Climate Change and Mapping of the Future Nature

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Denmark on the map
Climate changes and the future nature

- ‘Copenhagen weather forecast year 2100’
  - More rain. Increase of 8-9 percent
  - Mild winters. Temperature will increase 2-3 degrees Celsius
  - Sea level rise of 0.6 – 1.3 meters
  - More wind. More hurricanes and higher average wind speed
  - Increase of extreme events like more heath waves and flooding
  - In general more unpredictable…

What will happen to areas like this?
The Danish Coast line

- Denmark has a land area of app. 42,500 km²
- The coast line is app. 7,500 km long
- Denmark is in Top 20 at global level for countries with the longest coast line (No. 17)
- Denmark is No. 5 in Europe, but when looking at the coast line/land area ratio Denmark is number 1
- 80% of the population is living in areas associated with the coastal zones

The Project ‘Climate and Nature Maps’

- Aim of the project
  - How will climate changes affect the future nature?
  - It is important to protect vulnerable nature, bio-diversity and the landscape
  - Building a GIS based modeling tool for analyzing of sea level rise
  - Contribute to facilitate decisions in the planning strategies
- Project partners
  - The Danish Society for Nature Conservation
  - Municipalities
  - BLOM, specialized in the collection and processing of geographic information
- Geo-data
  - Public Sector; Land use maps, surface geological maps, registration of nature types, field blocks, subsoil water, etc. etc.
  - BLOM; countrywide orthophotos (20 cm GSD), countrywide DEM from LiDAR (vertical accuracy 10 cm)
An example from the West Coast

Coastal area vulnerable to the risks
Sea level rise of 0.6 meter

10 year event flooding (+1.9 - 2.25 m)
Storm surge +3 meter

Impact on the nature types

25-30% of the tidal meadows in this municipality will disappear within 90 years
What to do?...Building dikes?

Focus on the nature, bio-diversity and the landscape

- Reconsider the concept of administration and planning
- Allow new areas for the nature to expand – e.g. develop new areas for wetlands able to absorb increased masses of water
- Lowlands can be converted to ‘un-cultured’ nature or extensive growing of crops without the use of fertilizers
- Avoid urban growth or construction in flood risk areas
- Also to acknowledge that important socio-economic interests may cause that nature will not be preserved as it is today
Denmark and sea level rise 0 – 5 meters

It's our decision...