



# Managing coastal aquifers in climate and socio-economic change: An indicator-based multi-criteria decision system approach

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GEFÖRDERT VOM

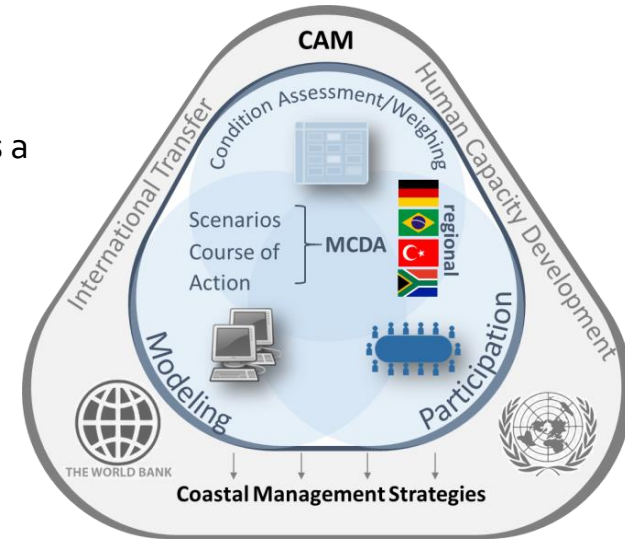


Bundesministerium  
für Bildung  
und Forschung

# Context

Current global developments put increasing pressure on freshwater resources and water supply and stakeholders especially in coastal areas

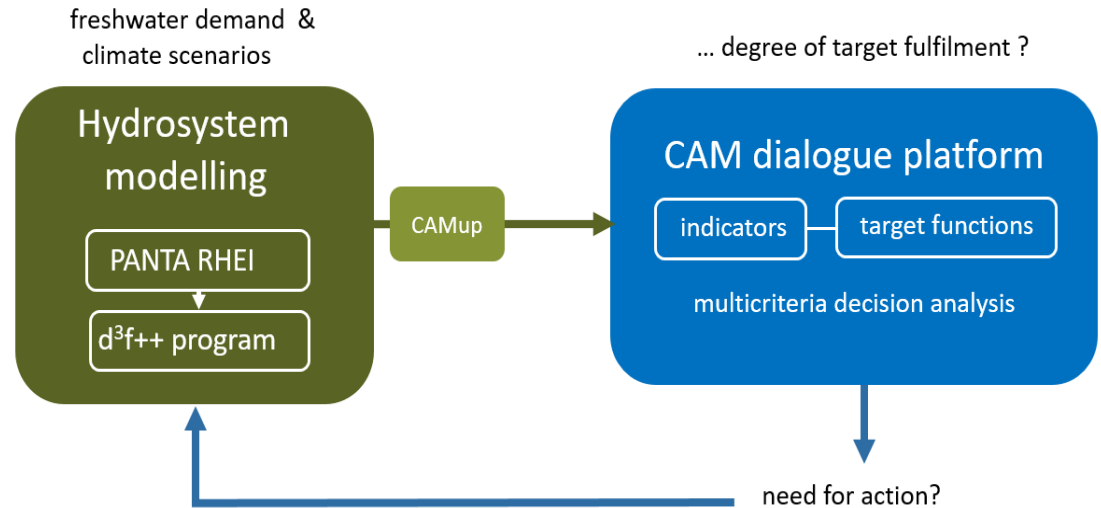
- Implementation of an integrated water resource management (IWRM) is a key to tackle future and ongoing changes and requires:
  - More **accurate assessment** of the state of water resources (quality and quantity) of coastal regions
  - Development of the basis for an **improved forecast** of the availability of water for future economic and ecological purposes
  - **Harmonization of conflicting stakeholder positions** to gain transparency and objectivity in decision making process



# The go-CAM concept

Complexity of decisions and concepts of measures as part of an IWRM requires scientific substantiation and transparency → Decision support systems (DSS), MCDA

CAM evaluation parameters
Chloride concentration [mg/l]
Groundwater recharge [mm/yr]
Groundwater head [m a.s.l.]
Freshwater volume [Mio. m <sup>3</sup> ]
Drought Index [-]
Water budget [mm/yr]
Discharge [m <sup>3</sup> /s]
Nitrate concentration [mg/l]



From modelling to decision making: Concept of the go-CAM-Project

Scenario: A1.3 - C1.85 - S1.45

← Back to Scenarios

Please, input a value (from 0 to 1) for every selected indicator, but take into consideration that the sum of weighting values for the selected indicators must be (1).

Indicator	Target function	Weighting
<input checked="" type="checkbox"/> Groundwater head trend	Groundwater head trend default	0.5
<input checked="" type="checkbox"/> Chloride concentration 60 m trend	Chloride concentration 60 m trend	0.5

Composite programming

Calculate

Info:  
The available calculation method is Composite programming.  
You can run the calculation and view its result.

Target function: Chloride concentration 60 m trend default

Right click or Drag Points to see the changes

mg/l

Reset

Function description:  
developed for case study area Sandelarmoors

In case you want to save the changes of the target function as your target function, click

Save

Indicator: Chloride concentration 60 m trend

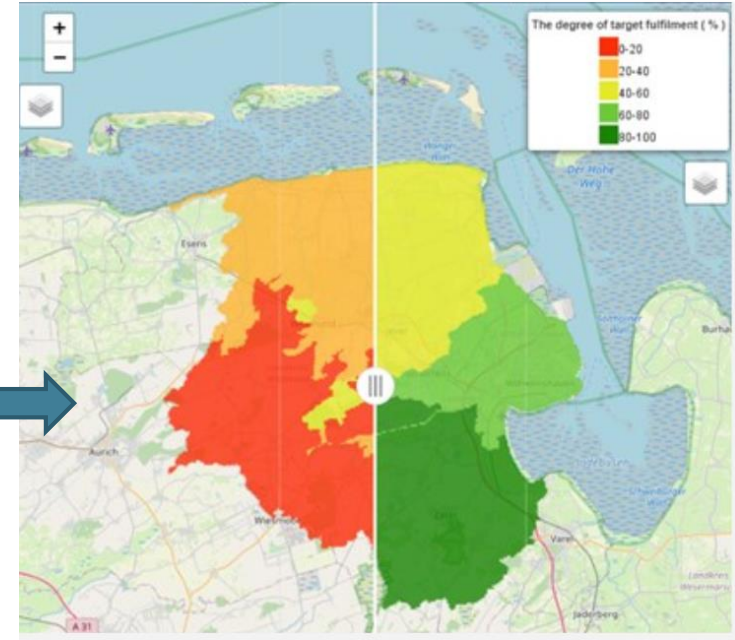
The degree of target fulfillment (%)

- 90-100
- 80-90
- 60-80
- 40-60
- 20-40
- 0-20

MC(D)A



Calculation for User 1    Calculation for User 2



Both the complexity of coastal hydrosystems and of necessary management options in times of rapid changes requires scientifically based evaluation:

- When adapted to stakeholders needs MC(D)A methods and DSS can be a substantial contribution to implementing an IWRM
- CAM tool serves as DSS, information and discussion platform
- Further development of the CAM tool: additional MCDA techniques and indicators
- Workshops with regional stakeholders (water suppliers, water boards etc.): Testing and further development
- Development focusses on assessment of management options and concrete measures



# Thank you for your interest!

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For further information feel free to visit:

[www.tu-braunschweig.de/en/lwi/hywag/forschung-projekte/gocam](http://www.tu-braunschweig.de/en/lwi/hywag/forschung-projekte/gocam)

[www.gocam.giscon.de/](http://www.gocam.giscon.de/) (CAM tool)

