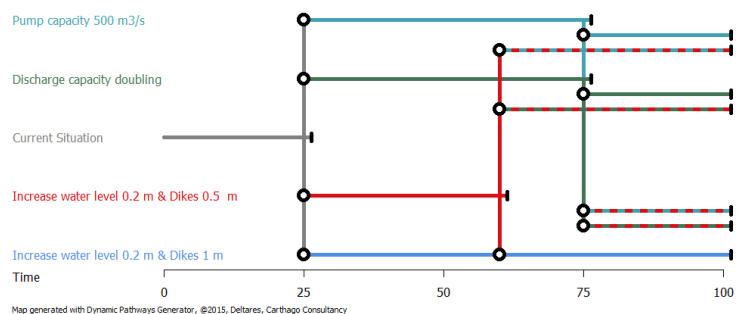
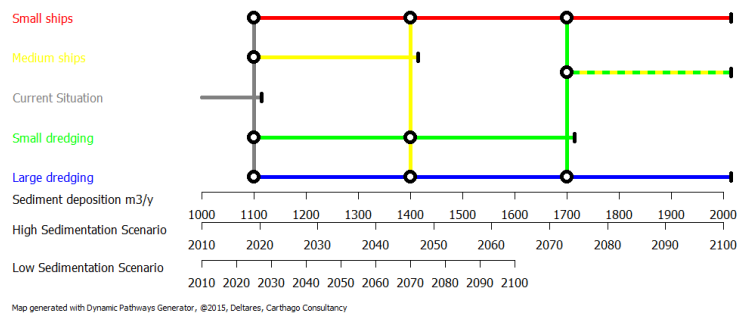


# Pathways Generator



## What is it?

The Pathways Generator helps you explore policy pathways in an interactive way, for example, together with stakeholders. The results are shown in a pathways map. Pathways are sequences (or portfolios) of actions over time to achieve a set of pre-defined objectives under uncertain and changing future conditions. Pathways are part of a policy and planning framework (e.g. Dynamic Adaptive Policy Pathways (DAPP)<sup>1</sup>), which incorporates the evaluation of costs and benefits with monitoring to track both policy implementation and any changing conditions. The DAPP approach is built upon the notion that decisions are made over time in dynamic interaction with the system of concern and cannot be considered independently. An example of adaptation pathways is shown in this [video](#). In the same way that all roads lead to Rome, there are also countless paths to reach the future.



*Example pathways maps created using the Pathways Generator*

<sup>1</sup> Background papers on this approach: Haasnoot, M., J.H. Kwakkel, W.E. Walker, J. ter Maat. (2013). Dynamic Adaptive Policy Pathways: A Method for Crafting Robust Decisions for a Deeply Uncertain World. *Global Env. Change*, 23 (2) 485–498 DOI: [10.1016/j.gloenvcha.2012.12.006](https://doi.org/10.1016/j.gloenvcha.2012.12.006)  
Haasnoot M., H. Middelkoop, A. Offermans, E. van Beek, W.P.A. van Deursen (2012). Exploring pathways for sustainable water management in River deltas in a changing environment. *Climatic Change*. 115 (3-4), 795-819 DOI: [10.1007/s10584-012-0444-2](https://doi.org/10.1007/s10584-012-0444-2)  
Kwadijk, J.C.J., M. Haasnoot, et al. (2010). Using adaptation tipping points to prepare for climate change and sea level rise: a case study in the Netherlands. *Interdisciplinary reviews: Climate Change*. DOI: [10.1002/wcc.64](https://doi.org/10.1002/wcc.64)

## How to use it

Copy the executable on your computer and start the programme by double clicking on it.

### Choose approach

In the current version, there are two ways to generate pathways:

- 1) Using adaptation tipping points based on the conditions under which a policy fails. Scenarios are then used to assess the timing of the tipping points.
- 2) Using the timing of adaptation tipping points determined from an analysis of different scenarios.

In method 1 a vulnerability assessment can be used to assess the main conditions for unacceptable performance of the system under consideration (e.g. at sea level rise of 1 m, the performance is unacceptable; with action X acceptable performance is reached until 2 m of sea level rise). In method 2 the performance of the current situation and potential adaptation actions must be assessed over time via either transient or semi-static analyses, before being compared to any threshold values for unacceptable performance.

### Add actions

The first step is to set the characteristics of the current system and actions. To achieve this, add the conditions under which a tipping point is reached (method 1) or when the tipping is reached (method 2). This can be done for several actions [click on Actions]. For method 2, the timing can be added for different scenarios [click on Scenarios].

### Generate Pathways

The second step is to generate your pathways [click on pathways]. Select the first actions, and any subsequent actions. Identify whether the pathway is a combination of actions (both stay implemented and will be maintained) or whether it is a sequence of actions (one action commences after an earlier action concludes). Combination actions are drawn with a dashed line of the two combining action colours.

### Add scenarios

The third step is to add scenario scales to your pathways [click on Scenarios]. Scenarios create a link between conditions and timing (condition based pathways), or allow you create additional columns for timing of the tipping points (time based pathways).

### Modify the pathways map

Two buttons allow you to change the appearance of the pathways map. The button X-axis setting allows for defining a caption and range for the x-axis of the map, while the button Graph Settings allow to define the map size, legend size, and some other settings.

## Conditions for use

The Pathways Generator is free for all to use. Do not distribute the software without this accompanying flyer. There are no extra or hidden costs to obtain or use the software, provided that proper reference is given to its use, developers and the DAPP methodology. In order to sustain the development of the software, we do ask that you involve us in your projects. This will provide the necessary resources to further develop the Pathways Generator's capabilities.

Please note that Deltares and Carthago Consultancy shall not be responsible for any loss, damage or other expenses of any kind incurred by either you as a user of the Pathway Generator, or third parties (partially or wholly) due to the use of the Pathways Generator and the interpretation and use of the results it generates.

## Join in the development

The Pathways Generator is a living project. The version that you are working with now is the co-production of many partners. If you identify a potential capability that you would like to incorporate into the Pathways Generator, please contact us and involve us in your project. We are always seeking to further develop the software, and would welcome your collaboration. Proper recognition for any resources received would of course be given within the application.

## About

The Pathways Generator is developed by and remains the copyright of [Deltares, Delft](#) and [Carthago Consultancy, Rotterdam](#), The Netherlands. For more up to date information see <http://pathways.deltares.nl>.

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