

Climate Change Adaptation in Urban Planning in Norway

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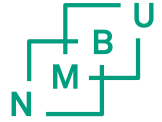
- Norwegian University of Life Sciences
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- www.nmbu.no/ilp



Urban/Spatial Planning in Norway

- The 428 municipalities are the primary planning agency – making legally binding spatial plans according to the Planning & Building Act - for their total territory
- The Municipal Council adopts the plans (municipal master plans and detailed zoning plans)
- National Guidelines – The Ministry of Local Government and Modernisation
- A system of objection if the local plans are in conflict with regional and/or national goals and considerations
- The County Governor coordinates the different agencies at regional level (with the right to make objections to local plans)
- The County Council adopts regional plans – but they are not legally binding

Mitigation and adaptation in urban areas



- Tradition for mitigation efforts in planning: compact city
- Emerging understanding of both adaptation and mitigation
- Compact city as an ideal- and a problem

Densification – a double edge sword



Climate Change in Urban Planning in Norway

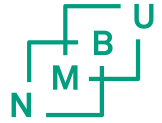


- The PLAN-project (Potential and Limits for Climate Change Adaptation in Norway, funded by NFR)
 - Sub-project 4: Adaptation in Urban Planning and Waterfront Development (NIBR)
- The Coast-Adapt-Project (Interreg)

Method

- Qualitative research design
- In depth interviews with 44 persons September 2008
February 2010
- Local politicians, municipal administrators, developers
- 11 building projects in vulnerable areas
- Document studies of plans

Case-cities

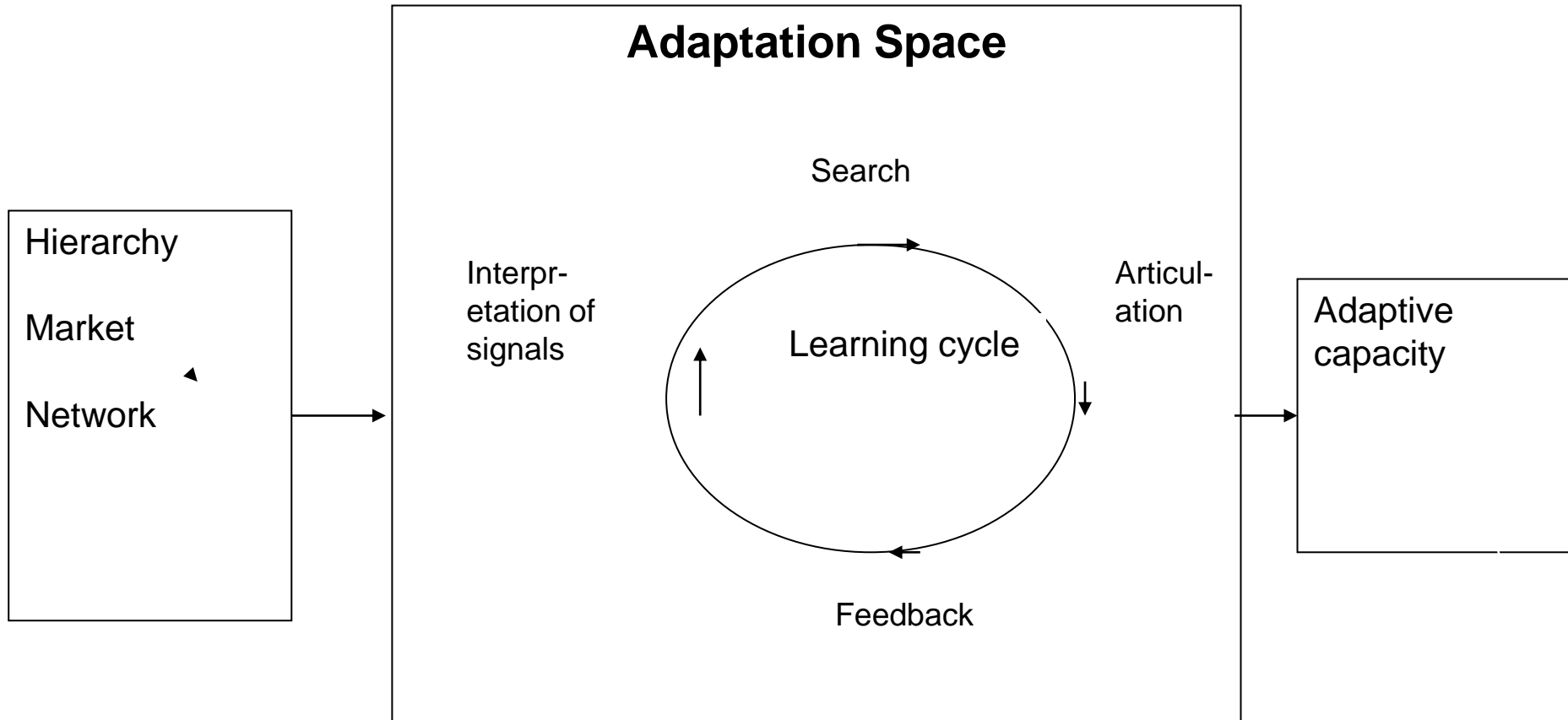
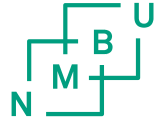


Adaptation in an urban planning context



- Adaptation within a neo-liberal planning ideology
 - Private planning initiative (zoning plans)
 - Cooperation private-public
 - Public planning hierarchy with governing ambitions
- Adaptation within a complex system with a number of actors with diverging goals, interests and values
- The actors need to be coordinated in order to adapt to Climate Change

Theoretical framework



Governance modes			
Learning cycle	Hierarchy	Network	Market
<i>Interpretation</i>	Rules (regulations guidelines)	Shared understanding	Price mechanism reflect risk– Dependent on demand
<i>Search for solution</i>	Implementing fixed solutions	Shared solutions	Cost- effectiveness Discount horizon
<i>Articulation</i>	New routines, norms guidelines, organisations	Implementation in own organisation	Changed supply
<i>Feedback</i>	From local to central government	Collective learning	Price mechanism Learning from one project to the next

Adaptation – hierarchy

- Few clear signals, incentives and claims to the municipalities
 - Few objections from responsible actors
 - Few clear signals to developers
 - Adaptation – only for the experts
 - Lack of operational scenarios for the municipalities
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- This is in line with experiences from UK show that lack of guidelines from the central government is a barrier to adaptation (Wilson 2006)

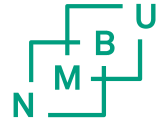
Adaptation – market

- Dependency of the market - demand for adapted solutions
 - Few and weak signals – with Fredrikstad as an exception (based on earlier experiences with flooding)
 - Still high demand for exposed buildings along rivers and coastline (despite their vulnerability to future Climate Change)
 - Example of developer trying to sell exposure to harsh climate
 - Short planning horizon among developers
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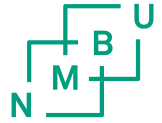
Adaptation in networks

- Adaptation in urban development claim collective learning and action, and innovative solutions
- A huge numbers of networks in urban development, i.e. between developers and municipal staff/local politicians
- But we found few networks where adaptation is in focus
 - With some exeptions: Networks between cities, as "Cities of tomorrow", networks between the municipal staff and professional networks
 - But little evidence on collective learning
 - Hammerfest the most promising case

CoastAdapt – Interreg Northern coastal peripheri



Hammerfest – transform from fishery to petroleum



Hammerfest

- Involved in NORADAPT, CoastAdapt
 - Received their own down-scaled scenarios
 - Local seminar/workshop with researchers – local vulnerability assessment
 - Climate and energy plan – with also includes adaptation
 - Long tradition for adaptation i.e. in the building sector, in cooperation with the Husbanken (the regional office in Hammerfest)
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Measures in Hammerfest

- Adaptation to sea level rise in the new municipal master plan – 3 m limit above sea level for new constructions
 - Requirement of climate analysis for all zoning plans/development plans
 - Avalanche prevention
 - Adaptation to extreme weather conditions, as snow and wind
 - Zoning plan for adapted housing development
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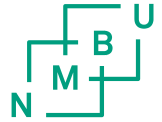
Adaptation to Sea Level Rise

- Stokke, Knut Bjørn (2013): Adaptation to sea level rise in spatial planning – Experiences from coastal towns in Norway. In Ocean & Coastal Management 94, 66-73

	Year 2050			Year 2100			
Norwegian cities	Rebound (cm)	Sea level rise (cm)*	Storm tide (cm)*	Rebound (cm)	Sea level tide (cm)*	Storm tide (cm)*	
Hammerfest	13	19 (11-33)	236 (228-250)	25	65 (45-100)	287 (267-322)	
Tromsø	13	18 (10-32)	237 (229-251)	27	63 (43-98)	287 (267-327)	
Bodø	18	13 (5-27)	257 (249-271)	36	54 (34-89)	303 (283-338)	
Trondheim	24	7 (-1-21)	254 (243-265)	48	42 (22-77)	294 (274-329)	
Ålesund	9	22 (14-36)	220 (212-234)	19	71 (51-106)	274 (254-305)	
Bergen	8	23 (15-37)	186 (178-200)	17	73 (53-108)	241 (221-276)	
Oslo	25	7 (-2-21)	197 (189-211)	49	41 (21-76)	236 (216-271)	
Fredrikstad	19	12 (4-26)	172 (164-186)	38	52 (32-87)	217 (197-252)	

* Uncertainty intervals in ().

Barriers to adaptation to sea level rise in Norwegian Cities



- Decision makers don't yet consider sea level rise as a relevant challenge in Norwegian towns
- Lack of authoritative signals from the national government (hierarchical apathy)
- Few signals from the market – still high demand for waterfront settlement (still increasing prices)
- Small and isolated networks
- However, an increasing awareness in line with increased knowledge

Conditions for adaptation in Hammerfest



- Key individuals in the municipal administration
- Capacity to build networks,
 - Within the municipality
 - With actors outside: The Norwegian Housing Bank, research projects
 - Learning networks and make existing knowledge available and adjusted to local conditions