.

• **Right direction.** Since this is a long term process, we need to choose the right direction for all the planning stages. We need to include all parties, public and private sectors. It will also make it easier for implementation.

• **Localizing the solutions.** We need to combine our own experiences with other cities’ experiences. Although it is essential and convenient to get good view of other cities with similar challenges and update ourselves, we have to look for the solutions locally.

The report is written by

*Misagh Mottaghi*