



Influences of Global and Regional Change on the Resilience of Critical Infrastructures

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Current discourse on CI Resilience

- Hazard-oriented perspective: (Wilbanks & Fernandez, 2012)
- Sector-specific approaches
- Interaction of systems and cascading effects
- Dominant focus on technical systems and their operation

- Inadequate consideration of:
 - Social dependencies on CI
 - Other (social, economic, environmental, technological) global change aspects

→ Systemic risks need stronger consideration
(Gamper, 2014; Aven and Renn, 2010)





Amendment: Environmental Impact Assessment

Amendment of the Environmental Impact Assessment Directive
(EC 2014):

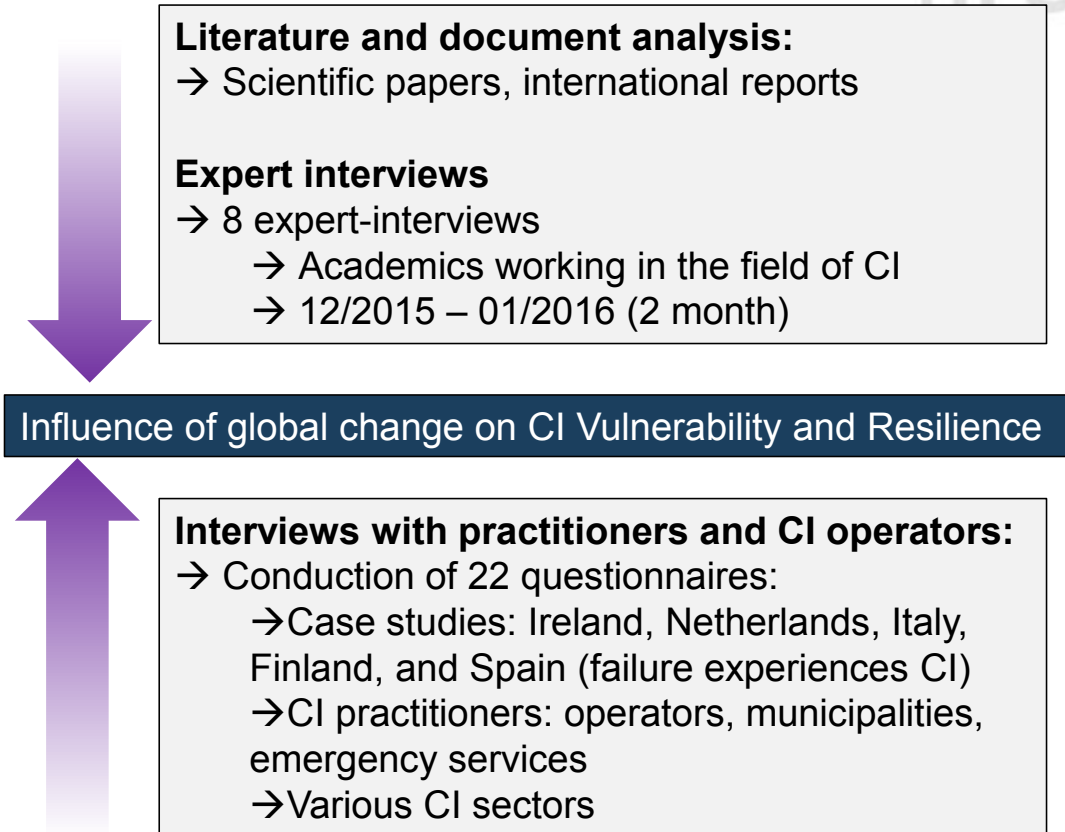
“The environmental impact assessment shall identify, describe and assess [...] the direct and indirect significant effects of a project on the following factors: exposure, vulnerability and resilience (....) to natural and man-made disaster risks.”



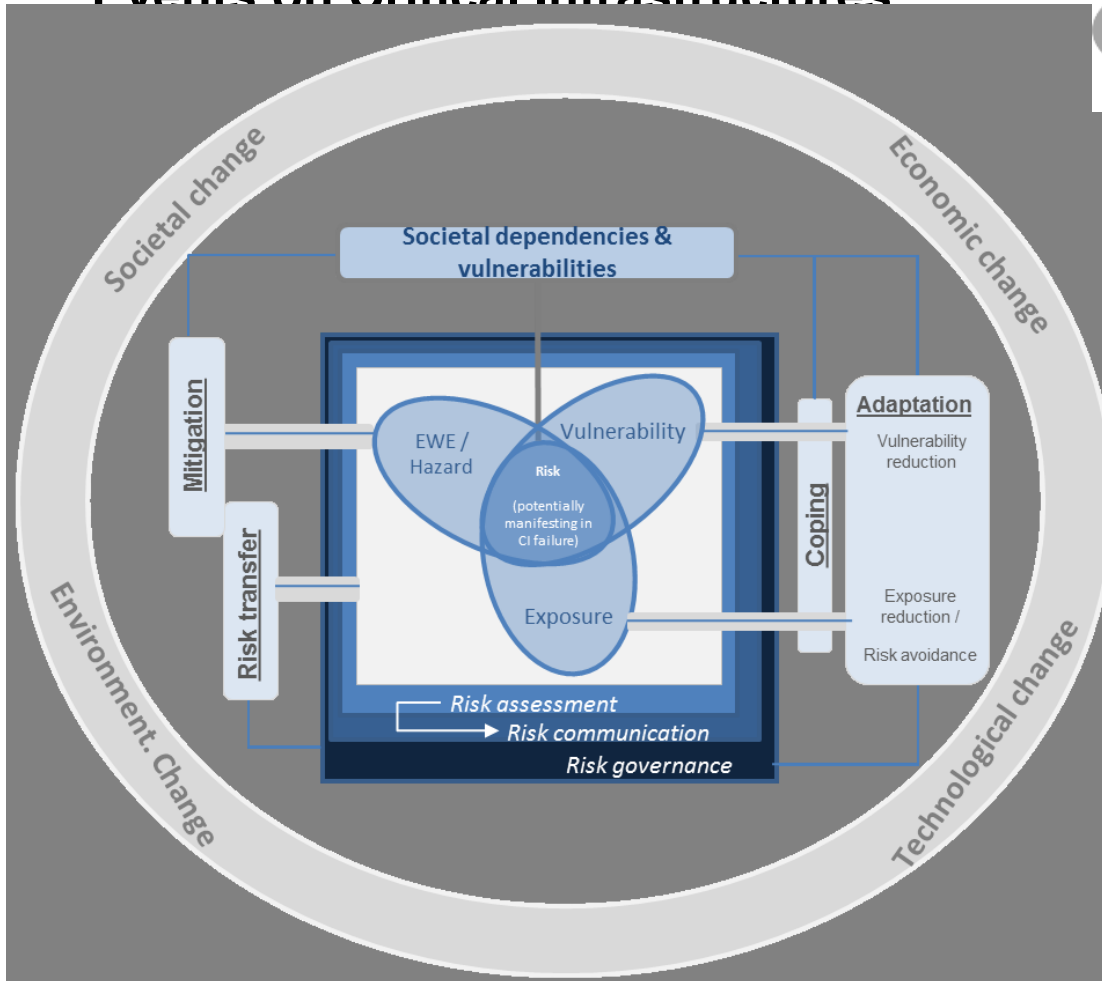
Key Questions

1. Which global and regional changes are relevant for Critical Infrastructures?
2. How do global and regional changes influence vulnerability and resilience of Critical Infrastructures?
3. How do global and regional changes influence the dependency of people on Critical Infrastructure services?

Research Design



5 **INTACT – On the Impact of Extreme Events on Critical Infrastructures**

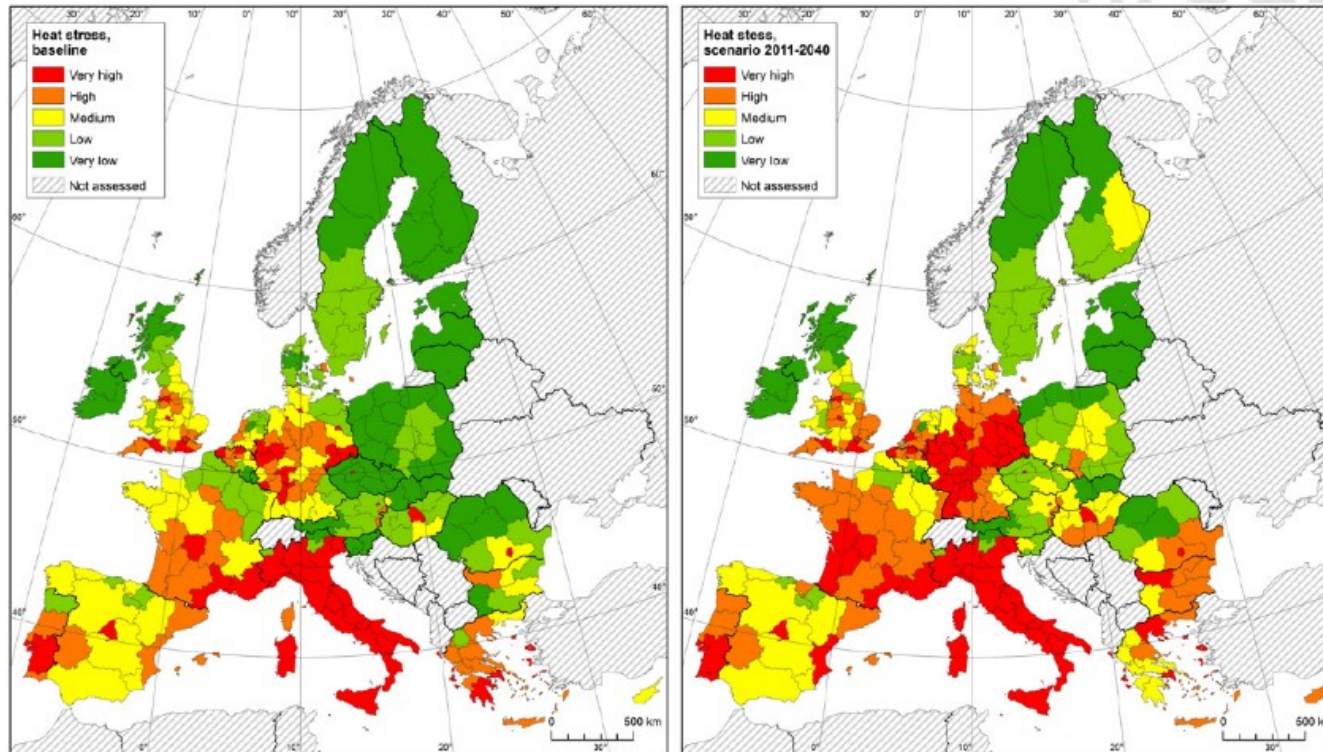


- FP7-Project
- 12 partners
- 5 Case Study Regions

McCord et al. (2015, p53)

Adaptation Futures

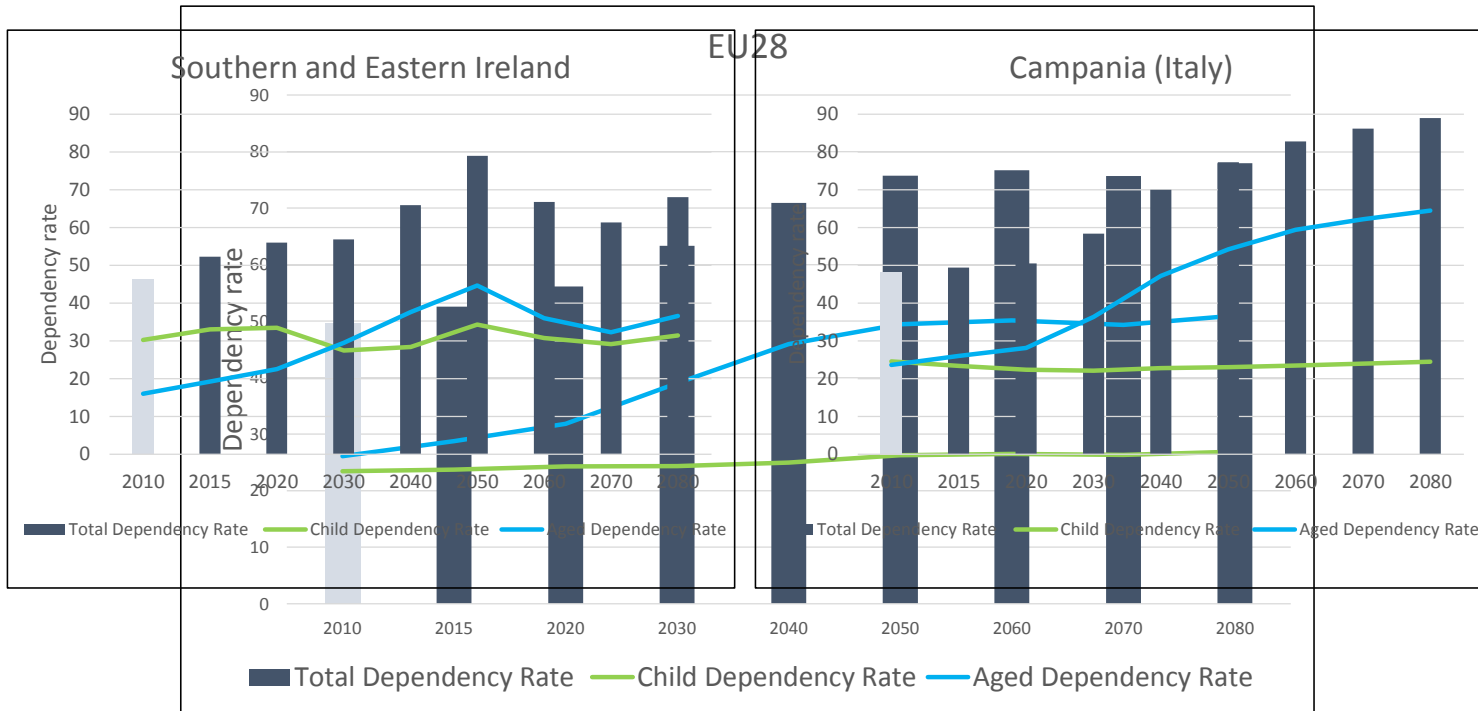
Change dimension: heat stress and heat risk



Source: Lung et al. 2013

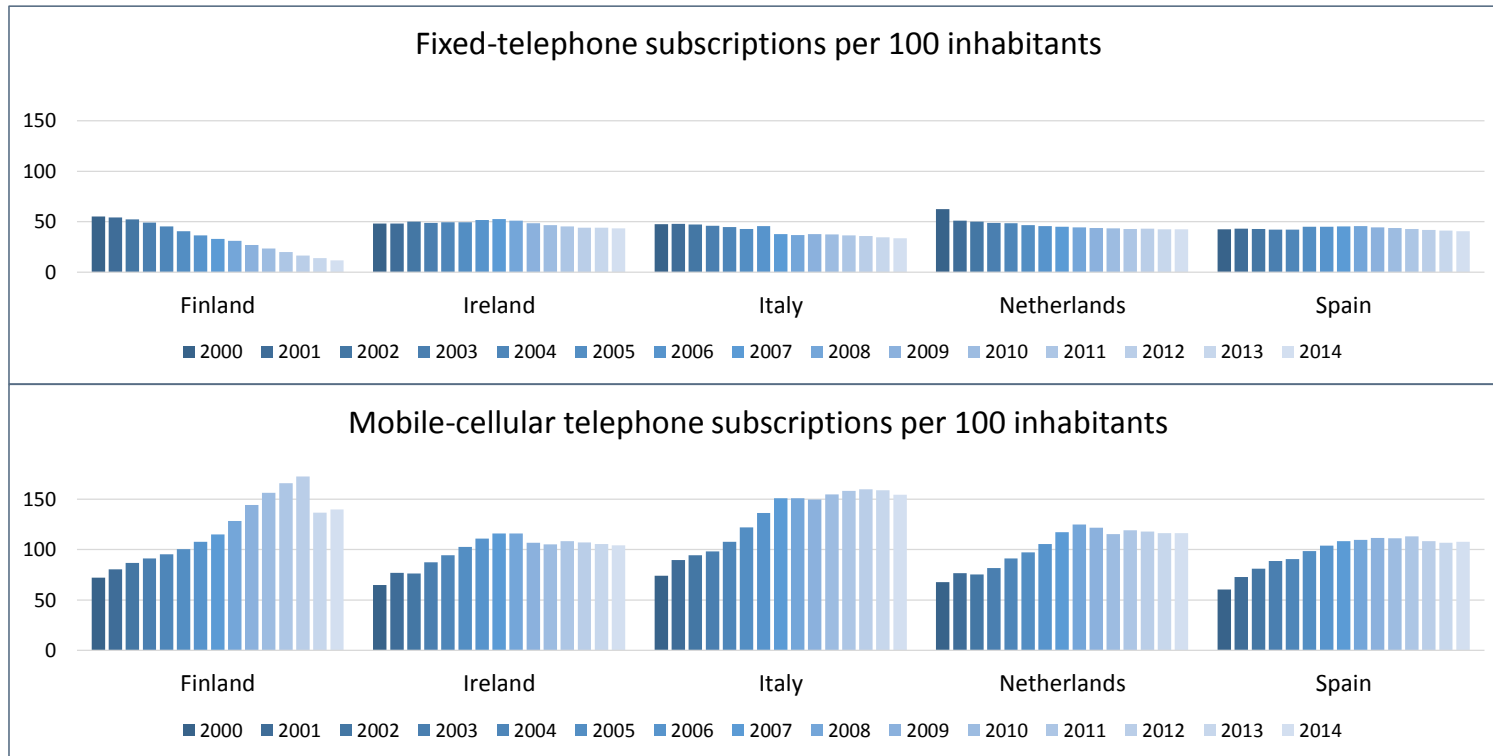


Change dimension: aging and dependency rates




Source: Own calculation based on EUROSTAT 2015

Change dimension: technology / ICT usage



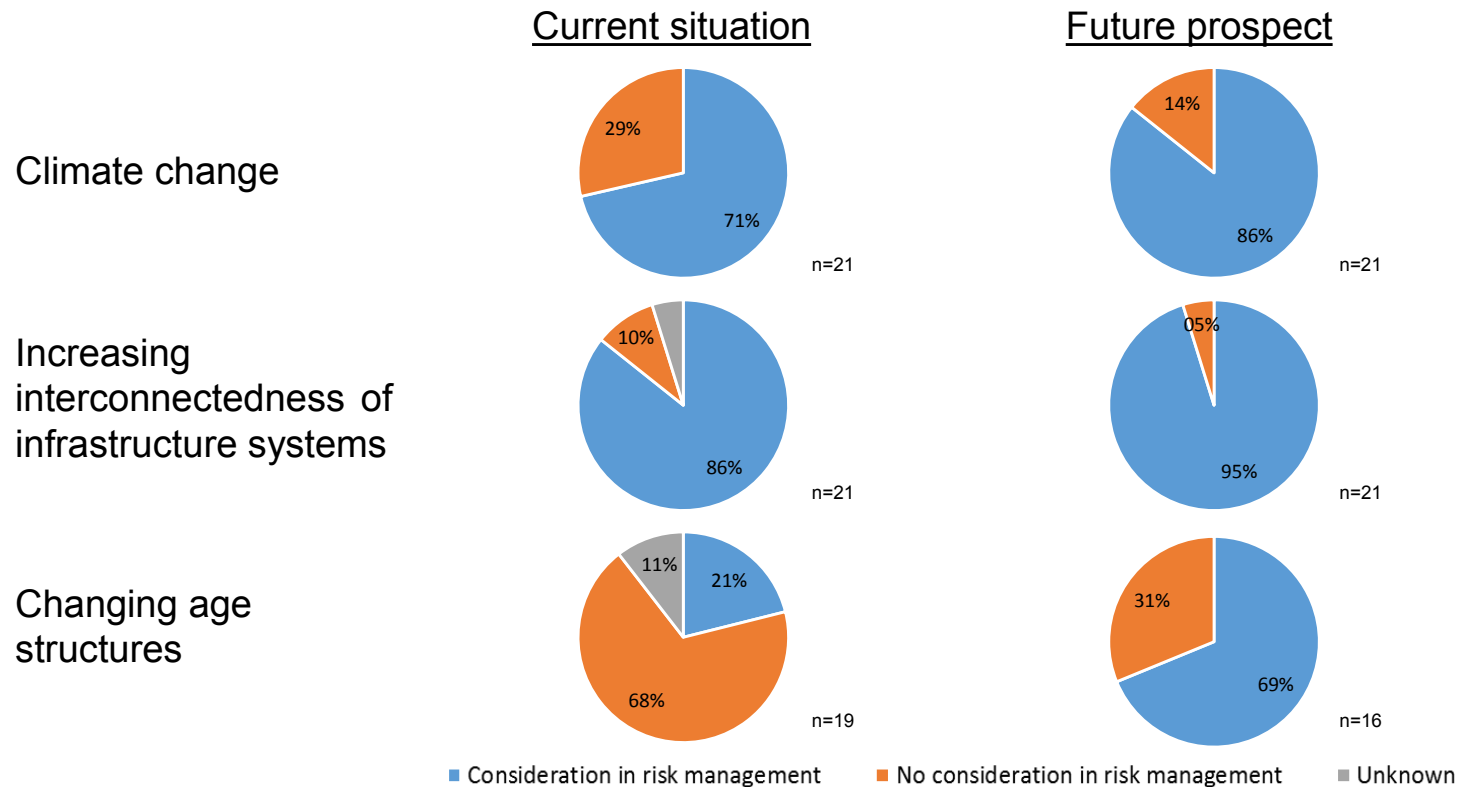
Source: Own calculation based on ITU 2015

Global change dimensions with impacts on CI and their assessed relevance (median)



	Stakeholder	Experts
1. Increasing interconnectedness of infrastructure systems	3	3
2. Increasing dependency on CI	2.5	2
3. Climate change	2	2
4. Urbanisation	2	2
5. Population size development	2	2
6. Economic growth and competition for resources	2	2
7. Changing institutional setting and governance	2	3
8. Changes towards a sustainable energy system	2	2
9. Changing age structures	1	1
0 - Not relevant 1 - Slightly relevant 2 - Relevant 3 - Very relevant	n=22	n=7

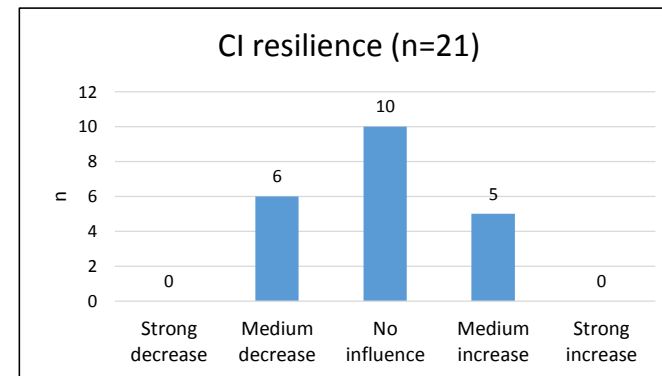
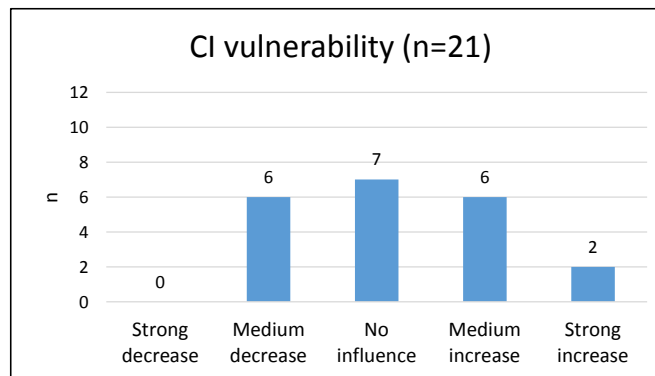
Consideration of trends in risk management of CI



Influences of global changes on CI vulnerability and resilience

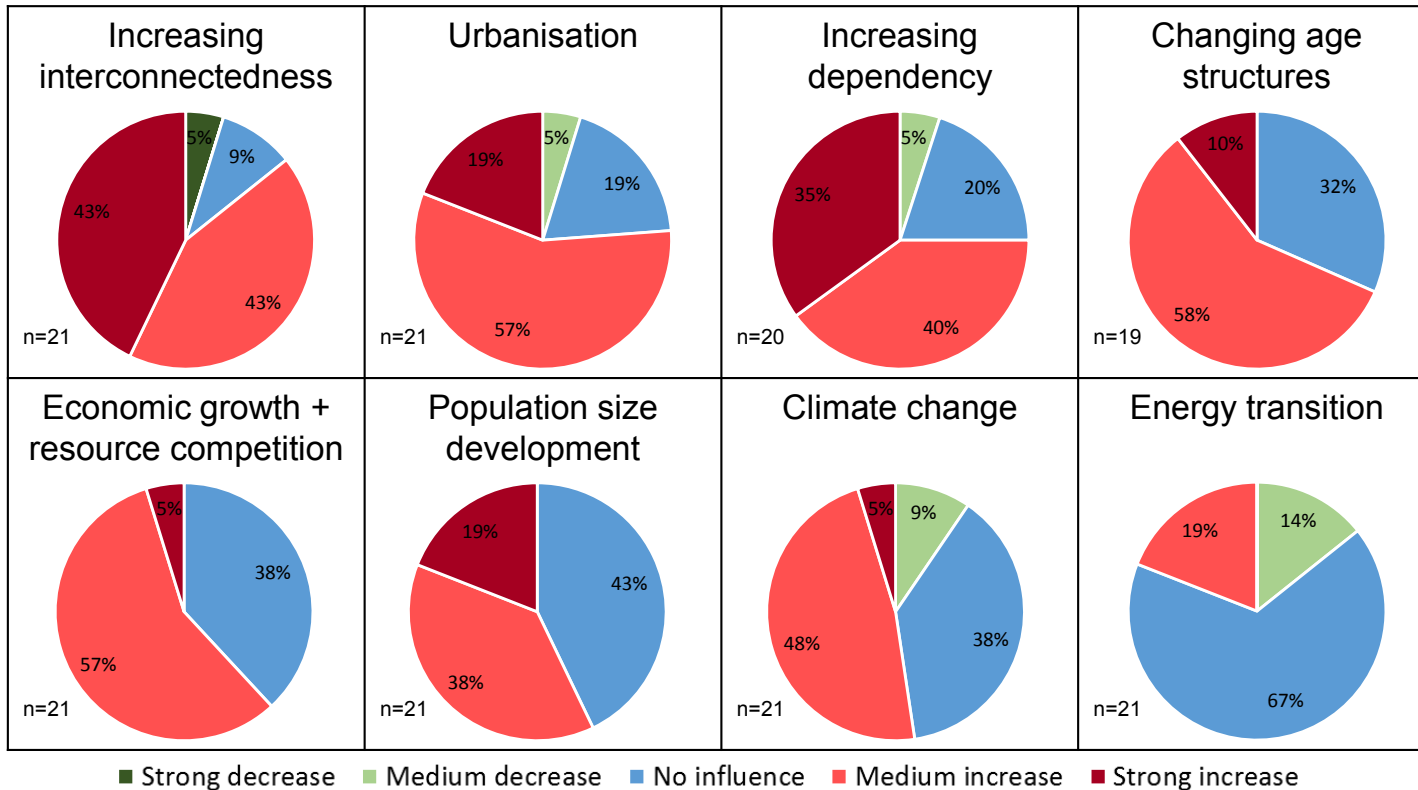


- Influences of most global changes on CI vulnerability and resilience as ambiguous
- For example: Stakeholder's assessment of influences of "Changes towards a sustainable energy system" on:





Influences of different trends on peoples' dependency on CI services



Conclusion



■ ■ ■



Thank you!

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Literature

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