# Linking Top-down and Bottom-up Scenarios

Kirsten Halsnæs

DTU Technical University of Denmark

CLIMATEDTU

## Basic Linkage Questions

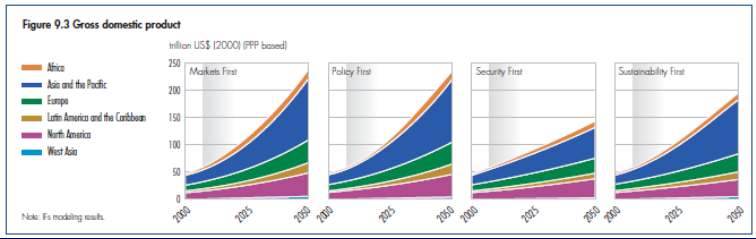
- What is going to be linked. Storylines, drivers, quantitative assumptions?
- What is BU: Regional/National economic model, sectoral model, hot spot assessment for extreme event?
- What is the impact of global or regional TD assumptions on the development in countries or smaller geographical areas?
- Which models can downscale economic development over centuries?
- Why are we not instead upscaling from BU to TD?

DTU Technical University of Denmark

CLIMATEDTU

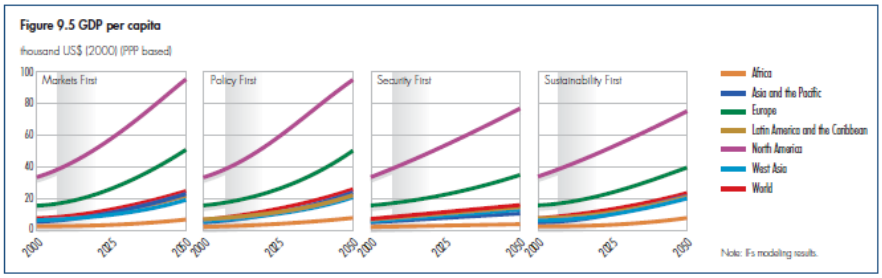
# SSP and Global IAM's have Methodological Problems that can be Magnified with BU link

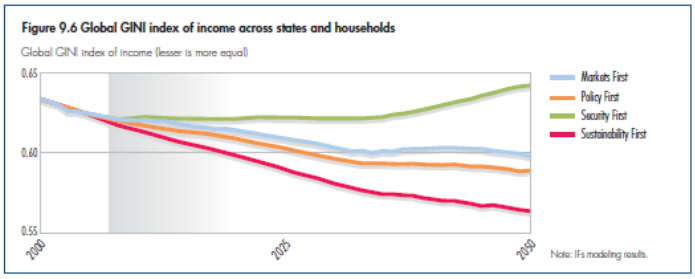
- Details versus time frame
- Baseline definitions and the integration of climate change policies (e.g. Danish 100 % renewable energy case)
- National or sectoral studies have a shorter time horizon and more details on policy options
- Adaptation studies are very context specific
- How to represent "softer" issues like governance, and are these following international trends?




Technical University of Denmark

CLIMATEDTU



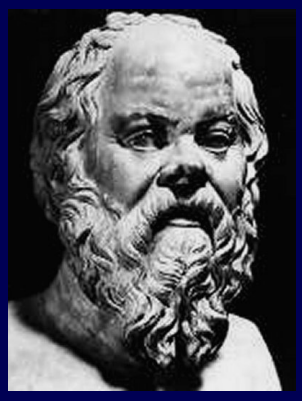

Technical University of Denmark

CLIMATEDTU

## Basic SSP's for Experiments – Generated Demands

- More detailed consumption patterns, covergence, diet, income distribution, development policies
- Special issues for decision makers e.g. narratives
- Scenarios with sub-optimalities (second best)

Framework document p. 26

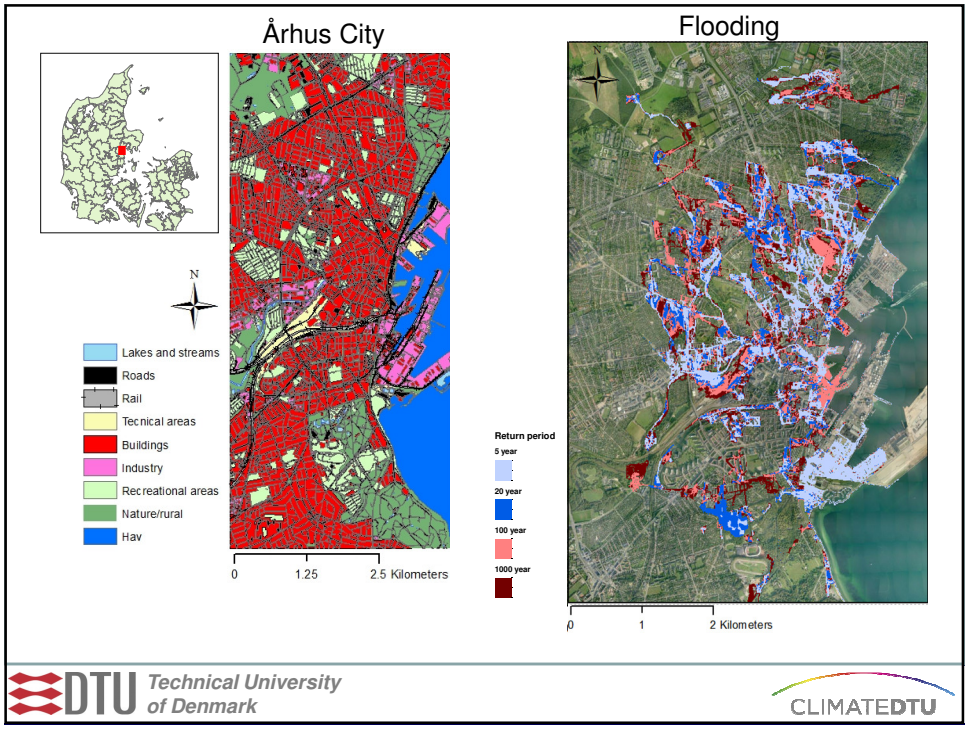


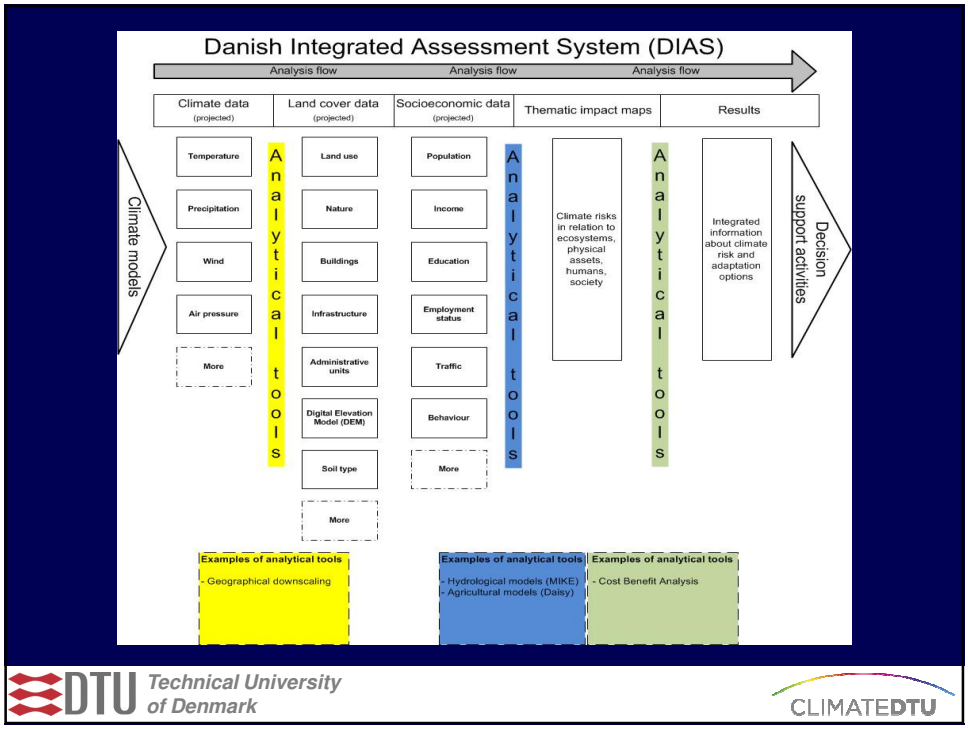
DTU Technical University of Denmark

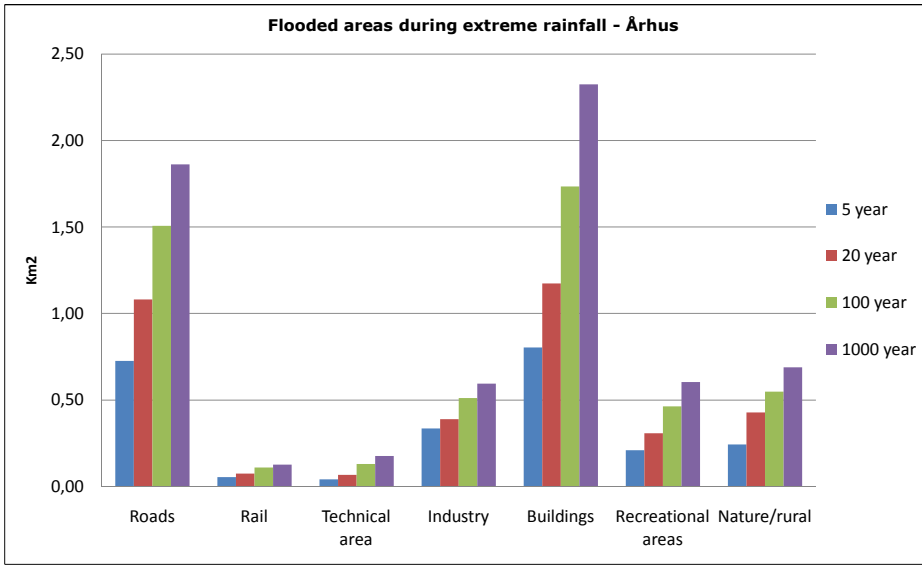
CLIMATEDTU

DTU Technical University of Denmark

CLIMATEDTU

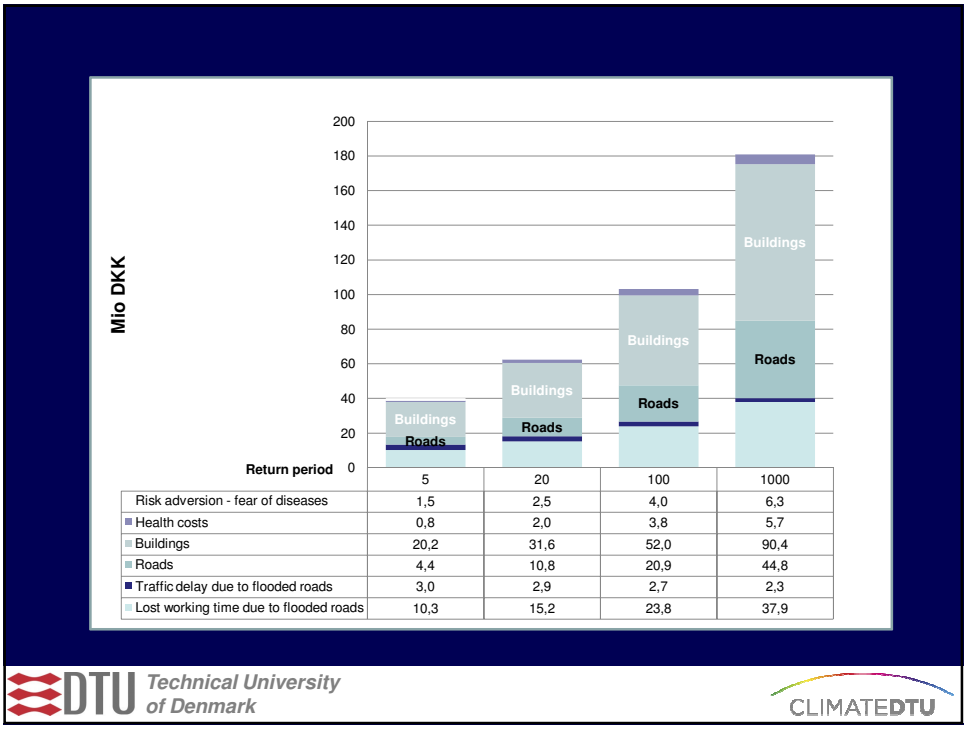

Århus City
Flooding
N
Lakes and streams
Roads
Rail
Tecnical areas
Buildings
Industry
Recreational areas
Nature/rural
Hav
0
1.25
2.5 Kilometers
Return period
5 year
20 year
100 year
1000 year
0
1
2 Kilometers
DTU Technical University of Denmark
CLIMATEDTU


Danish Integrated Assessment System (DIAS)
Analysis flow
Analysis flow
Analysis flow
Climate data (projected)
Land cover data (projected)
Socioeconomic data (projected)
Thematic impact maps
Results
Climate models
Temperature
Precipitation
Wind
Air pressure
More
Analytical tools
Land use
Nature
Buildings
Infrastructure
Administrative units
Digital Elevation Model (DEM)
Soil type
More
Population
Income
Education
Employment status
Traffic
Behaviour
More
Analytical tools
Climate risks in relation to ecosystems, physical assets, humans, society
Analytical tools
Integrated information about climate risk and adaptation options
Decision support activities
Examples of analytical tools
- Geographical downscaling
Examples of analytical tools
- Hydrological models (MIKE)
- Agricultural models (Daisy)
Examples of analytical tools
- Cost Benefit Analysis
DTU Technical University of Denmark
CLIMATEDTU




DTU Technical University of Denmark

CLIMATEDTU

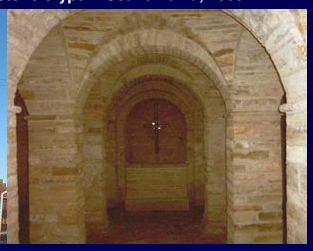



DTU Technical University of Denmark

CLIMATEDTU

# Priorities

Vor Frue Kirke: Oldest existing stone crypt in Scandinavia, 1060



Wiking museum

Århus Cathedral

Frescos 1300-1500

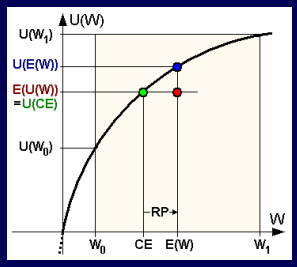
Baroque organ

Kindergarden

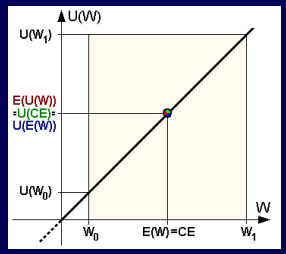


# Risk Aversion Factor

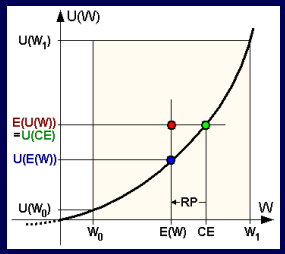
- Index value that reflects a risk aversion factor
- Different factors are applied to different damage elements or applied in general to the whole function
- To be estimated in the local context




Risk Averse




Risk Neutral




Risk Affine

## Policy Relevant Issues for Urban Adaptation

- How will different City development trends influence climate risks and adaptation:
  - Water in the city
  - Green areas
  - Transportation and other infrastructure
  - Population and income distribution
  - Lifestyles
- Interactions with climate change mitigation and sustainable development goals
- How to predict urban development trends including governance and business models

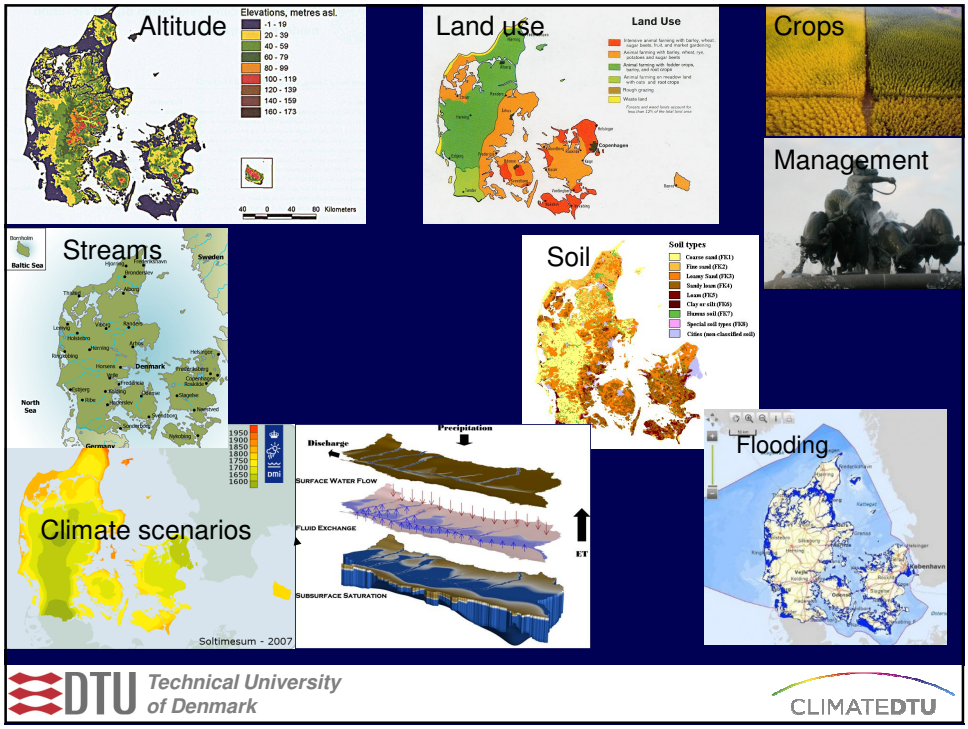
DTU Technical University of Denmark

CLIMATEDTU

## How Uniform are Global Trends

DTU Technical University of Denmark

CLIMATEDTU




## Where Could SSP's be Usefull as Framing for National and Local Adaptation Studies

- Provide assumptions about major global market prices as for example:
  - Agricultural markets
  - Bioenergy demand and production
  - Fuel prices
- Regional economic growth rates and structural GDP development
- Subregional issues for example for the EU
- Urbanization trends


DTU Technical University of Denmark
CLIMATEDTU