



**Visualising climate
resilient & non-resilient
futures: Some thoughts**
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Visualisations as...

- ... something we can analyze/interpret?
- ... something we can create and use?
- ... stories that communicate something on:
 - Impacts of climate change
 - Uncertainty, complexity
 - Solutions
 - Goals, desirable & undesirable futures



Visualisation as something to interpret



 <p>Traditional Disaster Preparedness Approach Focuses On:</p>	 <p>Community Resilience Approach Focuses On:</p>
<p>Individual households and their readiness to respond to emergencies</p>	<p>Community members working together to respond to and recover from emergencies</p>
<p>Disaster-specific functions</p>	<p>Merging of other community efforts that build social, economic, and</p>



Visualisation as something to interpret

- Visualisations serve as *framing devices*;
 - highlight specific aspects, ignore others
- Visualisations send a certain message;
 - Intentional? Unintentional?
 - Clear? Ambiguous?
- Can they tell us something about how people frame and perceive climate change and adaptation?



Visualisation as something to interpret

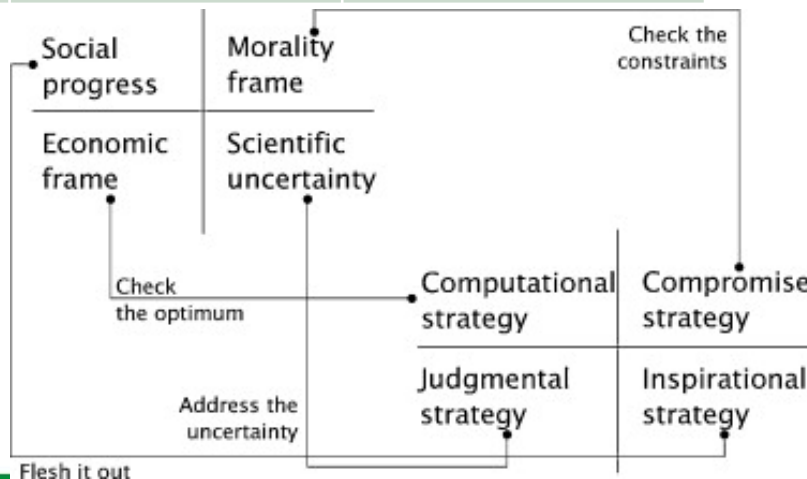
Example coding categories (for text analysis)

- Newspaper (source)
- Province (origin)
- Situation
- Actor
- Theme
- Consequences

(Runhaar e.a., 2015)

Perceptual distance:	Goal-orientation:	
	<i>Prevention</i>	<i>Promotion</i>
<i>long-term, broad</i>	Social progress frame	Morality/ethics frame
<i>short-term, narrow</i>	Economic development frame	Scientific uncertainty frame

(De Boer e.a., 2010; Wardekker e.a., 2009)





Visualisation as something to create & use

Uncertainty visualisation

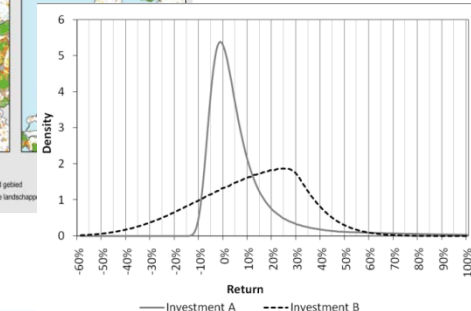
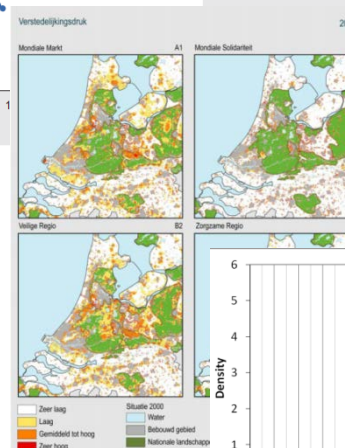
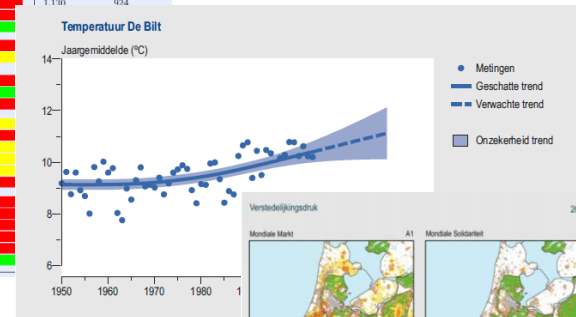
Types:

- (Metaphors)
- Qualitative descriptors
- Ranges
- Comparisons
- Dedicated uncertainty graphs



Tabel 1 Trends in de milieudruk en -kwaliteit, het halen van doelen (2010), en milieukosten (in miljoenen euro per jaar, prijspeil 2004).

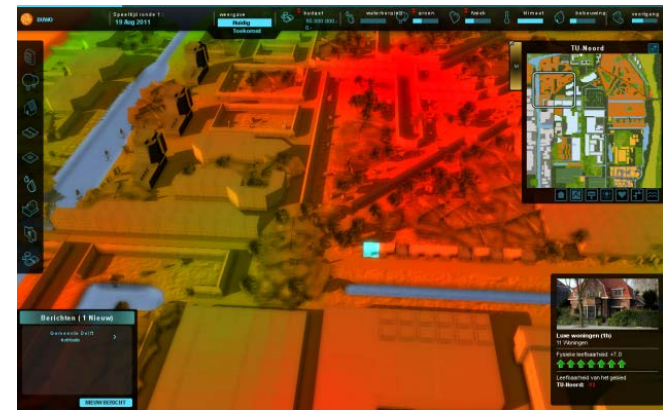
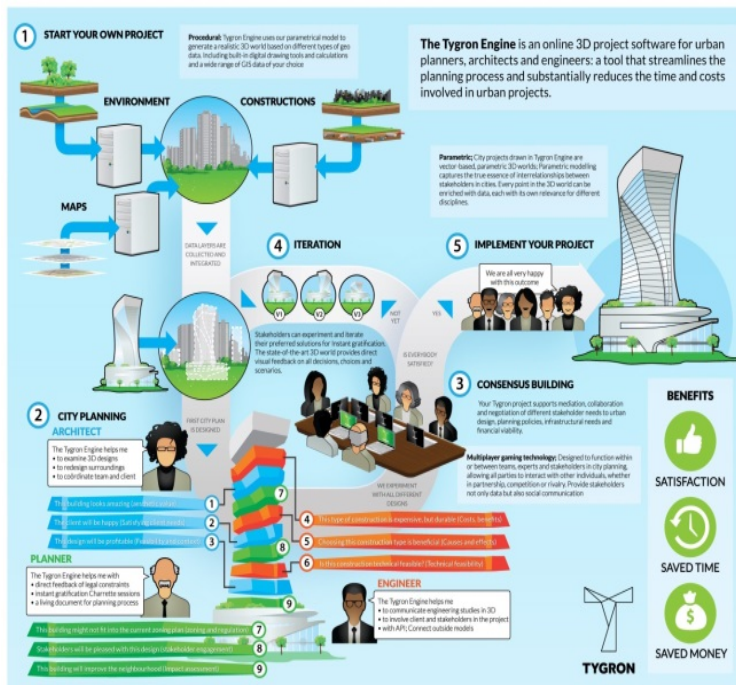
Milieuprobleem	Trend 1985-2004	Beleidsdoel bereikt? 21	Milieukosten samenleving ¹⁾	v.v. Rijksbegroting gem. per jaar (2005-2009)
Klimaat: binnenlands			1.170	974
Klimaat: Kyoto-instrumenten ²⁾		EU		
Energie-efficiënte				
Duurzame energie				
Duurzame elektriciteit				
Emissies NO ₂ , SO ₂		EU		
Emissies VOS, NH ₄		EU		
Emissies fijn stof		EU		
Depositie N / zuur op natuur		EU		
Luchtkwaliteit ozon		EU		
Luchtkwaliteit fijn stof, NO ₂		EU		
Nutriëntenverlies landbouw		EU		
Nitraat in grondwater		EU		
Geleuk dierlijke mest		EU		
Fosfaatverzadiging in bodem		EU		
Bestrijdingsmiddelen				
Oppervlaktewaterkwaliteit				
Biologische landbouw				
Verdurozing				
Geluid				
Externe veiligheid ³⁾				
Bodemsanering				
Afvalbeheer				



(Wardekker, 2012)
(see also Kloprogge e.a. 2007;
Wardekker e.a., 2008, 2013)



Visualisation as something to create & use



(Decision support systems & serious gaming; SAMKUL-UC4A)



Visualisation as something to create & use

Global Market

Global Solidarity



Visualisation of world views, using collages

Safe Region

Caring Region

(MNP, 2004)



Visualisation as something to create & use

- How can visualisation best be used in adaptation decision support?
- Do they help make better decisions under uncertainty (e.g., do they help build resilience)?
- How do users interpret visualisations?
- Can they improve understanding of:
 - Impacts
 - Consequences of decisions
 - Uncertainty & complexity
- Can they improve expression of and discussion on:
 - What climate resilience means to citizens, policymakers, etc.
 - Desirable & undesirable futures
 - Stakes, values, positions, etc.



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