

Adaptation – Land and Water

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**How can we, as Danish scientists involved
in land and water, support sustainable
development,
benefitting the poorest and most
vulnerable regions, countries, and people
-
in view of climate change?**

Two prerequisites:

- A fundamental and professional knowledge of our field
- Understanding of the context in which to apply our professional knowledge

Climate change

- an added complexity
- but also an opportunity and catalyst for enhanced and concerted effort on development
- emphasizes the challenges of risk, uncertainty, and long-term trends in previously stable physical entities

However, overarching goal of achieving sustainable development is unchanged

=> CC should not deter us from acting



Climate change

Two reaction paradigms:

- Mitigation
- Adaptation

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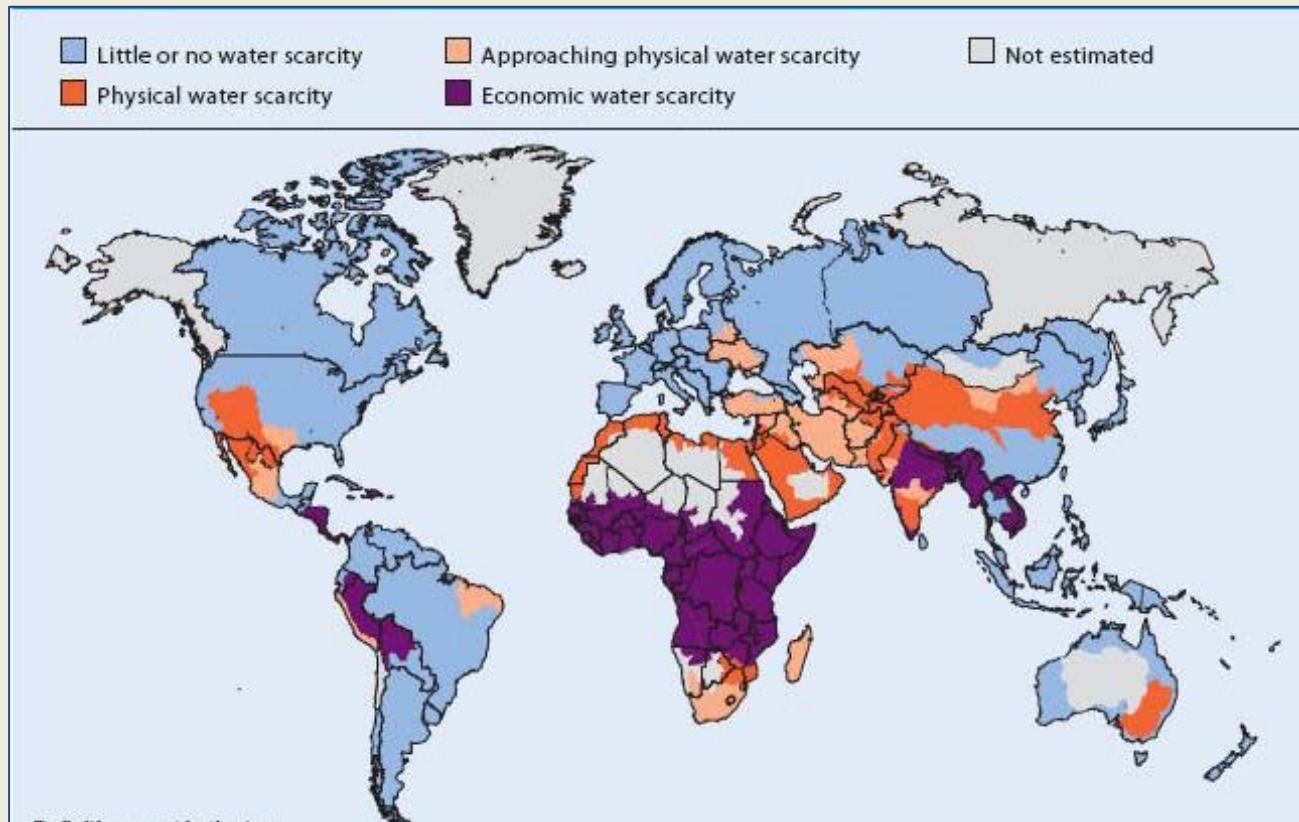
BERLINGSKE H₂O

Fattige taber kampen om vandet

Mens klimaændringer begrænser adgangen til rent vand, får flere mennesker behov for stadig mere vand. Den tilspidsede kamp om den fundamentale livskilde rammer de fattige hårdest.

Af Pauli Andersen observerede ændringer, som om ændringer modelberegninger kan forudsige. Når det gælder de konsekvenser dig vil højere vandtemperaturer, flere ekstreme vejr- begivenheder som tørke og oversvømmelser øge mange vandkvalitet, øgede flygtningestrømme, skærpede konflikter om vandressourcer, og generelt set vil de fat-

Physical and economic water scarcity



Economic water scarcity: Human, institutional, and financial capital limit access to water even though water in nature is abundant relative to water use, with less than 25% of water from rivers withdrawn for human purposes.

Triple crises

- Financial crisis
- Food crisis
- Climate change crisis

These crises are inter-linked, and influence each other:

- CC focus on mitigation emphasizes biofuels => food production is under pressure
- Financial crisis => smaller aid budgets
- Financial crisis keeps food prices artificially low

Hence, solutions to combat one may exacerbate the other



Professional/thematic challenges

- Water storage - water buffering
- Water and land quality
- Water resource assessments:

CC projections → WR assessment → best adaptation strategies

- Data integration, LULC and earth system science integration
- ‘Living’ models, updated, used interactively to inform policy advice



CLIVET: Impacts of Climate Change on Water Resources and Agriculture - and Adaptation Strategies in Tanzania

CLIVET is a 5 year **capacity building** project that aims to increase the capacity in Tanzania to project climate changes and impacts on water resources relevant for the agricultural sector.

Project partners:

GEUS, Geological Survey of Denmark and Greenland
DGG, Dept. of Geography and Geology, University of Copenhagen

IRA, Institute of Resource Assessment, University of Dar es Salaam

WRED, Water Resources Engineering Department, University of Dar es Salaam

TMA, Tanzania Meteorological Agency

Read the short [project description](#) (pdf-file ~30kb)

The project was initiated in Nov 2009 with an **Inception Workshop** in Dar es Salaam, Tanzania.

[Read the review of the meeting, see the program, participants and minutes](#) (pdf-file ~80kb)



Integration/institutional/organizational challenges

- Surface water - groundwater
- Formal - informal mgt.
- Role of public - private sector
- Natural sciences - socio-economic sciences
- Understanding climate trends - extremes/disasters/tipping points
- Water - health
- Water - energy
- Capacity building for integrated CC adaptation



Emerging stronghold - Groundwater

- Good buffer against CC and variability
- Increasingly used in many parts of the world
- Needs active and strategic mgt. and protection, but often neglected
- Essential in disaster risk reduction
- Denmark has an added advantage and entering into strategic partnerships



Recommendations for Danish efforts

- Emphasize Danida strategy of *global and regional* responses:
 - Transboundary water issues becoming critical
 - Virtual water/food transfers significant
 - Disasters (floods and droughts) often hit regionally
- Develop guidelines/practices for climate proofing water investments
- Foster and support networks/platforms for North-South and South-South collaboration:
 - University platforms
 - Dialogue on CC adaptation for Land and Water mgt.
 - Influence international agenda and dialogue, e.g. with WHO, WB, UNESCO, IAH, etc.
- Link CCTF - KFT in support of knowledge hub for CC adaptation

