Climate Adaptation in Coastal Regions
- A safe Future -

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Ems-Dollart Region

- German-Dutch border area
- Up to 2/3 of the area is below sea level

Impacts of Climate Change

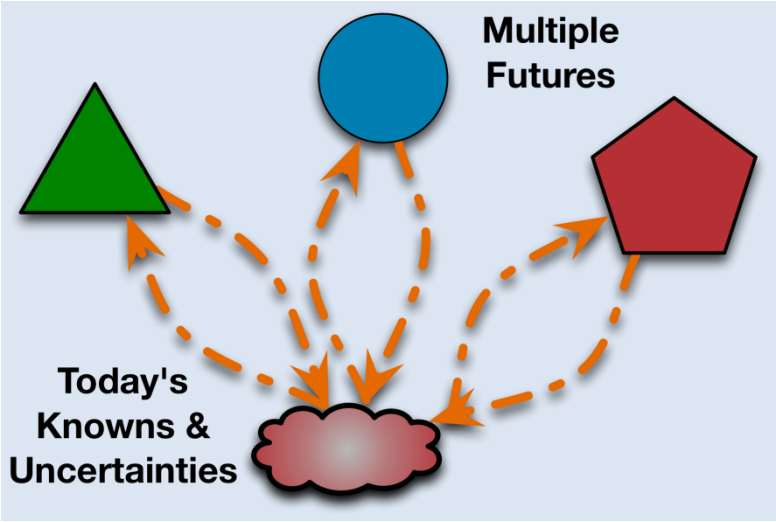
Climate change will affect coastal landscapes:

- sea level rise
- increasing wave and wind conditions
- 20 % less rain in summer (2070-2100)
- up to 50 % more precipitation in winter (2070-2100)

What can be done to protect humans and the landscape?

- We need ideas for the future of the region:

Scenarios to simulate the effects of climate change...



…and to communicate sustainable land use management

“Land is vitally important“

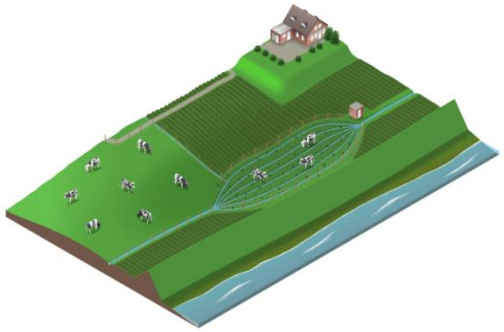
“More and more people are using land more and more intensively“

“Land is limited“

“Give the land new perspectives“

1. Trend Szenario

- „Business as usual“
- Agriculture, dairy farming, nature conservation



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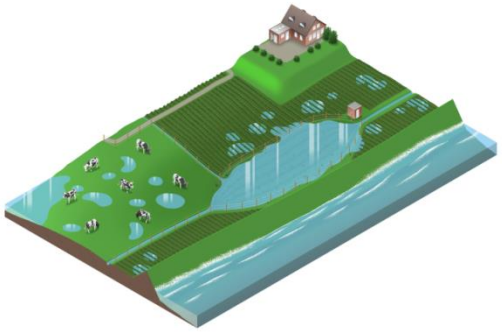

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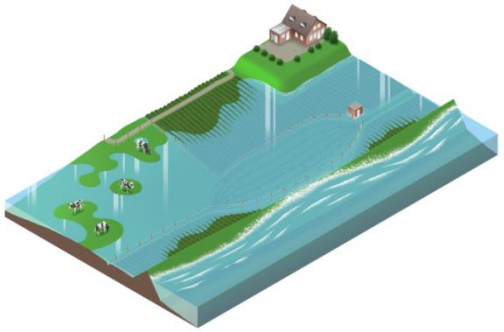

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What can be done to protect humans and the landscape?

- Trend: Technical solutions…

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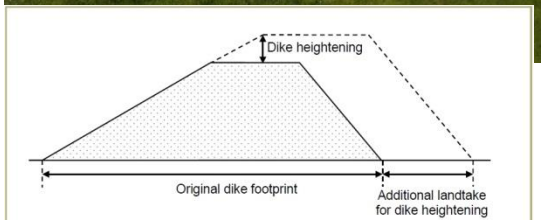


…But: high impacts, limited, very expensive, not possible…

What can be done to protect humans and the landscape?

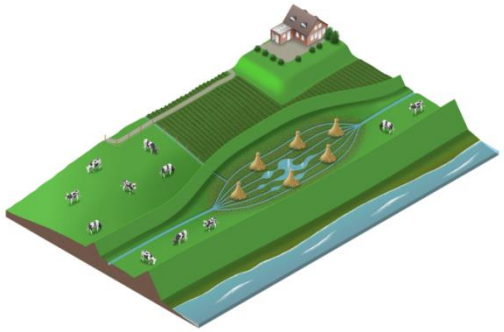
- **Sustainable solutions…**

  …taking **ecological** (maintenance of natural resources, ***ecosystem services***),
  economic (prosperous economy, ecological economics) and
  social (justice, equity, quality of life) impacts into account.

  …focusing on **benefits** of what we do today will also benefit **future** generations.

2. Water Management Szenario

- Establishment of freshwater polders
- Retention of freshwater
- Use of reeds for green energy
- Enhance tourism and leisure activities



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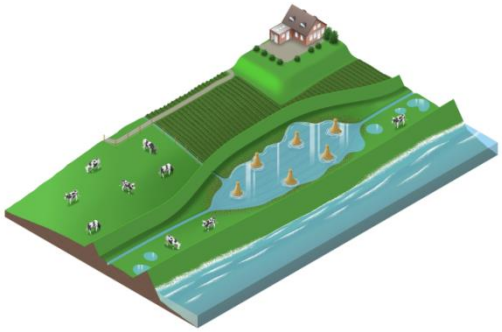

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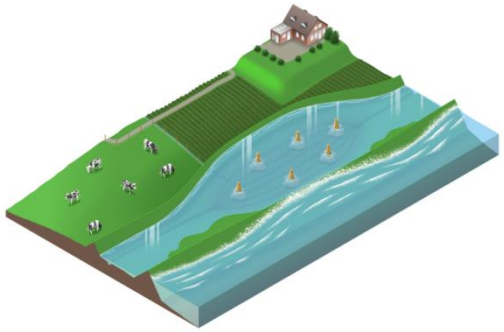

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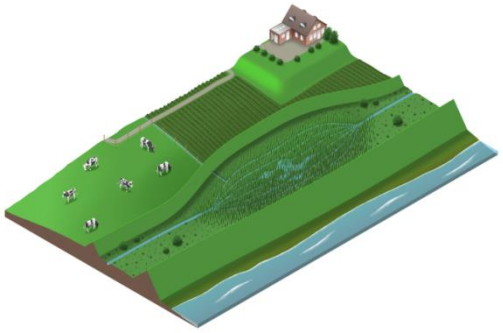
3. Carbon Sequestration Szenario

- Establishment of polders
- Active peat formation
- Restoration of former vegetation



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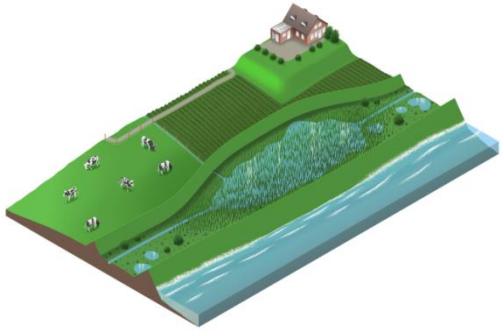

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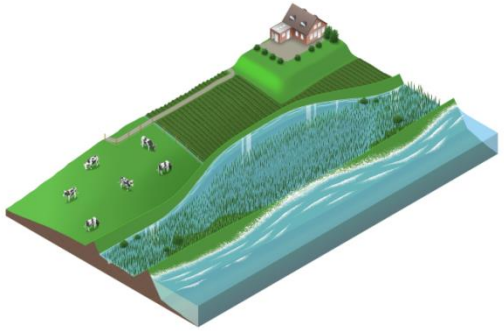

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What can be done to protect humans and the landscape?

- The development of sustainable climate adaptation strategies is only successful, when **local and regional stakeholders** are involved

- Benefits of **stakeholder participation** in integrative planning and assessment

Local knowledge

Identification of unintended effects

Identification of benefits and risks

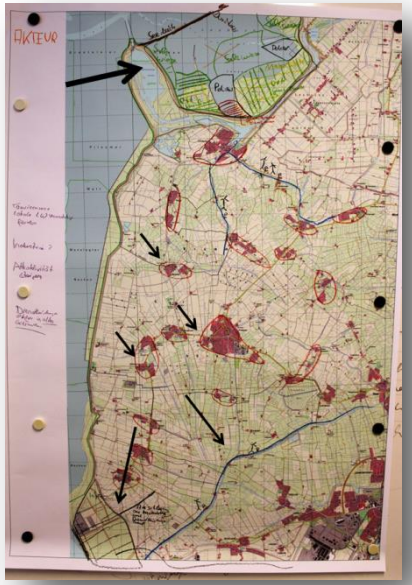
Reduction of uncertainties

Development of goals and positive outcomes

Actor-based scenario

- Extensive participation of stakeholders that represent important sectors in the society

- Evaluation of the land management scenarios
- Assessment of stakeholder preferences
- Development of future land use strategies



Results and conclusion

- **Multi-functional** land use, including aspects of the proposed scenarios on a small-scale level

- Minimizing competing land use

- Highly relevant and expected to increase: polder areas to store water, environmental conservation areas, maintenance of agricultural land and grassland (food production, drinking water), tourism, sustainable and organic land use and renewable energies.

Results and conclusion

- There is **awareness rising**: many stakeholders realize that climate change will cause changes in current land use

- Stakeholder collaboration promotes **social learning processes, consideration of different world-views and cooperation and agreements**. The work on a common goal improves decision-making processes.

- Although participative processes are very time intensive, the research results will **benefit**!

- Together with experts and decision-maker of the region, **concrete and action oriented adaptive strategies can be developed**.

Thank you for your attention

For more information, please contact

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