Lifestyle changes in mitigation pathways: policy and scientific insights

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In short

- Published in Environmental Research Letters in December 2020
- “Examining the political and scientific implications of integrating lifestyle changes into mitigation pathways.”
- Why?

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Lifestyle changes in mitigation pathways: policy and scientific insights

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Abstract

Lifestyle changes are key factors of the climate mitigation challenge because they drive the demand for energy, goods and food. They have received growing attention in the development and assessment of mitigation pathways, one of the key approaches used to inform mitigation policies. This paper contributes to this emerging literature by examining the political and scientific implications of integrating lifestyle changes into mitigation pathways. We analyse a large sample of pathways, supplemented by interviews with practitioners, to provide a perspective relevant to both scenario production practices themselves and the science-policy process in which they are included. We use three illustrative pathways to describe what it means to explore lifestyle changes and how this exploration can be conducted (indicators, dimensions, precision). We summarize the observed benefits of the explorations of lifestyle changes in scenario production by considering three main contributions of scenarios to policy decision-making: explicit knowledge, mediation tools and framing power. We also discuss why the integration of lifestyle changes poses a potential challenge to the robustness and reliability of pathway production methodologies, which is a condition for their policy-relevance. We therefore argue that the implications of this integration need to be carefully characterized in order to maximize the policy relevance of the analysis without compromising the robustness of the scenario development and assessment process. The nature of lifestyles, which reflect values and preferences and require a multidisciplinary approach, raises significant policy neutrality challenges and scientific challenges. Overcoming these challenges can lead to more policy-relevant pathways: we describe existing approaches in the literature and analyse their contributions and limitations.

Introduction

- Growing interest for lifestyle changes
- Highlight demand side issues
- Establishes the link between what gives meaning and “shape” our lives and the resources we use
- “A fundamental concept but hard to tame in scenarios”
  - Complexity
  - No established consensual way to reduce emissions
  - Requires context-specific and transdisciplinary approaches
  - →Poses major challenges to modellers

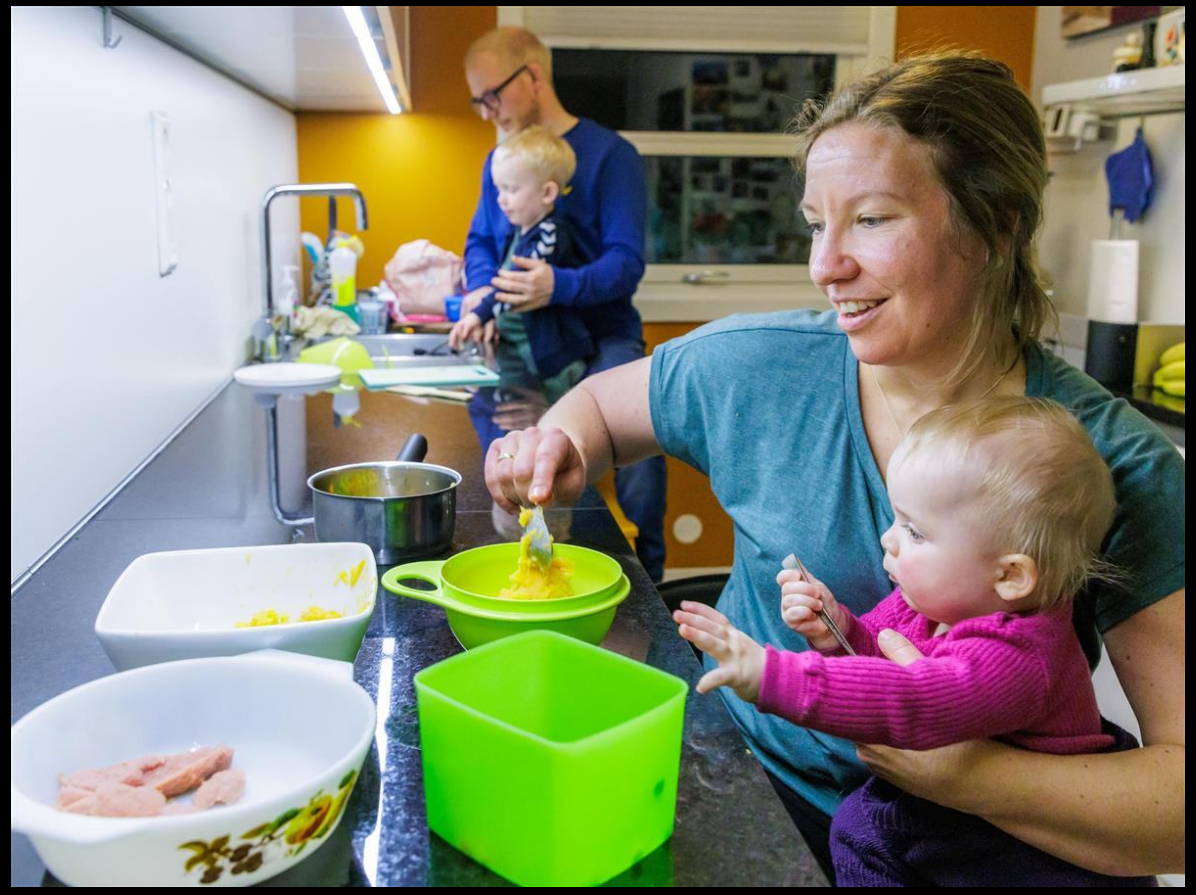


Photo: Molde kommune

Introduction

“A need to better embrace the full spectrum of scenario contributions to policy decision-making”

- Scenario development: One of the key scientific approaches used to support decision-makes facing the long-term challenges raised by climate change mitigation
- Scenarios contributes to policy making in at least three ways:
    1. Production of explicit knowledge i.e. the concrete outputs of pathways (emission curves, costs of implementation etc.)
    2. Scenarios are supports that enable constructive dialogue among stakeholders
    3. Scenarios frame problems and solutions

Photo: Pixabay.com

Introduction

“Specifically, we want to understand under what conditions a better representation of lifestyles in pathways could help decision makers to improve the consideration of lifestyle changes in their strategies and climate policies. We are interested both in scenario production practices themselves (including but not limited to modelling) and in the science-policy process in which they are included.”

Methods

- Analysed scenarios developed in different science-policy contexts
- N=75 scenario development initiatives
- Focus scenario + the process
- Supplemented the analysis with 16 interviews
- Scope encompasses both academic and non-academic materials
- Built the sample primarily from previous case studies and reviews
- The sample contains both pathways that considered lifestyle changes, and pathways that are developed without any criteria for taking lifestyle changes into account

Methods

Factual component. «What does it mean to «explore lifestyle changes» in this study? What, if any, are the changes in lifestyles considered and how are they described?»

Methodological component. Particular attention to models. «How have lifestyle changes been explored?»

Output component. «Why explore lifestyle changes in this context? What difference does it make to the science-policy process?”

Results: What does it mean to "explore lifestyle changes"?

Table 1. Lifestyle changes (through changes in practices), indicators used to consider these changes, and effect of the changes on the indicator value for the three illustrative cases.

	Changes in lifestyles	Common indicators used to quantify the effects	Grubler *et al* (2018)		European Climate Foundation (2018)	French Ministry of Ecology (2018)
			Global North	Global South		
Consumption practices (e.g. food, goods)	Further accumulation of consumer goods and devices	Consumption of industrial goods, number of devices owned	↑ (moderate)	↑		
	Changes in consumer behaviour leading to lower product demand				↓	
	Increase in living standards			↑		
		Calorific intake & share of (red) meat		↑		
	Growing concerns for healthy living and dietary shifts	Calorific intake	→ (stabilisation)	→ (cap)	↓	
		Share of (red) meat	↓ (moderate)	↓ (moderate)	↓	↓ (moderate)
Mobility practices	Increase in living standards	Passenger kilometres (total)	↑ (moderate)	↑		
	Partial substitution of physical mobility by telepresence	Kilometres passengers (total)	↓ (moderate)	↓ (moderate)	↓ (moderate)	↓ (moderate)
	Shift towards shorter trips accompanied by urban policies	Kilometres passengers (total)			↓	
	Substitution of private cars by shared or active modes	Share of car mode Kilometres passengers (car)	↓	↓	↓	↓
	Shared transportation	Occupancy rate	↑	↑	↑	↑
	Preferences for urban and dense areas	Share of car mode	↓	↓	↓	↓
	Reverse preferences for distant holidays	Kilometres passengers by plane	→ (stabilisation)		↓	
Housing practices	Increase in living standards	Residential floor area		↑		
	Preferences for urban and dense areas	Residential floor area	↓			
	Saturation of preferences for larger dwelling	Residential floor area	→ (stabilisation)		↓	
	Change in comfort standards	Base temperature for thermal comfort				↓

Results: How have lifestyle changes been explored?

- Lifestyle changes have historically received less attention from modellers than supply-side aspects
- However, they identified a significant number of cases that include approaches aiming to represent lifestyle changes in mitigation pathways.
- Observed a multitude of combinations
  - Construction of narratives that are subject to a posteriori quantification
  - Approaches centered on modelling, where the structure of the model(s) guides the construction of pathways.

Results: What difference does it make to explore lifestyle changes?

Production of knowledge

- Most obvious and frequent contribution
- Preparing decisionmakers for uncertainties of future lifestyles

Mediation

- Medium to support participatory approaches
- Enable different communities to work together

“Framing” the possible transitions

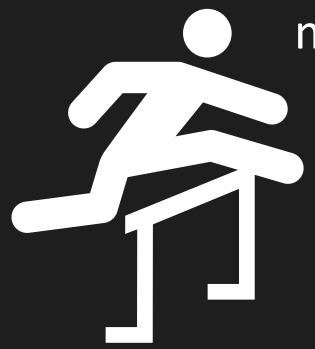
- Framing the worldview associated with the necessary transition
- Consumption, cohabitation, tourism, travel, sharing are rarely explicitly considered

Results: What difference does it make to explore lifestyle changes?

"These conventional modelling approaches generally fall short of capturing the lessons from the literature that demonstrates that demand is actually the result of an interaction between society and technical systems"

Discussion

The next generation of mitigation pathways has an important role to play in informing future decarbonisation policies.



Challenges facing more and better consideration of lifestyle changes in mitigation pathways

- *Challenges due to the political nature of lifestyle changes*
- *Quantification challenges*
- *Broader scientific and methodological challenges*

Opportunities

Proposals to overcome these challenges

- *When the modelling framework matters*
- *… and when it does not matter so much*
- *Connecting well-being approaches with pathways methodologies*
- *Acknowledging the political nature of mitigation pathways and options*

Conclusion

“The next generation of mitigation pathways has an important role to play in informing future decarbonisation policies, at both national and international level, and it is crucial to better integrate lifestyles changes in these upcoming assessments.”