Innovations for sustainability and transformative outcomes

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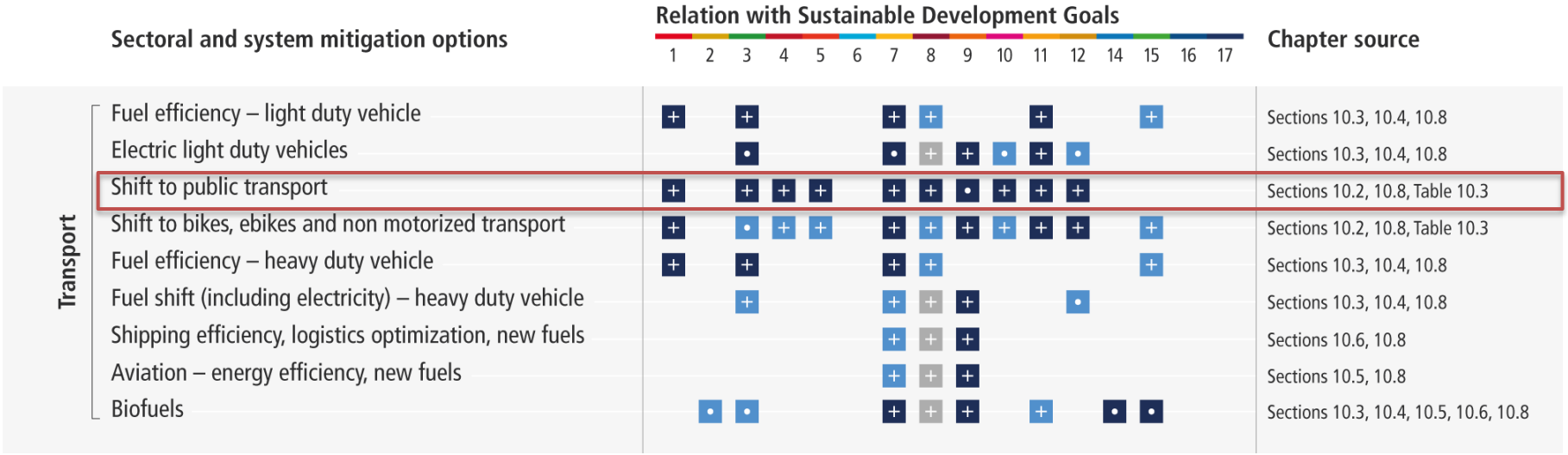
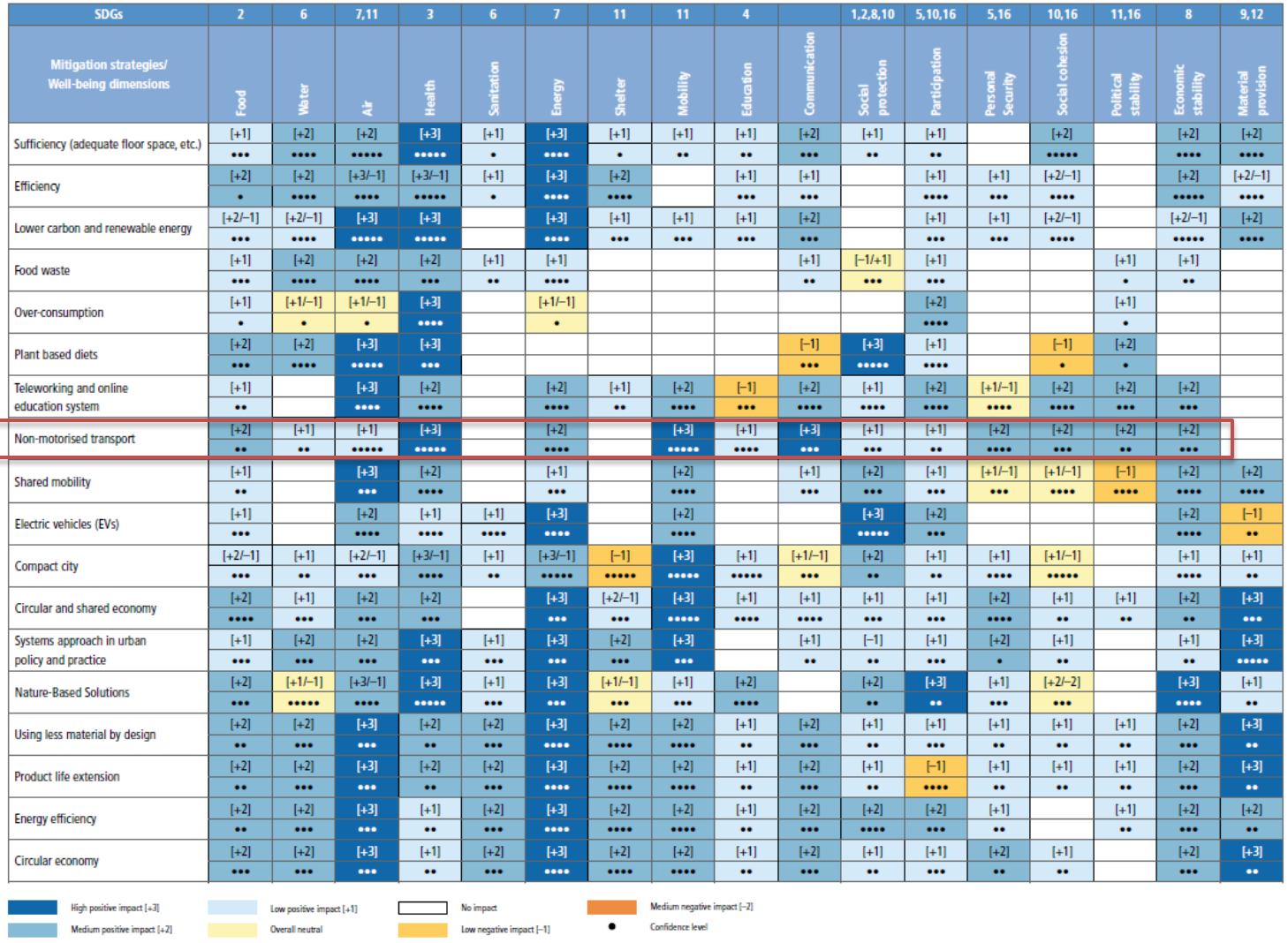


Figure SPM.8: Synergies and trade-offs between sectoral and system mitigation options and the SDGs



SDGs	2	6	7,11	3	6	7	11	11	4		1,2,8,10	5,10,16	5,16	10,16	11,16	8	9,12
Mitigation strategies/ Well-being dimensions	Food	Water	Air	Health	Sanitation	Energy	Shelter	Mobility	Education	Communication	Social protection	Participation	Personal Security	Social cohesion	Political stability	Economic stability	Material provision
Sufficiency (adequate floor space, etc.)	[+1]	[+2]	[+2]	[+3]	[+1]	[+3]	[+1]	[+1]	[+1]	[+2]	[+1]	[+1]		[+2]		[+2]	[+2]
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Efficiency	[+2]	[+2]	[+3/–1]	[+3/–1]	[+1]	[+3]	[+2]		[+1]	[+1]		[+1]	[+1]	[+2/–1]		[+2]	[+2/–1]
	•	••••	••••	•••••	•	••••	••••		•••	•••		••••	•••	••••		•••••	••••
Lower carbon and renewable energy	[+2/–1]	[+2/–1]	[+3]	[+3]		[+3]	[+1]	[+1]	[+1]	[+2]		[+1]	[+1]	[+2/–1]		[+2/–1]	[+2]
	•••	••••	•••••	•••••		••••	•••	•••	•••	•••		•••	•••	••••		•••••	••••
Food waste	[+1]	[+2]	[+2]	[+2]	[+1]	[+1]				[+1]	[–1/+1]	[+1]			[+1]	[+1]	
	•••	••••	••••	•••	••	••••				••	•••	•••			•	••	
Over-consumption	[+1]	[+1/–1]	[+1/–1]	[+3]		[+1/–1]						[+2]			[+1]		
	•	•	•	••••		•						••••			•		
Plant based diets	[+2]	[+2]	[+3]	[+3]						[–1]	[+3]	[+1]		[–1]	[+2]		
	•••	••••	•••••	•••						•••	•••••	••••		•	•		
Teleworking and online education system	[+1]		[+3]	[+2]		[+2]	[+1]	[+2]	[–1]	[+2]	[+1]	[+2]	[+1/–1]	[+2]	[+2]	[+2]	
	••		••••	••••		••••	••	••••	•••	••••	••••	••••	••••	••••	•••	•••	
Non-motorised transport	[+2]	[+1]	[+1]	[+3]		[+2]		[+3]	[+1]	[+3]	[+1]	[+1]	[+2]	[+2]	[+2]	[+2]	
	••	••	•••••	•••••		••••		•••••	••••	•••	•••	••	••••	•••	••	•••	
Shared mobility	[+1]		[+3]	[+2]		[+1]		[+2]		[+1]	[+2]	[+1]	[+1/–1]	[+1/–1]	[–1]	[+2]	[+2]
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Electric vehicles (EVs)	[+1]		[+2]	[+1]	[+1]	[+3]		[+2]			[+3]	[+2]				[+2]	[–1]
	•••		••••	••••	••••	••••		••••			•••••	•••				••••	••
Compact city	[+2/–1]	[+1]	[+2/–1]	[+3/–1]	[+1]	[+3/–1]	[–1]	[+3]	[+1]	[+1/–1]	[+2]	[+1]	[+1]	[+1/–1]		[+1]	[+1]
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Circular and shared economy	[+2]	[+1]	[+2]	[+2]		[+3]	[+2/–1]	[+3]	[+1]	[+1]	[+1]	[+1]	[+2]	[+1]	[+1]	[+2]	[+3]
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Systems approach in urban policy and practice	[+1]	[+2]	[+2]	[+3]	[+1]	[+3]	[+2]	[+3]		[+1]	[–1]	[+1]	[+2]	[+1]		[+1]	[+3]
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Nature-Based Solutions	[+2]	[+1/–1]	[+3/–1]	[+3]	[+1]	[+3]	[+1/–1]	[+1]	[+2]		[+2]	[+3]	[+1]	[+2/–2]		[+3]	[+1]
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Using less material by design	[+2]	[+2]	[+3]	[+2]	[+2]	[+3]	[+2]	[+2]	[+1]	[+2]	[+1]	[+1]	[+1]	[+1]	[+1]	[+2]	[+3]
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Product life extension	[+2]	[+2]	[+3]	[+2]	[+2]	[+3]	[+2]	[+2]	[+1]	[+2]	[+1]	[–1]	[+1]	[+1]	[+1]	[+2]	[+3]
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Energy efficiency	[+2]	[+2]	[+3]	[+1]	[+2]	[+3]	[+2]	[+2]	[+1]	[+2]	[+2]	[+2]	[+1]		[+1]	[+2]	[+2]
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Circular economy	[+2]	[+2]	[+3]	[+1]	[+2]	[+3]	[+2]	[+2]	[+1]	[+2]	[+1]	[+1]	[+2]	[+1]		[+2]	[+3]
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High positive impact [+3] | Medium positive impact [+2] | Low positive impact [+1] | Overall neutral | No impact | Low negative impact [–1] | Medium negative impact [–2] | • Confidence level

Figure 5.6 | Two-way link between demand-side climate mitigation strategies and multiple dimensions of human well-being and SDGs. All demand-side mitigation strategies improve well-being in sum, though not necessarily in each individual dimension.

IPCC WGIII AR6 emphasis and my research interests

- ❑ Well-being
  - Socio-technical innovations for diverse sustainability outcomes
- ❑ Equitable society
  - Just transitions (recognitional, procedural and distributive justices)
- ❑ Participatory governance
  - Facilitating (invited and uninvited) engagements of diverse stakeholders in policy
- ❑ Policy Implementation
  - Policy experimentation to build a localized theory of change and monitoring, evaluation and learning

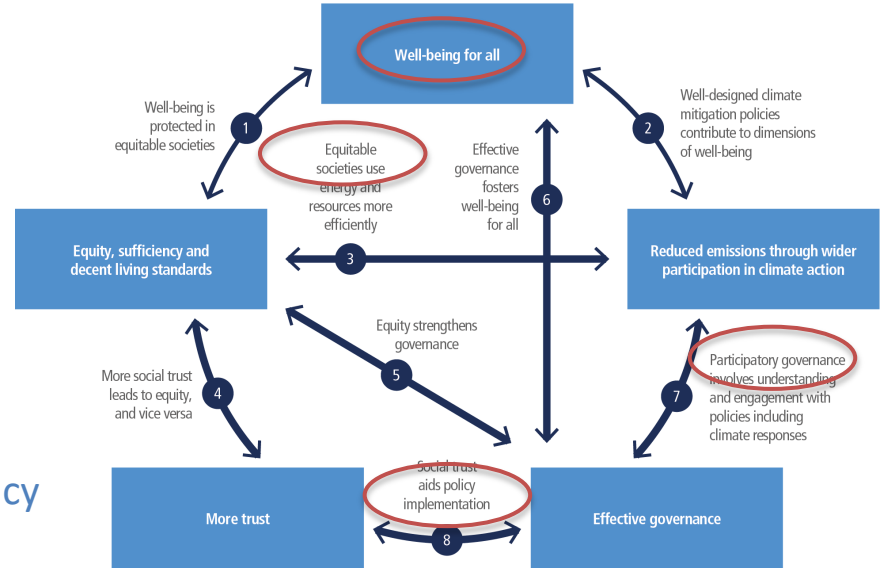
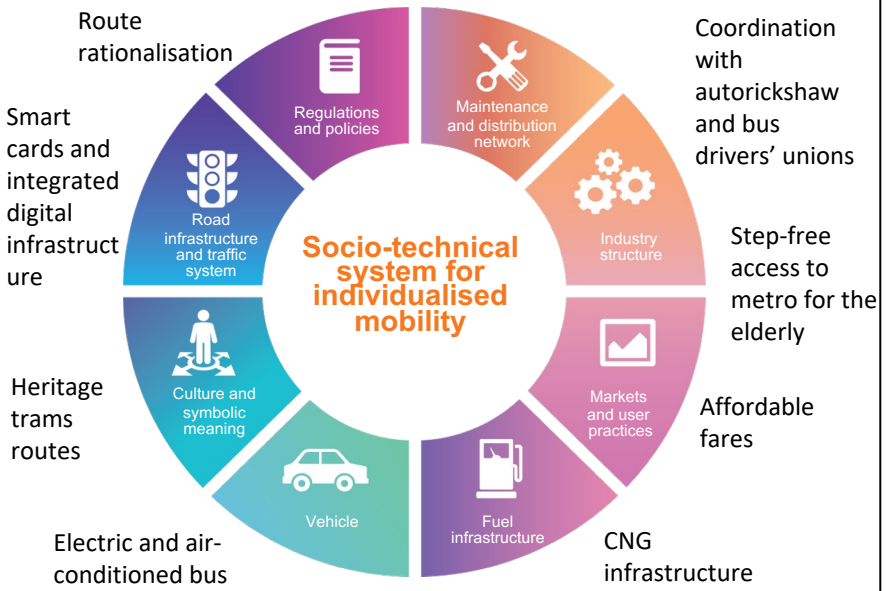


Figure 5.5 | Well-being, equity, trust, governance and climate mitigation: positive feedbacks.

System innovation example and measurements

System innovations can be in energy, mobility, food, health, education…



Measuring transformative potential of system innovations

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Article

Transformative outcomes: assessing and reorienting experimentation with transformative innovation policy

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Abstract

The impending climate emergency, the Paris agreement and Sustainable Development Goals demand significant transformations in economies and societies. Science funders, innovation agencies, and scholars have explored new rationales and processes for policymaking, such as transformative innovation policy (TIP). Here, we address the question of how to orient the efforts of science, technology, and innovation policy actors to enable transformations. We build on sustainability transitions research and a 4-year co-creation journey of the TIP Consortium to present twelve transformative outcomes that can guide public policy agencies in evaluating and reformulating their projects, programmes, and policies. We illustrate the transformative outcomes in two empirical cases: transitions towards mobility-as-a-service in the Finnish transport system and the emergence of speciality coffee in Colombia. We argue that the twelve transformative outcomes can guide public policy agents to fundamentally transform their ways of thinking and operation in advancing transformative change.

Key words: innovation policy; sustainability transitions; transformation; transformative outcomes; experimentation; policy engagements.

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