

Recommendations for an Effective Application of the DST towards becoming a Water Sensitive City

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Abbreviations

CAC	Climate Adaptation Cycle
CCA	Climate Change Adaptation
DST	Decision Support Tool
ESS	Ecosystem Services
ECO	Ecosystem Services Tool
GAT	Governance Assessment Tool
SAT	Self-assessment Tool
WSC	Water Sensitive Cities

General Recommendations

The following recommendations are made for both CATCH partner cities and the cities that will consider applying the DST in the future.

- To achieve the most effective results from the DST, the **four components (SAT, CAC, ECO, GAT) should be applied by an interdisciplinary team** consisting of representatives from the relevant stakeholders of CCA. This would also align with a common thread across the four DST components: collaboration across disciplines and sectors. There is no blueprint on which departments or organizations should be involved in the application of the DST, nor on the number of individuals or organizations to involve in the team. Since the target users of the DST is midsize cities, involving too many individuals or organizations is not advised both due to possible capacity constraints and to keep flexibility.
- If deciding on whom to involve in the application of the DST doesn't look easy, **a stakeholder analysis can be conducted to identify the most relevant stakeholders**. The stakeholder analysis will also create additional information, which can be used in answering several questions in the DST, particularly the "community" pillar of the SAT, the "generation of solutions" step of the CAC, and the "actors and networks" dimension of the GAT. Establishing and maintaining an interdisciplinary, inter-organizational team will also **ensure preserving the institutional memory** by not relying on a single person or department for the application of the DST.
- Applying the DST at the city level provides a strategic perspective, whereas applications at pilot/project level bring operational insights. Therefore, it is recommended to **apply the DST at both the city level and the pilot/project level**. Results will be more useful if the level of a given application is kept constant throughout all components. If it seems practical to apply some components at the city level and others at the pilot/project level, this should be communicated among the involved stakeholders and noted in the DST results for future applications.
- In some cases, the organization that intends to apply the DST is not the local authority responsible to make decisions at the city level. Without the involvement of responsible local authorities, the application of the DST will be limited to the project level. To be able to apply the DST at the city level, such **responsible local authorities should be involved in the application of the DST**. It is also recommended to **involve participants from the policy/management level** during the application of the DST. These measures can improve the ownership of application results, make projects results part of "everyday work" and taking CCA actions based on them.
- Most of the questions and indicators included in the DST are qualitative to identify the strengths and weakness as well as areas for improvement. This **qualitative approach is recommended** by considering the fact that many midsize cities lack the monitoring and evaluation capacity to quantify the necessary data. **If quantitative data are available, they should also be used in applying the DST**. Involving an interdisciplinary team also contributes to reduce personal biases in answers.
- While the primary objective of the DST is making better decisions for becoming a water sensitive and climate resilient city, the **DST components can also be applied to raise awareness** within the different departments of the applying organization as well as among the relevant stakeholders. This particularly applies to the SAT, which is recommended as the first step in applying the DST.
- Finally, the application of the DST is not a 'once-only' process. To make the best out of it, cities should **apply the DST multiple times** to compare the results over years and identify improvement points that can be implemented and aggregated **for transitioning to a water sensitive city**. The reports from each application as well as supporting data and documents should be kept within the applying organization, which will also contribute to institutional memory. The decision on how often to apply the DST can be guided by the local and national policy cycles.

Specific Recommendations for Arvika/Teknik I Vast

- While there are limitations of being a small city, it also brought advantages, such as the easiness of applying the tool at the city level and reaching out to citizens. These advantages should be capitalized in future applications of the DST. The existing cooperation with Värmland County Council can be improved by involving them in the future applications of the DST, which can create more comprehensive results.
- The Arvika pilot focuses on the problem of water quality, which is not a commonly addressed climate change challenge, such as rainfall and floods. In Arvika, progress has been made on flood management, such as the recent flood barrier, whereas water quality has been emerging as a new issue. But floods are still perceived as the biggest climate change threat, and they are high on the agenda. It is recommended to move to an integrated view on CCA by putting both floods and water quality on the CCA agenda.
- The CATCH project and the pilot in Arvika contributed to an increased awareness. So, there is an overall positive effect of CATCH in all three pillars of WSC, although it is not immediately reflected in the SAT scores from 2018 to 2021. Again, when the DST is applied in the future, these impacts can be observed in terms of increased scores in specific indicators that received relatively low scores.
- When applying the GAT, Teknik I Vast had a small team available to answer questions and did not feel confident in answering some questions on behalf of the municipality. This has led to a governance assessment with several “neutral” or “don’t know” answers, for instance regarding the availability of funding. Involving the municipality in applying the DST will bring about more comprehensive results and possibly points of improvement that can be taken up by the municipality.
- Like many other partners, Teknik I Vast completed the application of the DST on their own. It is acknowledged that bureaucracy and the lack of resources can hinder cooperation. Furthermore, since the CATCH project started in 2017, there has been institutional changes in Arvika, which might have limited cooperation. The DST can be utilized as an instrument to overcome such barriers by raising awareness and creating ownership of other stakeholders.

Specific Recommendations for Enschede

- As with many other partners, a key recommendation for Enschede is to apply the DST as a team, and not by one person. The fact that the DST was applied first by a team and then by one person seems to affect the results. For instance, there were no “1s” or “6s” for the SAT, which is explained by the preference of the person that applied the DST for giving intermediate scores and not extremes.
- The SAT results from 2018 to 2021 show that Enschede has improved in most aspects, particularly the organization of emergency management, for which a plan was made and put into effect. The ESS pillar shows more improvement potential than the community and catchment pillars. Scores for the ESS can also be improved by taking actions based on the results of the ECO. This involves two types of actions. Firstly, the knowledge gap about ESS and green infrastructure should be bridged. Secondly, there should be more dialogue about the competition for space in the city, such as for parking vs. green areas.
- With respect to the CAC, the only remaining step is evaluation. An evaluation procedure is being prepared, and it is expected that there will have an evaluation at the city level within few years. Results from the applications of SAT, GAT and ECO can also be used in preparing the evaluation procedure.
- Concerning GAT, some limitations are observed due to limited funds. CCA is mostly associated with water management, also in terms of budget. This results from the fact that in many Dutch cities CCA plans are often derive from sewer management plans. The recommendation is allocating funds to non-water related climate change impacts, such as droughts, heatwaves and heat islands.
- Enschede has successfully implemented their pilot and applied the DST, but it is observed that the new insights from CATCH are not necessarily adopted by the municipality. Despite fruitful transnational exchanges, the lessons learned cannot be enter any policy/ management-level decisions. Therefore, it is recommended to involve more people from the policy/management level in the application of the DST.

Specific Recommendations for Herentals/VMM

- Most components of the DST were applied for the pilot level, except the scoring for the SAT, which was done for the city level. This is explained by the fact that VMM, as a regional authority, doesn't have the detailed overview at the city level. This calls for engaging representatives from the city level during the application of the DST. However, the staff member from Herentals, who was familiar with CATCH is leaving the organization. This implies a need to keep the institutional memory and maintain the work on the use of the DST and the results.
- Compared to other partners, the answers and assessments by VMM reflect a high level of modesty, especially in terms of the SAT scores. Furthermore, similar to Enschede, the DST was applied by one person, which has likely affected the results.
- The scope of the Herentals pilot is different from other CATCH pilots, involving only a design, which has not been implemented within the CATCH project. Therefore, a different perspective had to be applied for answering many questions in the DST. This also explains why little improvement is observed between the SAT scores in 2018 and 2021.
- Applying the SAT and CAC has brought insights about the evaluation step and in terms raising the awareness of the municipality about the problems. Regarding the evaluation of projects or actions, there is room for improvement by increasing the capacity to set the objectives of evaluation and apply appropriate evaluation methods.
- The fact that VMM is a regional authority provides more awareness on ESS, although there is limited action on ESS-based solutions. Some of the improvements over the course of CATCH projects are also attributed to other factors. For instance, because of COVID citizens started to appreciate the nature and respond to projects with hard measures.

Specific Recommendations for Norfolk/NCC

- Most of the answers to DST questions were given for the pilot level. Similar to several other CATCH partners, this is explained by the focus on the scope and emphasis of the pilot. It is also observed that using both the city and pilot level can bring in new insights. For instance, with CAC all types of flooding would be relevant for the city level, but only rainfall for the pilot level. Such choices would bring different results, and therefore it is recommended to consider applying the CAC several times focusing on different risk type. This awareness is essential, and it should also be made sure that such reflections are kept within the institutional memory for future applications of the DST.
- With regards to the SAT scores, there has been little change from 2018 to 2021. This is attributed to both the delayed implementation of the pilot and the fact that the change in policy doesn't immediately change the knowledge of officers. Given the position of NCC, which forms the interface between central government and parish councils, it can build upon this bridging role to engage the local actors more in the application of the DST.
- The CAC results show that in the beginning of the CATCH project especially the "implementation" and "monitoring and evaluation" steps were lacking. Although the city is affected by all types of flooding and many projects are being implemented, no systematic, quantified evaluation is done. The recommendation on this aspect is to define the objectives of evaluation and increase capacity for evaluation methods.
- Floods and water management put increasing pressure towards taking actions for CCA. This relates to the "pressure for change" criteria of the GAT. It shows supportiveness in terms of the initiatives to improve the current status and the actors that contribute to them. For instance, a new large-scale

project on 'holistic flood management' is being designed from an integrated perspective. Some actors, such as the Anglian Water, support this approach, since it fits their agenda. There is also increased awareness among citizens. It is recommended to mobilize the actors that are neutral about or against the significant change, such as large-scale, integrated projects.

- Compared to other CATCH partner cities, the GAT results for Norfolk have many more “neutral” answers (12 out of 20). This pattern indicates a need to pay attention to possible changes in the governance structure towards a supportive or restrictive context. For instance, the “responsibilities and resources” dimension was scored with “neutral” for all four criteria. This dimension includes, among others, the funding for CCA actions and the distribution of tasks among different CCA stakeholders, both of which have the potential for improvement in the future.
- The ECO results show that there is a high degree awareness of ESS, but this still needs to be put in practice and mainstreamed across different departments. For instance, the flood management department might adopt ESS-based, holistic approaches, whereas other departments such as land developers might rather focus on cost-effectiveness rather than the value of ESS. Application of the DST by multi-departmental teams can contribute to identifying and implementing ESS-based approaches at the city level.

Specific Recommendations for Oldenburg/OOWV

- The DST was applied by the members of the CATCH team from OOWV. Partly because OOWV is not the local authority at the city level, it was necessary to answer some questions for the city level and others for the pilot level, particularly for the SAT and GAT. Although the results seem realistic, it is likely that input from the municipality would enrich the results and provide insights for improvement.
- While several representatives from OOWV participated in the development and application of the DST, it is recommended to build an interdisciplinary team that also involves representatives from the municipality and from other relevant stakeholders. Involving such a team can also help resolve the issue that OOWV is not responsible for city-level decisions and apply the DST for the city level.
- The experience of OOWV shows that cultural or institutional barriers, such as bureaucracy and hierarchy, can be overcome through communication and collegial interactions. This good example of cooperation would be useful in future projects. Further lessons can be learned and exchanged from other CATCH cities, especially Enschede and Zwolle.
- The application of the ESS pillar of the SAT and the ECO has created significant awareness about ecosystem services. This awareness on the importance of ESS is also attributed to the insights from the ditch system. By building on this awareness, the sustainability and impacts of CATCH results can be ensured in future projects, especially with regards to ESS.
- Results from the application of the DST can be integrated into the broader roadmap of the city, which doesn't focus on CCA yet touches upon relevant issues, such as rainwater flow. This would help integrate the CATCH results to city-level vision on CCA.

Specific Recommendations for Vejle

- The DST was applied at the city level. This was enabled by the fact that the CATCH partner that applied the DST is the Vejle municipality. While there is no indication of missing out data due to a lack of involvement by other stakeholders, involving other stakeholders could improve their awareness and ownership.
- Concerning the SAT, they have a significant improvement in water storage indicators, since they have created some additional storage. For the ESS pillar, they have lower scores than they expect to have, which they explain by the fact that Vejle is surrounded by green areas, and citizens don't feel the need to have green in the city, although they know that green infrastructure is important for the city. Also considering the answers to the ECO, it is recommended to increase the awareness on ESS and make use of customised ESS for their city.
- Of all the seven CATCH partner cities, Vejle has the most positive answers to the GAT questions, with only 4 answers that indicate "neutral" context and 16 answers that indicate "supportive" context. It is recommended to substantiate these results and keep them within the institutional memory so that they can be the city's benchmark for future GAT applications.
- Many CCA activities are being implemented in Vejle and they score high in most of the DST components. They are still critical of themselves, seeking out ways for improvement, such as reaching out to citizens more often. At the same time, Vejle is known as a frontrunner city, which is not only because of CATCH, but also due its membership in the global "100 Resilient Cities" programme. Therefore, our main recommendation is to keep up the good work and tell everyone about it!

Specific Recommendations for Zwolle

- In Zwolle, the municipality has been implementing various CCA actions. While the CATCH pilot was about raising awareness and although it took place in multiple neighborhoods, it was not measurable with the tools. Therefore, the DST was applied for the city level. Building on this experience, different components of DST can be used in the future to assess specific projects or programmes. This also aligns with the intention of Zwolle to tailor the CATCH tools to its CCA strategy.
- Overall results of the DST application reflect a high level of capacity and ambition. For instance, Zwolle is the only CATCH partner city that answered all the questions of ECO, with "yes". Similarly, they scored 6 out of 23 indicators of the SAT with a "6", some of which were scored with a "3" or "4" in the first self-assessment. The reasoning for such scores is attributed to the fact that most of the descriptions of "6s" applies to Zwolle, although they also see opportunities for improvement. Such answers and assessments should be further substantiated and backed up with more practical evidence, for instance regarding the increases in self-assessment scores.
- It is very valuable that Zwolle has a dedicated climate change team and most of its members contributed to CATCH activities. Nevertheless, the results gained from the application of the DST can also be further enriched with the inputs of additional specialists from departments that were not involved so far in CATCH. The involvement of technical departments in the application of the DST will also improve accuracy of the results, particularly for the GAT and ECO, and the "catchment" and "ESS" pillars of SAT.
- Zwolle positions itself as a frontrunner city in CCA and has taken many actions that demonstrate this position. At the same time, they adopt a critical approach to continually improve the already positive results. We recommend maintaining this approach to enhance the benefits of the DST and move further towards becoming a water sensitive city!