IMPROVING DECISION QUALITY IN URBAN STORM WATER MANAGEMENT PROJECTS BY USING THE 3DI SYSTEM

Floor Speet

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Climate change will lead to more extreme rainfall in cities. Together with urbanization this will lead to an increased chance of flooding in cities. Measures should therefore be taken in the urban environment. Important is the decision about which measure will be implemented. The use of a water simulation model for this decision can possibly increase the decision quality. However, there is a lack of knowledge about the effects of the use of a model on the decision quality. The objective of this study is therefore to assess the impact of using a water simulation model on decision quality in urban storm water management projects. The studied model is the 3Di system (see Figure 1), which is an instrument that visualizes flooding processes in 3D and calculates the effectiveness of measures.

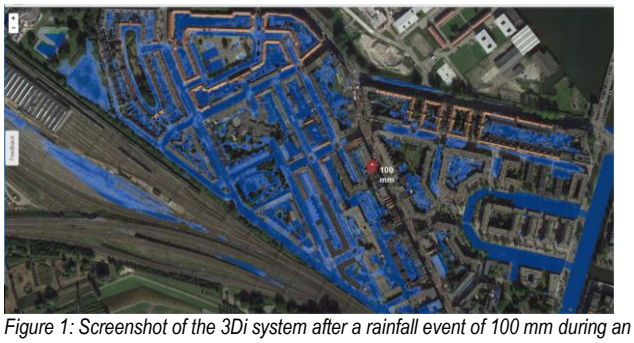

Figure 1: Screenshot of the 3Di system after a rainfall event of 100 mm during an hour for the area Houtmankade

The main research question is 'What is the difference in decision quality of urban storm water management projects as Rainproof in Amsterdam caused by using water simulation models as the 3Di system in comparison to the current decision quality of these projects?'. Amsterdam Rainproof is a program that aims to make the city of Amsterdam more Rainproof in the future. First, interviews were held to obtain information about the current situation of decision-making. After this, two cases in Amsterdam were used to execute workshops. Decision-makers from the municipality and the water board were brought together in these workshops to discuss about measures and evaluate the measures with 3Di. The decision quality was measured in these workshops with eleven decision quality elements with a questionnaire.

The study has found that models are not often used in the current situation of decision-making in urban storm water management projects. The use of the 3Di system is therefore mostly compared in this study with no model use in the decision-making process. The study has shown that using the 3Di system increases the decision quality on all elements. This is also valid when the decision-maker was using another water simulation model in their reference situation. Figure 2 gives an overview of the improvement of the individual decision quality elements. Four means equal to the reference situation, any score above four means improvement in comparison with the reference situation.

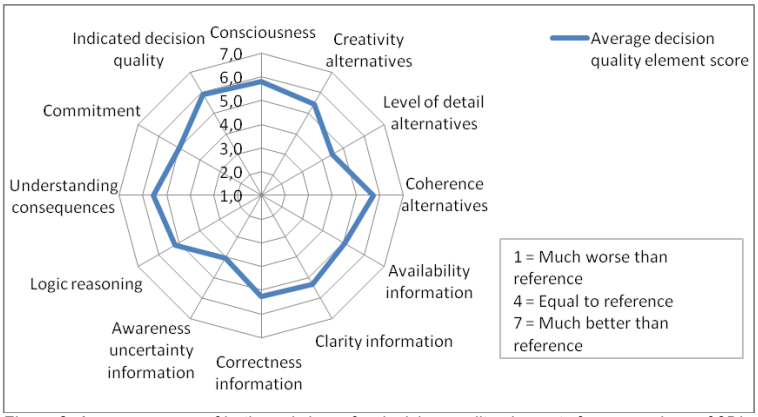

Figure 2: Average scores of both workshops for decision quality elements for comparison of 3Di with the current situation

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