

CLIMATE CHANGE ADAPTATION - COLLABORATION AND INNOVATION IN SOCIETY, SCIENCE AND INDUSTRY IS NEEDED

Rolf Johnsen

Central Denmark Region, Department of Soil and Natural Resources,
Emil Møllers Gade 41, 8700 Horsens, Denmark, e-mail: rolf.johnsen@ru.rm.dk

Abstract

As a consequence of global warming, we in Northern Europe are facing an increase in precipitation, changes in precipitation distribution, less rainfall in summer and more in winter. The precipitation pattern is expected to have a more dynamic cycle, with longer droughts and more intense rainfalls. As a result, groundwater models predict increases in groundwater levels of up to 2 metres in some areas (Van Roosmalen et al). Sea level will also rise. The precise increase is uncertain but models show increases of up to 0.88 m (Thomé-Schmidt et al.) in the next 60–90 years.

Economic growth, population growth and intensified agricultural land use will increase demands on fresh groundwater resources in the future. The uppermost surface groundwater is and will be increasingly contaminated due to the land use. Changes in evaporation and recharge patterns will lead to increased demand for water for agricultural use. Additionally, the fresh water in coastal zones will be affected by the anticipated sea level rise.

One of the consequences of climate changes will be flooding which will affect the assessment and delineation of suitable industrial and agricultural development areas. Groundwater level and sea level rises will challenge the construction sector and it will be necessary to come up with new standards. It will also change the available groundwater resource and stream flow patterns between summer and winter. Rising sea levels will also affect the development of recreational areas and water abstraction in coastal zones because of flooding and seawater intrusion into fresh aquifers. Climate change scenarios pose great challenges to adaptive local and transboundary spatial planning in the North Sea Region and in other regions.

The changes will have consequences on the hydrological cycle and calls for greater awareness among society as a whole. There is a need for cooperation between the different sectors including industry and science and further we will be better prepared if we avoid silo thinking. Climate change will affect us all and water is a common challenge.

Reference list:

Thomé- Schmidt, P. “Sea level change affecting the spatial development in the Baltic Sea Region.” Geological Survey of Finland, special edition paper 41. pp. 51-59.

Van Roosmalen L., Christensen, B.S.B, Sonnenborg, T.O. “Regional difference in climate change impacts on groundwater and stream discharge in Denmark”, 2007. *Vadose Zone Journal* 6: 554-571.