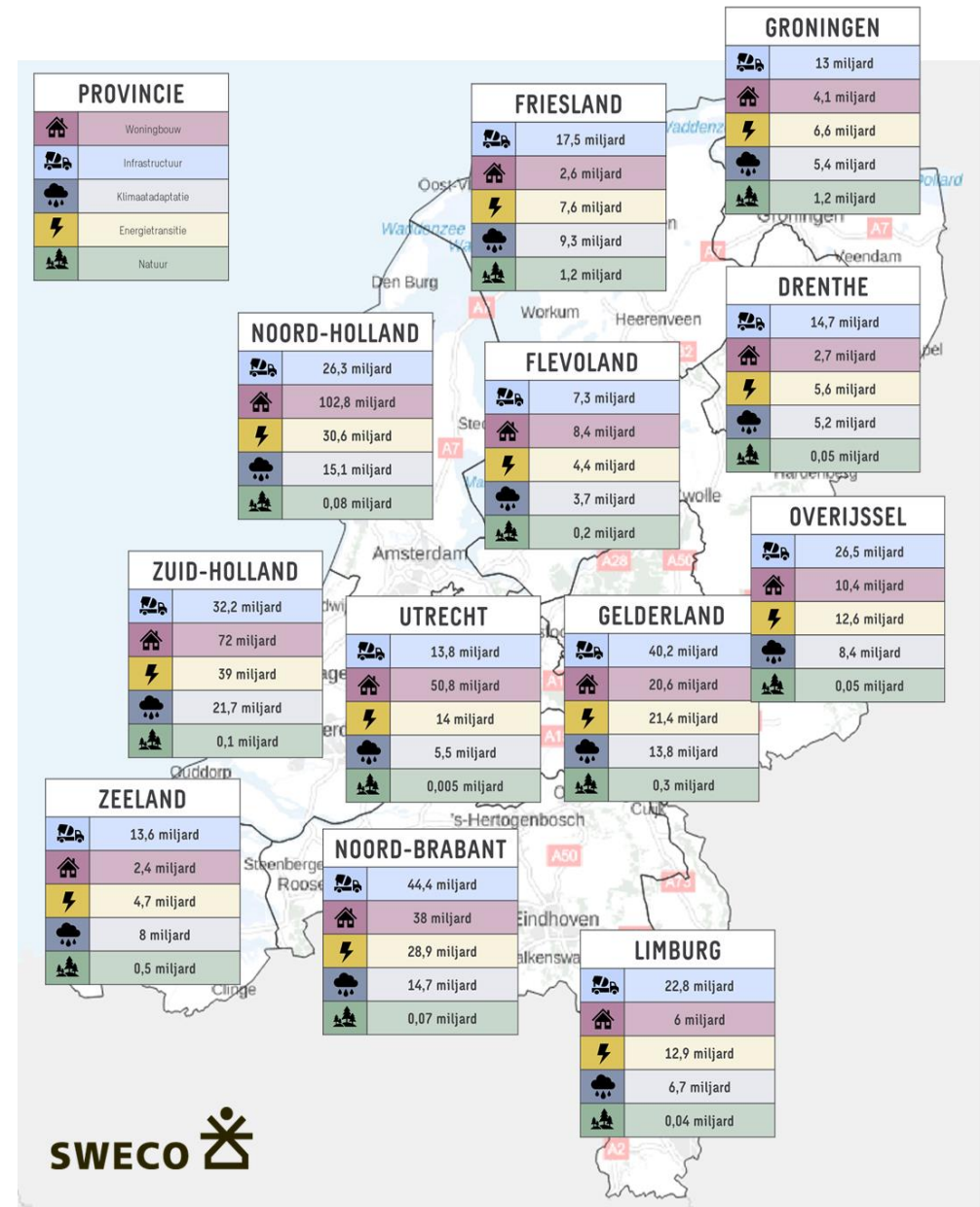
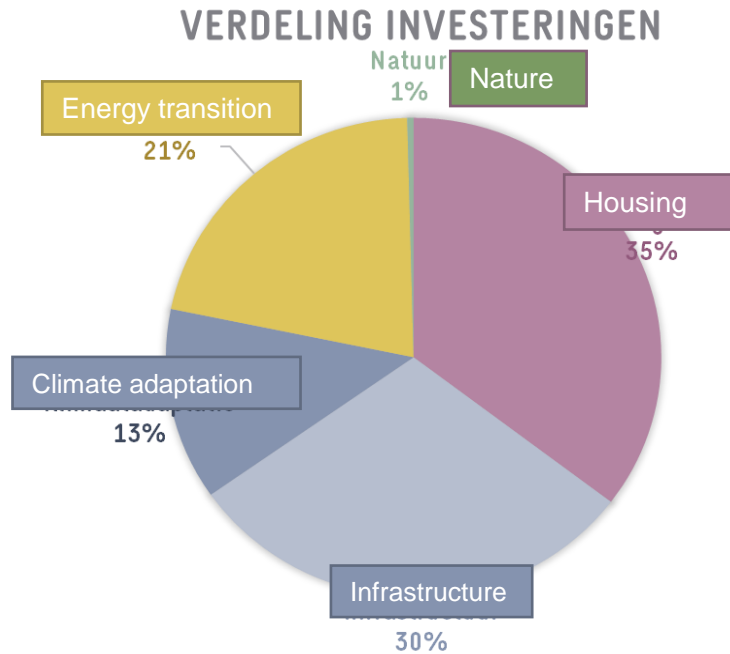


From long-term uncertainty towards decision making



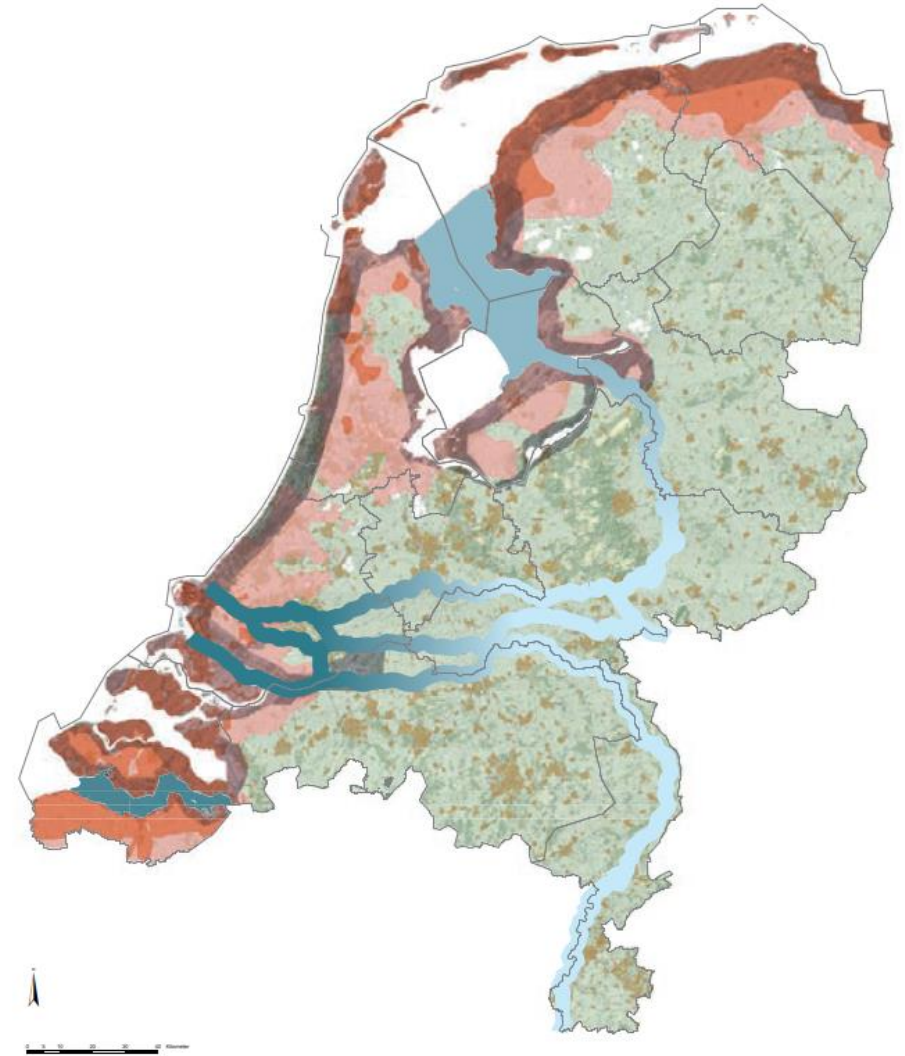
Investment in long-term spatial planning

- Over €900 billion will be invested from 2020-2050
- Over €600 billion in the Deltaprogramme regions



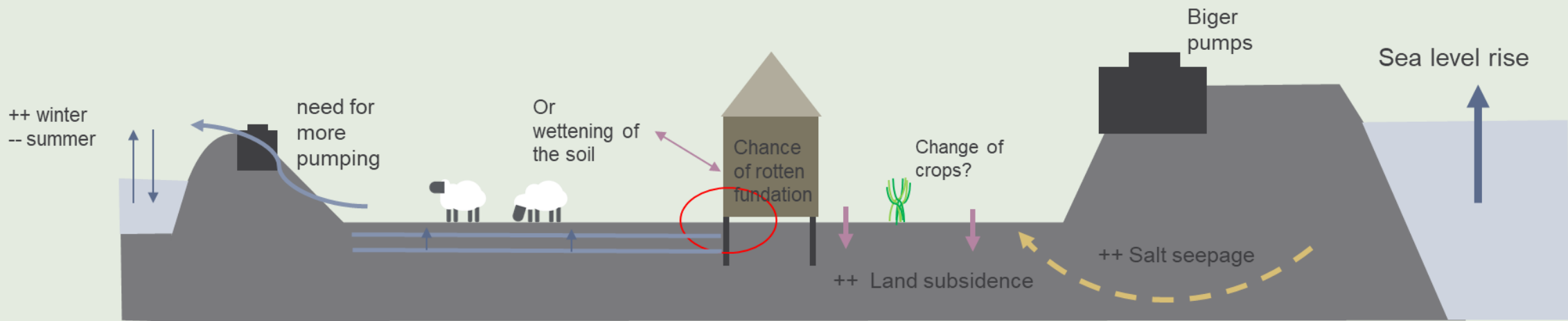
Effects of sea level rise

- Increase of water levels along the coast and (open) rivers
- Increase of salinisation
- Water management in polder areas more challenging



Impacts of SLR to the investment agenda

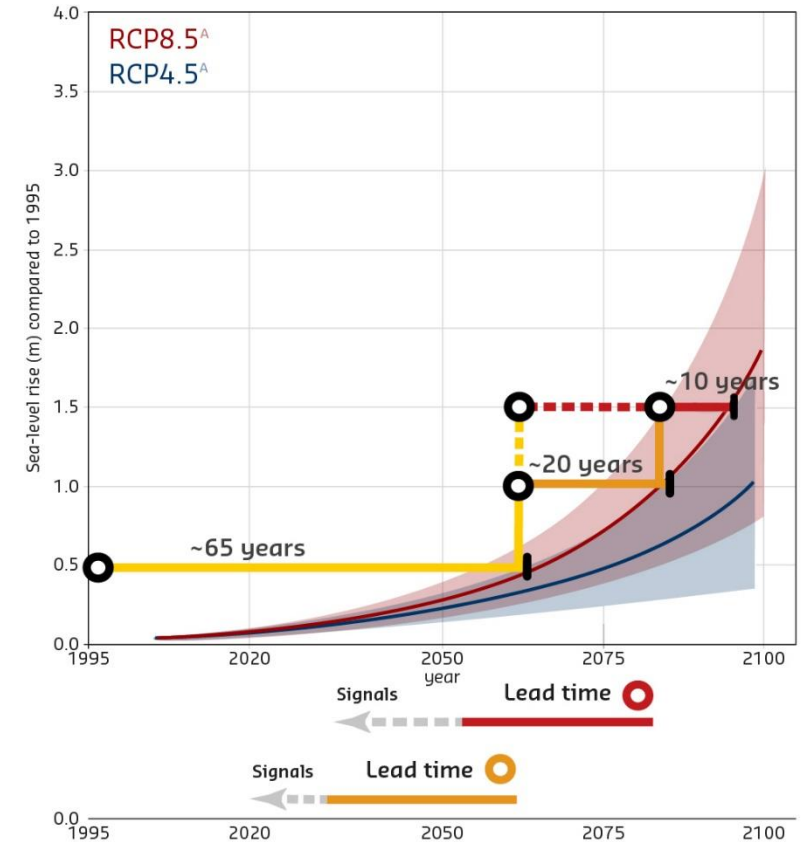
- **Infrastructure:** ports, shipping routes under pressure, impact of more saline water for drinking water inlets, underground networks
- **Housing:** long lifetime, pressure on available space, higher change of water nuisance
- **Energy transition:** underground heat-cold storage and underground infrastructure— possible impact of salination
- **Climate adaptation:** hightening (and widening) of dikes, increase of suppletion
- **Agriculture:** Salinization (+drought), reduction of water quality
- **Nature:** impact to coastal nature, change of water quality, impact to N2000



Room for investment

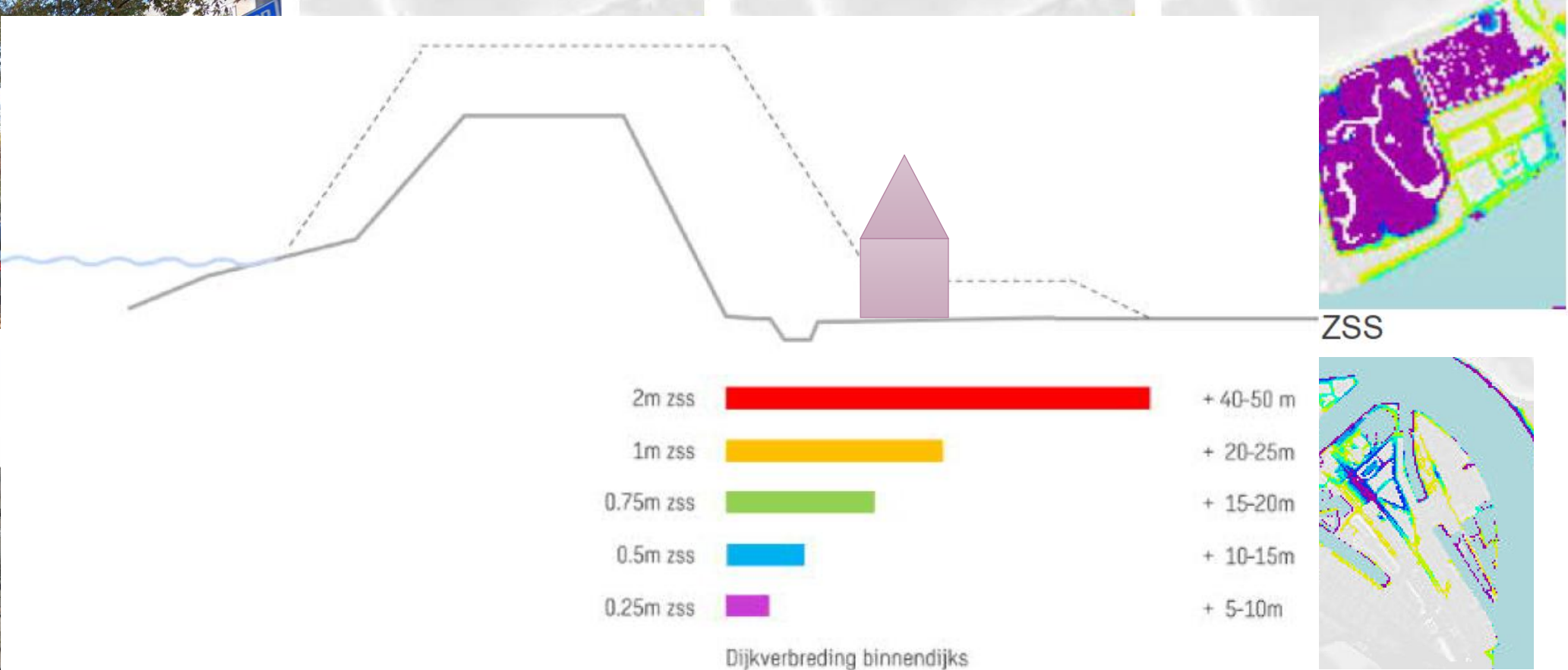
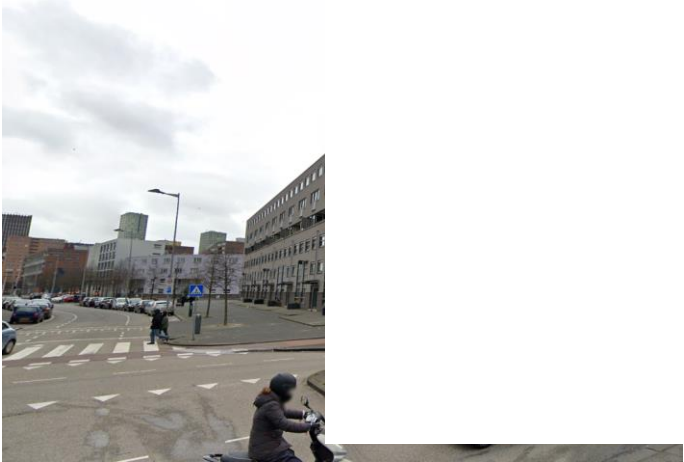
- All investments have impact on the available space in the living society
- Investments have a long lifetime, often 40-80 years
- Investments attract other investments
- Networks become bigger and of higher economic value
- The time to respond becomes shorter in the future

Risk: lock-in → limited flexibility and adjustability



Source: Deltares, 2019

Impact of SLR to unembanked areas and dikes



T=100, 0m ZSS

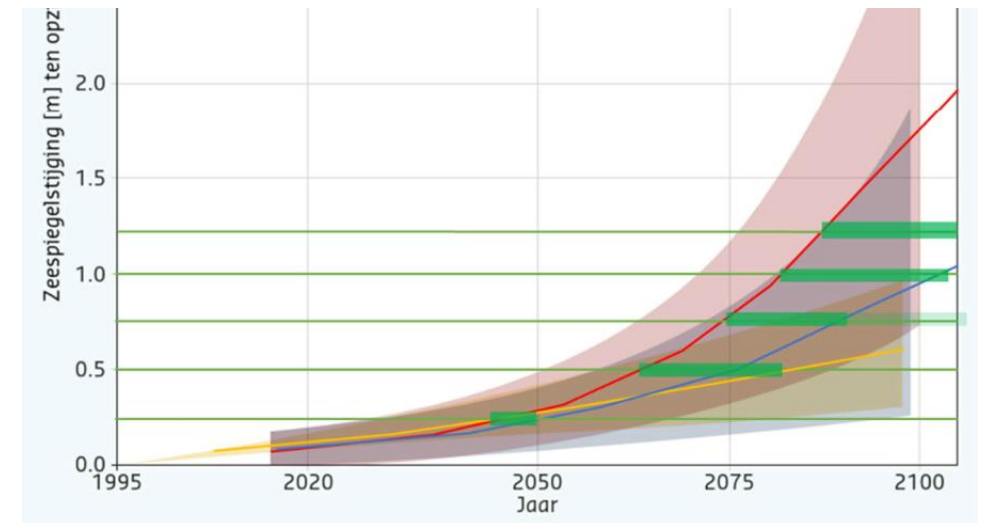
T=100, 0,5m ZSS

T=100, 1m ZSS

Need for no-regret investments

- No-regret: even if the sea level rises an investment can be made without regrets
- Long-term uncertainty simplified based on several indicators

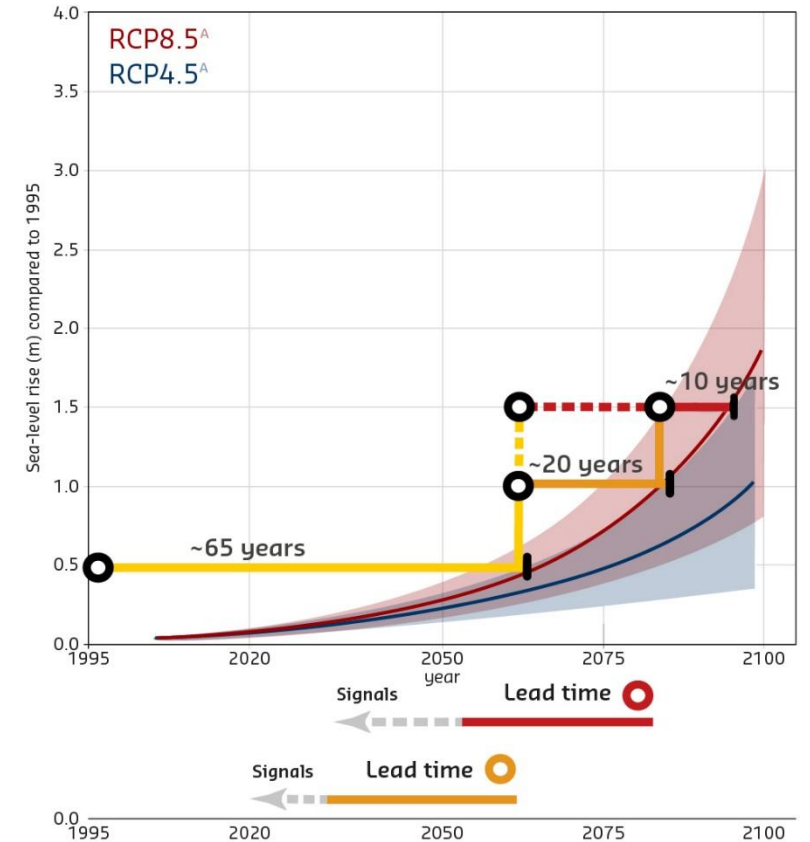
- Investment analysis based on main indicators
 - Short lifetime (technical, social or economical)
 - Adaptation / changes / measures



- No-regret tool: stepwise excel based tool to support municipalities in no-regret decision making

From long-term uncertainty towards decision making

- In the Netherlands, over 900 billion euros will be invested
- There is a lot of uncertainty and time to respond reduces
- Investments are needed now
- Using indicators for decision making now for no-regret investments supports the decision making
- Avoid a lock-in – only invest no- or low-regret
- Plan now and look at the system!



SWECO

