



Coastal challenges and current status on adaptation in Denmark

An aerial photograph showing a vast, green agricultural field on the left, which meets a blue body of water on the right. The field is divided into numerous rectangular plots by thin, dark lines, likely furrows or roads. The edge of the field is a steep, dark cliff that drops down to a sandy beach and the water's edge. The water is a deep blue, and the sky is not visible. The overall scene is a stark contrast between the vibrant green of the land and the deep blue of the water.

‘Those who benefit must pay
for their own protection’





- **Natural processes vs climate change**
Yes, climate changes and increases challenges
- **Climate adaptation vs Disaster Risk Management**
Need to strengthen links between and integrate terms
- **Adaptation vs Mitigation**
A need to think of the two together
- **More water from all sides**
Defragment and work toward more holistic solutions.
Integrate sources of e.g. floods and do not transfer risks
- **(Population)pressure and coastal risks increase**
Coordinated efforts on adaptation and planning needed
- **Technologies are available**
2020 technologies are at hand; think and plan ahead
- **Focus on challenges and co-work established in many places**
Move to the next level of action, build on the 'good examples' and best practices
- **If we do not understand climate impacts, we cannot live in low-lying coastal areas in future**
It's a statement!

Planning

Bekendtgørelse af lov om naturbeskyttelse¹⁾

Bekendtgørelse af lov om kystbeskyttelse m.v.

ed bekendtgøres lov om kystbeskyttelse m.v. if. lovbekendtgørelse nr. 78 af 19. januar 2017, med

Bekendtgørelse af lov om planlægning¹⁾

bekendtgøres lov om planlægning, jf. lovbekendtgørelse nr. 50 af 19. januar 2018, med de ændringer følger af lov nr. 62 af 30. januar 2018 og lov nr. 63 af 30. januar 2018.

Kapitel 1

Formål

Loven skal sikre en sammenhængende planlægning, der forener de samfundsmæssige interesser i udviklingen, medvirker til at værne om landets natur og miljø og skaber gode rammer for vækst og udvikling i hele landet, så samfundsudviklingen kan ske på et bæredygtigt grundlag med respekt for menneskets levevilkår, bevarelse af dyre- og planteliv og øget økonomisk velstand.

Loven tilsigter særlig,

- at der ud fra en planmæssig og samfundsøkonomisk helhedsvurdering sker en hensigtsmæssig udvikling i hele landet og i de enkelte kommuner og lokalsamfund,
- at der skabes og bevares værdifulde bebyggelser, bymiljøer og landskaber, der skaber gode rammer for erhvervsudvikling og vækst,
- at åbne kyster fortsat skal udgøre en væsentlig naturværdi og landskabelig værdi, og at biodiversiteten understøttes, og at forurening af luft, vand og jord samt støjulemper forebygges, og at offentligheden i videst muligt omfang inddrages i planlægningsarbejdet, og at tilgængeligheden i bolig sammensætningen fremmes gennem mulighed for planlægning for almene boliger og andre formål.



Guidelines for klimatilpasning i kystområder



Danish strategy for adaptation to a changing climate

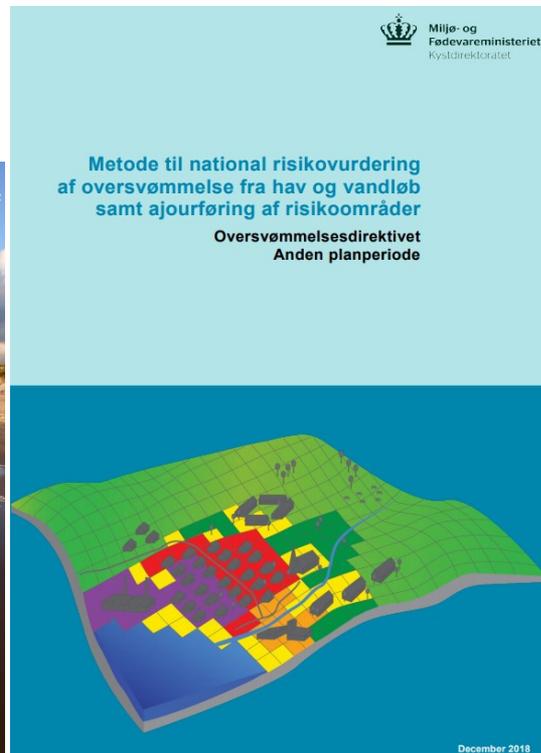
sikoen for mål vare-

på at gen- denne lov, Miljø- og igspligter, r og EU-

March 2008

The Danish Government

Efforts and actions



Manual
For udarbejdelse af bestemmelser knyttet til den
samfundsøkonomiske analyse
samt
oversvømmelsesdirektivet

See more at:
www.kyst.dk



COHERENT er et tværfagligt forsknings- og innovationsprojekt, der udvikler ny viden og løsninger til at integrere katastrofeberedskab og klimatilpasning for en bedre risikohåndtering i kystområder.

COHERENT skal føre til en styrket indsats mod oversvømmelser ved kyster. Det skal afhjælpe de store tab, som oversvømmelserne medfører. Samtidig skal det skabe nye forretningsmuligheder, hvor danske kompetencer og løsninger til kystbeskyttelse og risikostyring kan føres videre ud i resten af verden.

Emergency management

Det Syd- og Sønderjyske Stormflodsberedskab



Den nationale operative stab (NOST)

Den nationale operative stab (NOST) træder sammen, når der opstår større kriser og hændelser i Danmark. Staben skal i sådanne situationer sikre det tværgående samarbejde og koordinering mellem myndighederne.



How are we doing?

Planning

Risk increases as we develop and build in areas prone to erosion and floods



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Emergency Management

Risk increases as emergency management is not dimensioned to handle larger events



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Planning

Risk increases as we develop and build in areas prone to erosion and floods

Emergency Management

Risk increases as emergency management is not dimensioned to handle larger events

Efforts and actions

Risk increases as awareness is low and coastal protection is in many places poorly designed



The good examples?



The good examples?



Storytelling – ‘multi’-benefits & services



Storytelling – ‘multi’-benefits & services



Storytelling – Planning is hot!

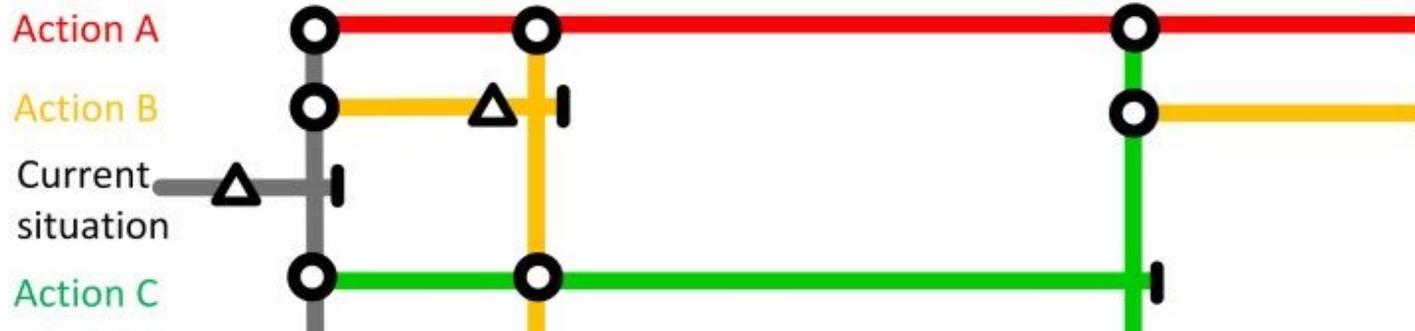
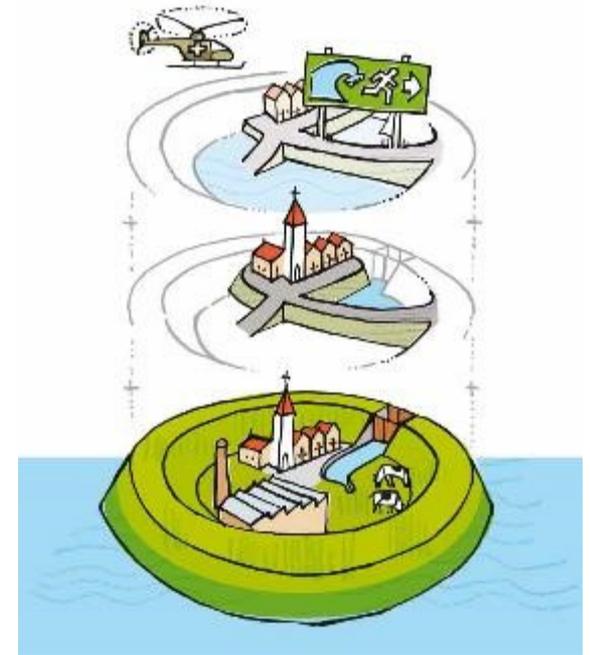


Storytelling – Eco-system services

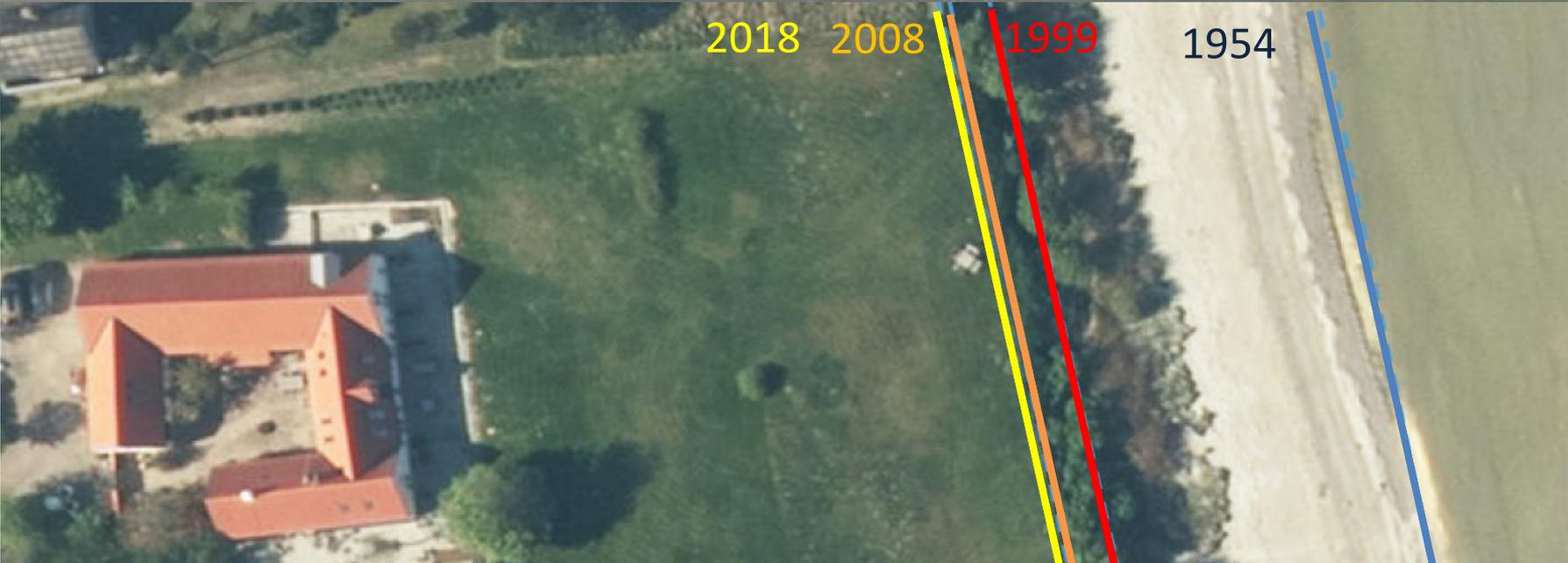


Storytelling – Planning

What's the good story to tell our kids about their (in-)heritage and/or burden?



Storytelling / Knowledge of coastal processes



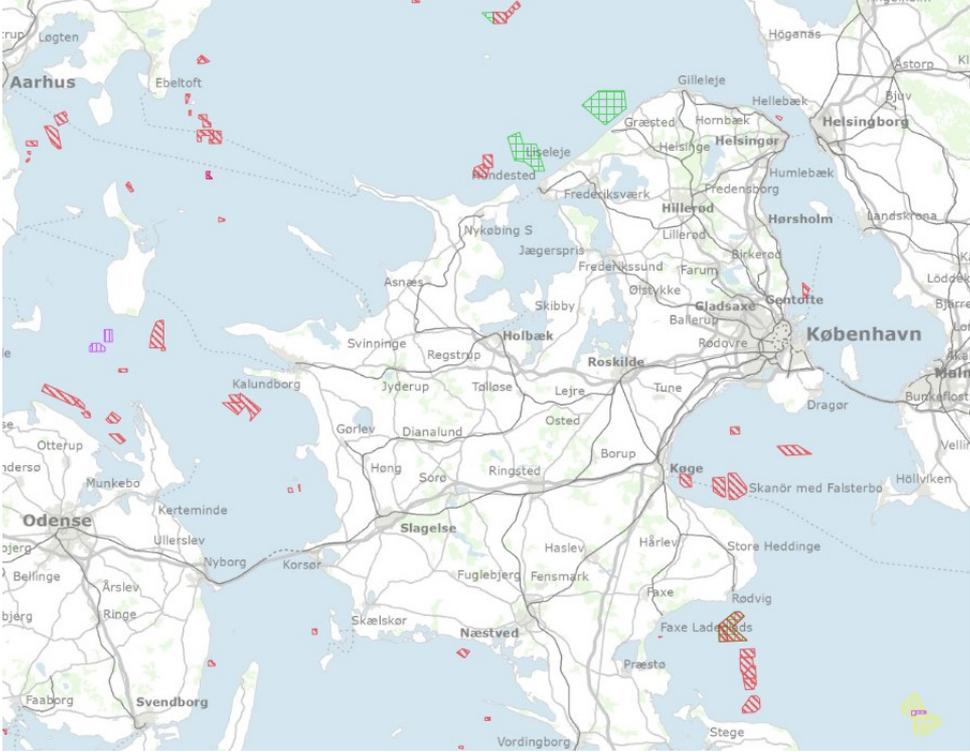
Storytelling / Knowledge of coastal processes



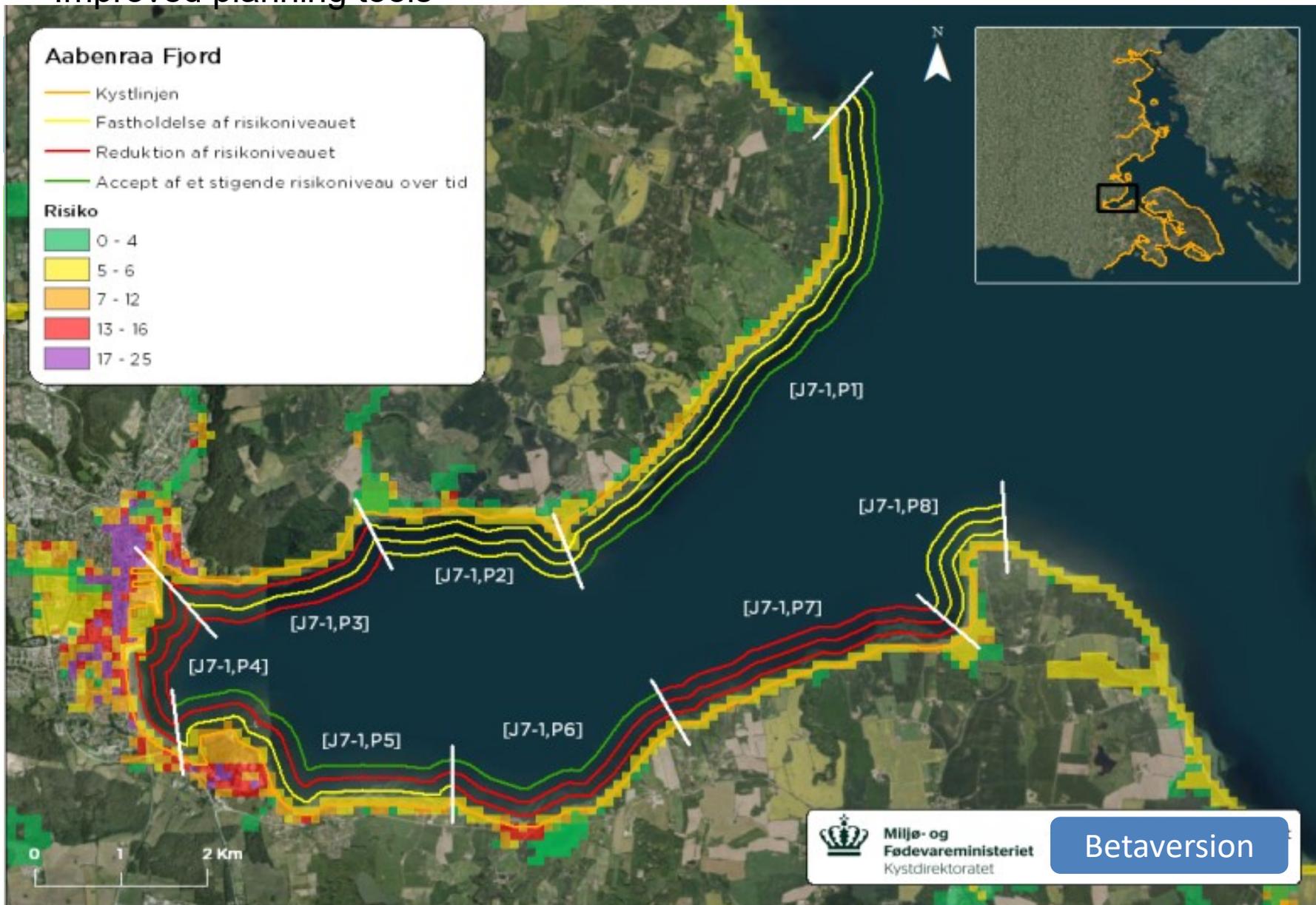
Storytelling / Knowledge of coastal processes and materials



Storytelling / Knowledge of coastal processes and materials



Improved planning tools



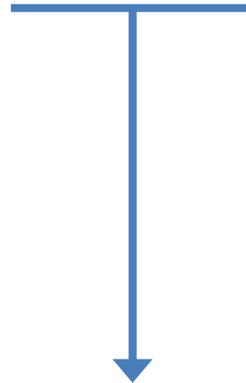
Climate impacts

IMPACTS

Sea Level Rise & Storm Surges
Precipitation & Cloudbursts
Rising Groundwater Levels
Runoff
Erosion

STRESSES

Land Subsidence
Degrading Sewer Systems
Other Infrastructure
Urbanization



COMBINED (PHYSICAL)
IMPACTS
OF CLIMATE CHANGE

*..with coupled events and
cascading effects*

Prevention

Forebyggelse

At undgå fremadrettede aktiviteter, der kan medføre eventuelle fremtidige oversvømmelsesskader



Reservering af arealer til vandophobning

Skabe bevidsthed om oversvømmelsesrisikoen gennem dialog



Kampagne om oversvømmelse



Lokal dialog ved borgermøder

Protection

Sikring

At der træffes foranstaltninger af både anlægsma- art, for at formin oversvømmelse



Digebeskyttelse



Højvandsmur

Preparedness

Beredskab

At yde en forsvarlig forebyggende indsats i forbindelse med oversvømmelser



Recovery

1 NO POVERTY



2 ZERO HUNGER



3 GOOD HEALTH AND WELL-BEING



4 QUALITY EDUCATION



5 GENDER EQUALITY



6 CLEAN WATER AND SANITATION



7 AFFORDABLE AND CLEAN ENERGY



8 DECENT WORK AND ECONOMIC GROWTH



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



10 REDUCED INEQUALITIES



11 SUSTAINABLE CITIES AND COMMUNITIES



THE GLOBAL GOALS

For Sustainable Development

12 RESPONSIBLE CONSUMPTION AND PRODUCTION



13 CLIMATE ACTION



14 LIFE BELOW WATER



15 LIFE ON LAND



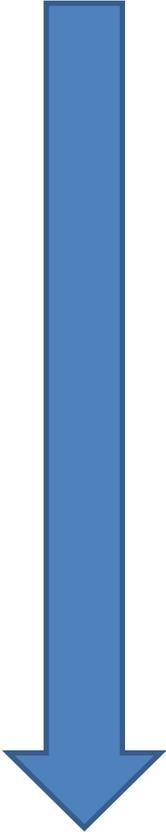
16 PEACE AND JUSTICE STRONG INSTITUTIONS



17 PARTNERSHIPS FOR THE GOALS

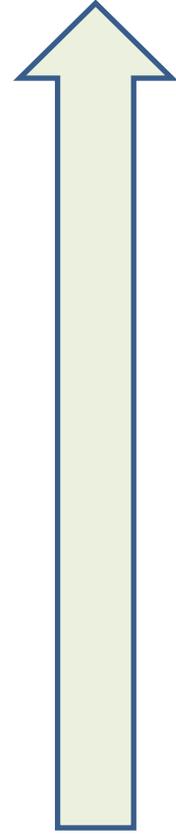


TOP DOWN

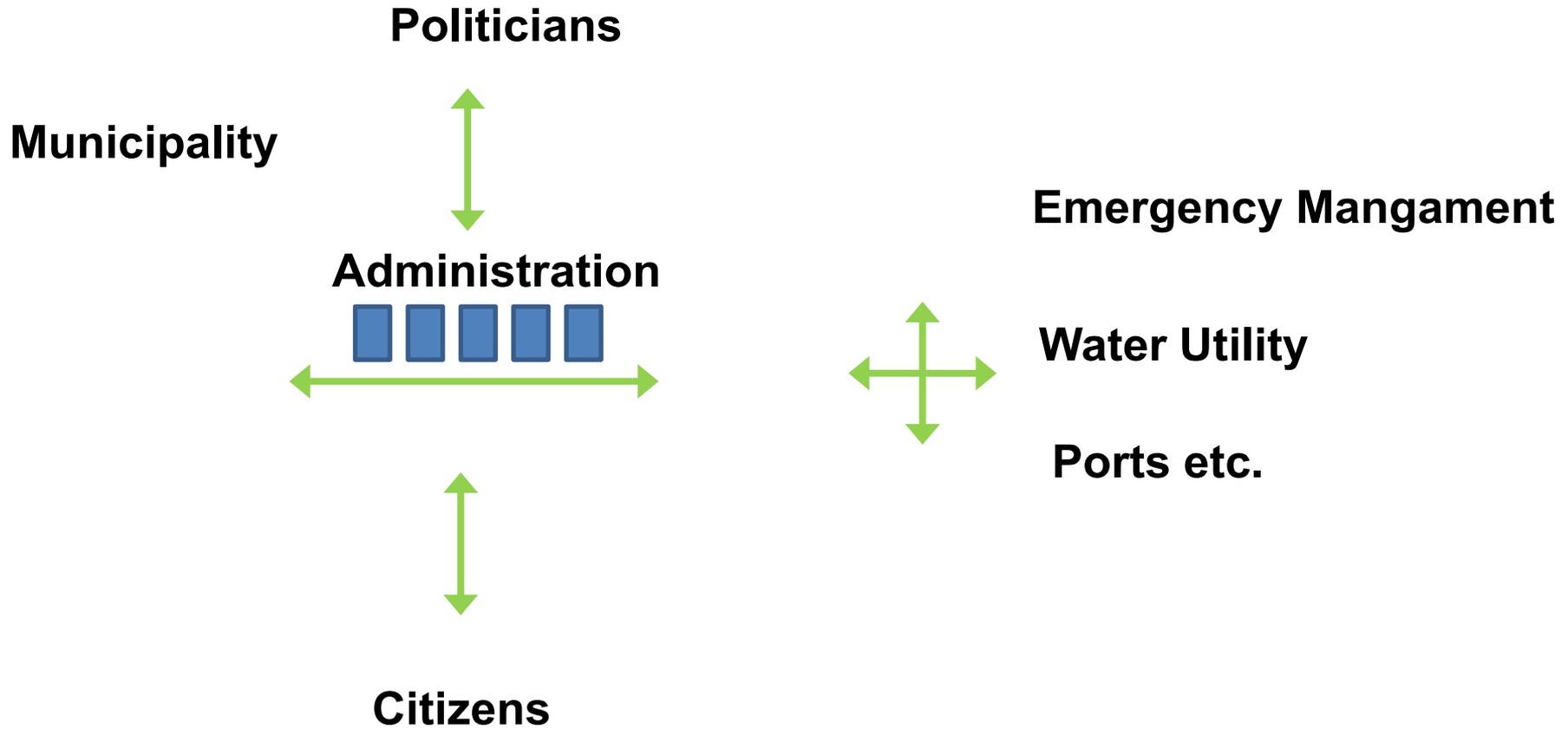


Global (e.g. Sendai, SDGs)
EU (e.g. WFD, 'Climate law')
National (Adaptation, legislation)
Local Government (Planning)

Local Government
NGOs
Communities
House owners (Ass.)
Citizens



BOTTOM UP



How to work with risk and adaptation? How to engage citizens?

Inform? Involve? Citizen driven processes? Do nothing?

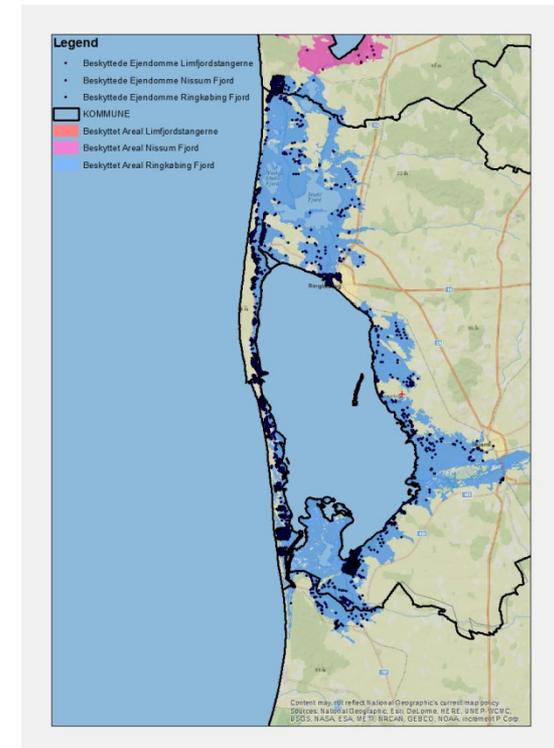
Skive



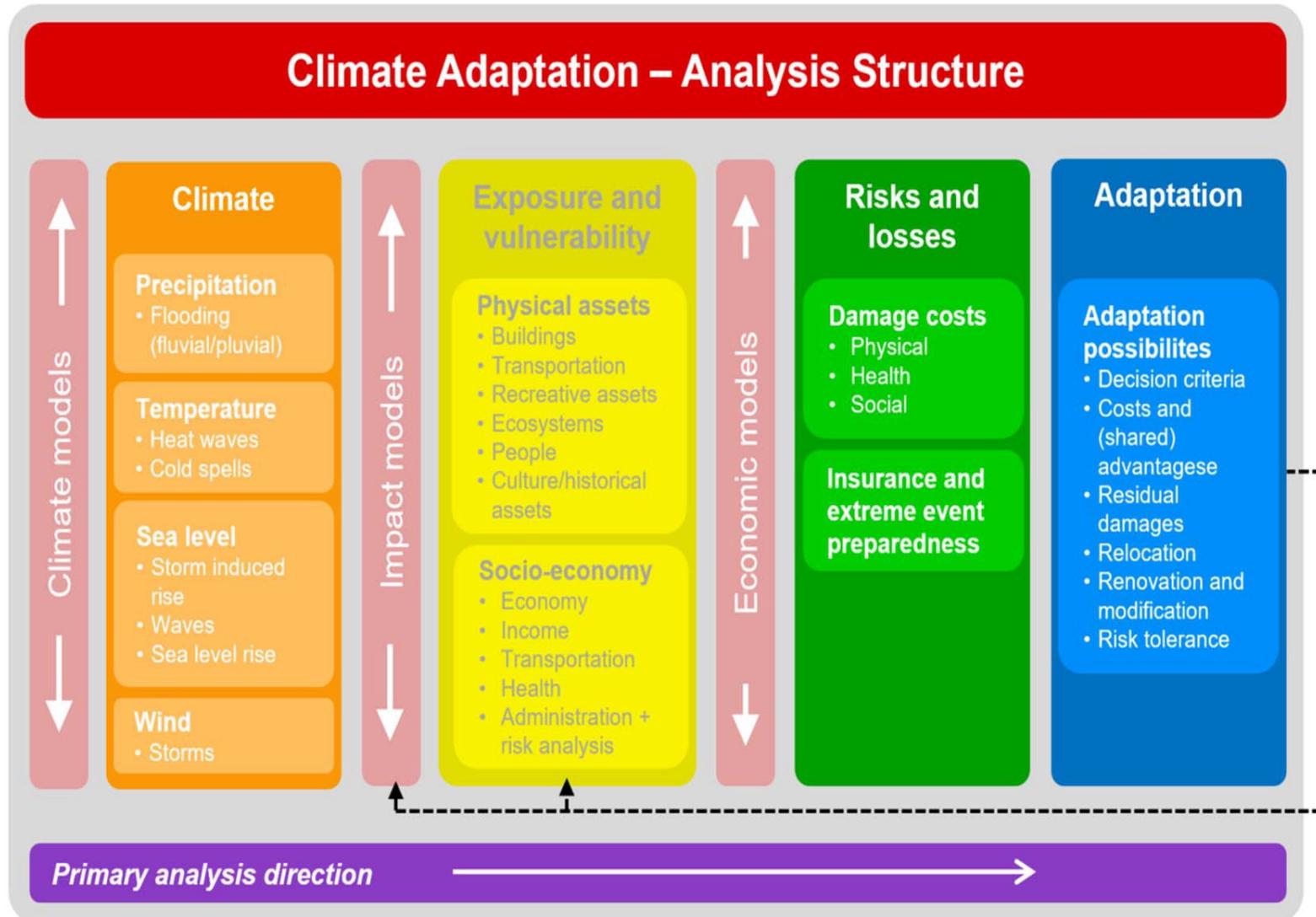
Aabenraa



Ringkøbing-Skjern



Using a coherent methodological approach



Conclusions:

Despite facing somehow comparable challenges, each municipality and/or coastal community is different regarding its history (of floods), tradition, administrative setup, competences, awareness, experiences, political agenda etc.

Technical solutions are at hand but we need more holistic, sustainable and risk-based solutions for coastal protection.

A combination of top down and bottom up approaches are advocated.

More experiences/ good examples needed, and a need for more focus on transdisciplinarity including e.g. social sciences and economics.

Robust methods to facilitate stakeholders/citizens advocated for →
Process-oriented ways of dealing with climate change issues in society.

Funding, politics & people.

Thank you!

