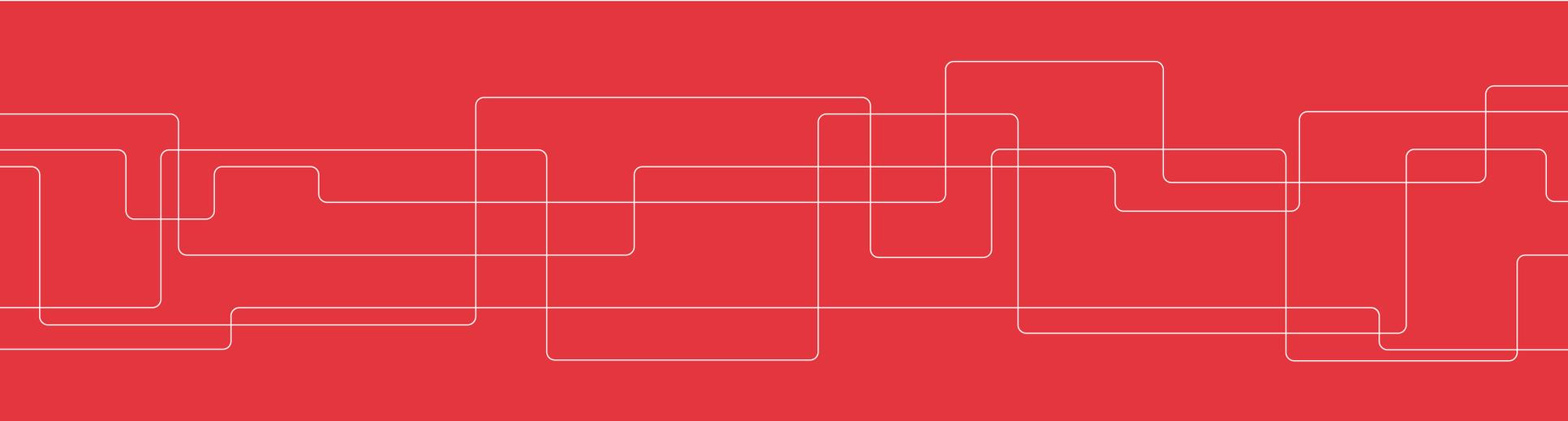




Ethical aspects of adaptation to rising sea levels

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Rising sea levels come at steeper cost

Rising sea levels bring the prospect of more violence and expense. Four new studies confirm the menace of the waves.



Spain-sized glacier sounds alarm on rising sea levels

Senegal city races to move families as sea swallows homes

Apr. 03, 2018, 9:00 am | By REUTERS @reutersafrica



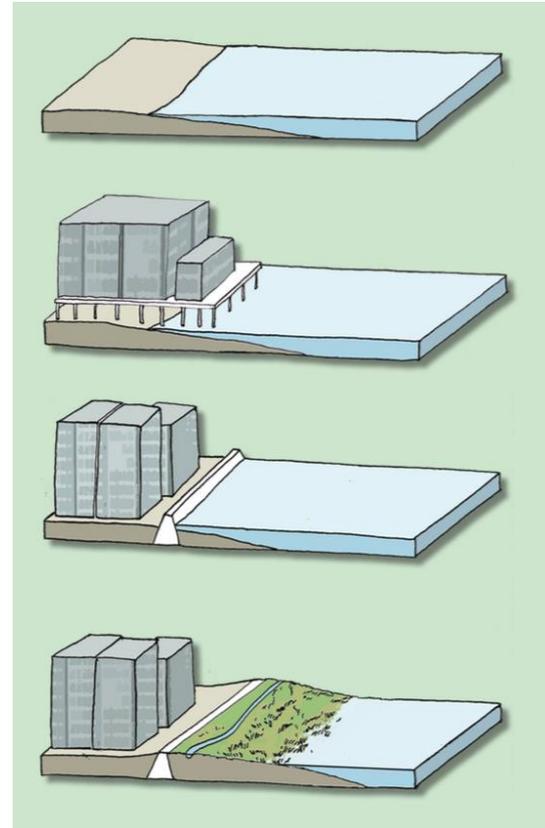
Count On Sea Levels To Keep Rising For A Long Time

Sea Level Rise Will Rapidly Worsen Coastal Flooding in Coming Decades, NOAA Warns

Sea level rise could be even worse for San Francisco than previously thought

Coastal cities in California and Florida are especially vulnerable to climate change

- Retreat
- Accommodate
- Protect





“Adaptation is an ethical issue as it deals with fair processes and fair outcomes” (Adger et al., 2017)

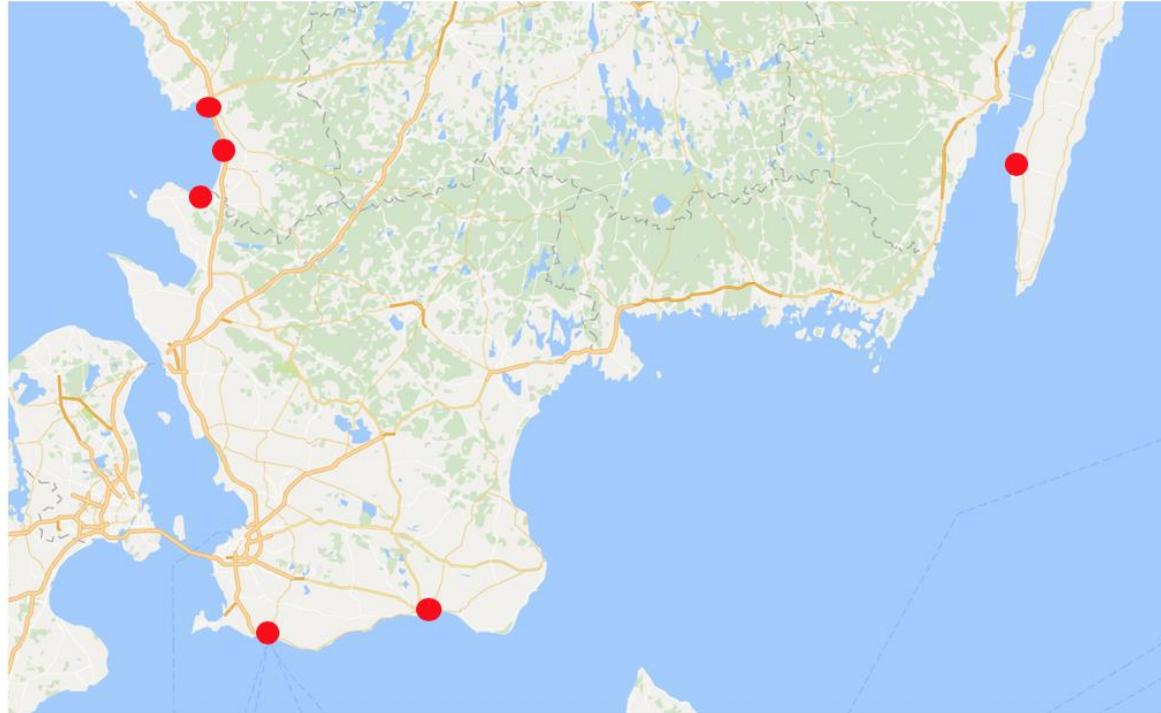
*“Adaptation is fundamentally an ethical issue because the aim of adaptation is to preserve that which we value”
(Hartzell-Nichols, 2011)*



FORMAS



sea-rims



white



“Which ethical issues of relevance to adaptation to sea level rise can be identified in the scientific literature on climate change?”



Eight ethical themes

1. Distributive justice
2. Procedural justice
3. Intergenerational justice
4. Rights
5. Responsibility and compensation
6. Individual and collective responsibility
7. Uncertainty and precaution
8. Fundamental values

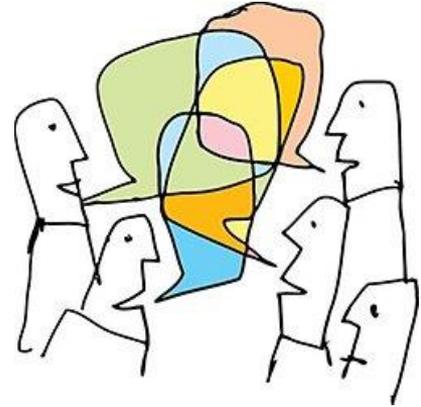
1. Distributive justice



2. Procedural justice

Who gets to decide? And on what grounds?

How do we ensure that the processes are fair? What tools are needed?





3. Intergenerational justice

Costs and benefits are not only distributed within generations but also between generations.

What are implications for future generations if we choose to build in low lying coastal zones today?



4. Rights

How are our rights affected when society adapts to SLR?

Human rights

Property rights

Propriety rights?

Conflicting rights?



5. Responsibility and compensation

Who should pay for adaptation?

- Polluter pays
- Ability to pay
- Beneficiary pays



6. Individual and collective responsibility

Climate change is “a problem of many hands”

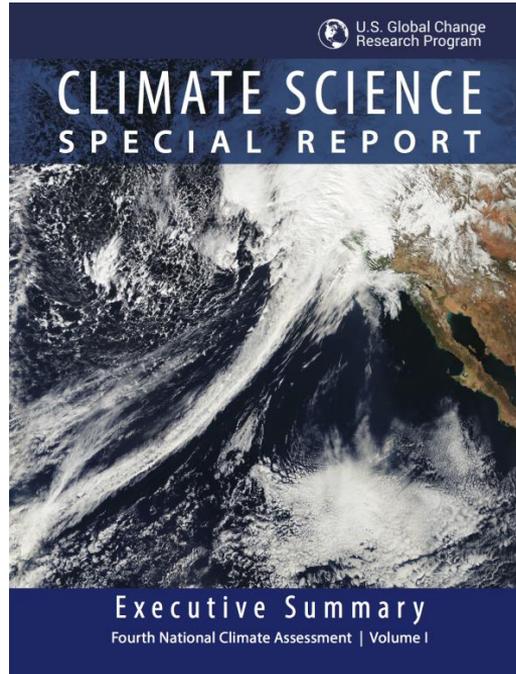
What responsibility does the individual hold for adaptation?

What responsibility does the collective hold?

Institutional responsibility? What responsibility does a municipality have in protecting its citizens against rising sea levels? The state? Today? Tomorrow?



7. Uncertainty and precaution





7. Uncertainty and precaution

| GMSL Scenario (metres) | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 | 2090 | 2100 | 2120 | 2150 | 2200 |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Low | 0.03 | 0.06 | 0.09 | 0.13 | 0.16 | 0.19 | 0.22 | 0.25 | 0.28 | 0.30 | 0.34 | 0.37 | 0.39 |
| Intermediate-Low | 0.04 | 0.08 | 0.13 | 0.18 | 0.24 | 0.29 | 0.35 | 0.40 | 0.45 | 0.50 | 0.60 | 0.73 | 0.95 |
| Intermediate | 0.04 | 0.10 | 0.16 | 0.25 | 0.34 | 0.45 | 0.57 | 0.71 | 0.85 | 1.0 | 1.3 | 1.8 | 2.8 |
| Intermediate-High | 0.05 | 0.10 | 0.19 | 0.30 | 0.44 | 0.60 | 0.79 | 1.0 | 1.2 | 1.5 | 2.0 | 3.1 | 5.1 |
| High | 0.05 | 0.11 | 0.21 | 0.36 | 0.54 | 0.77 | 1.0 | 1.3 | 1.7 | 2.0 | 2.8 | 4.3 | 7.5 |
| Extreme | 0.05 | 0.11 | 0.24 | 0.41 | 0.63 | 0.90 | 1.2 | 1.6 | 2.0 | 2.5 | 3.6 | 5.5 | 9.7 |

Global mean sea level rise until 2200 for the six scenarios presented in the US National Climate Assessment, Sweet et al. (2017).



7. Uncertainty and precaution

Rather safe than sorry?

Strategies under uncertainty

- Precautionary principle
- Flexible solutions
- No-regret-solutions



8. Fundamental values

What is worth protecting? And why?

Humans and property. But what about:

- Environmental values
- Cultural values
- Other values?



Concluding remarks

Ethical perspective is valuable.

Needs to be incorporated into processes.

And tools?

Further research is needed!

To research the various themes,

And apply them on specific adaptation options.



Thank you!

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