



Implications of Electrification of Municipal Transport Systems

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Background

- Current systems
- ‘Hype’/‘Rush’ to Electrification
- Replacement of biofuels
 - Displacement
 - Removal
- Only the direct “benefits”
- *Implications & Modelling*



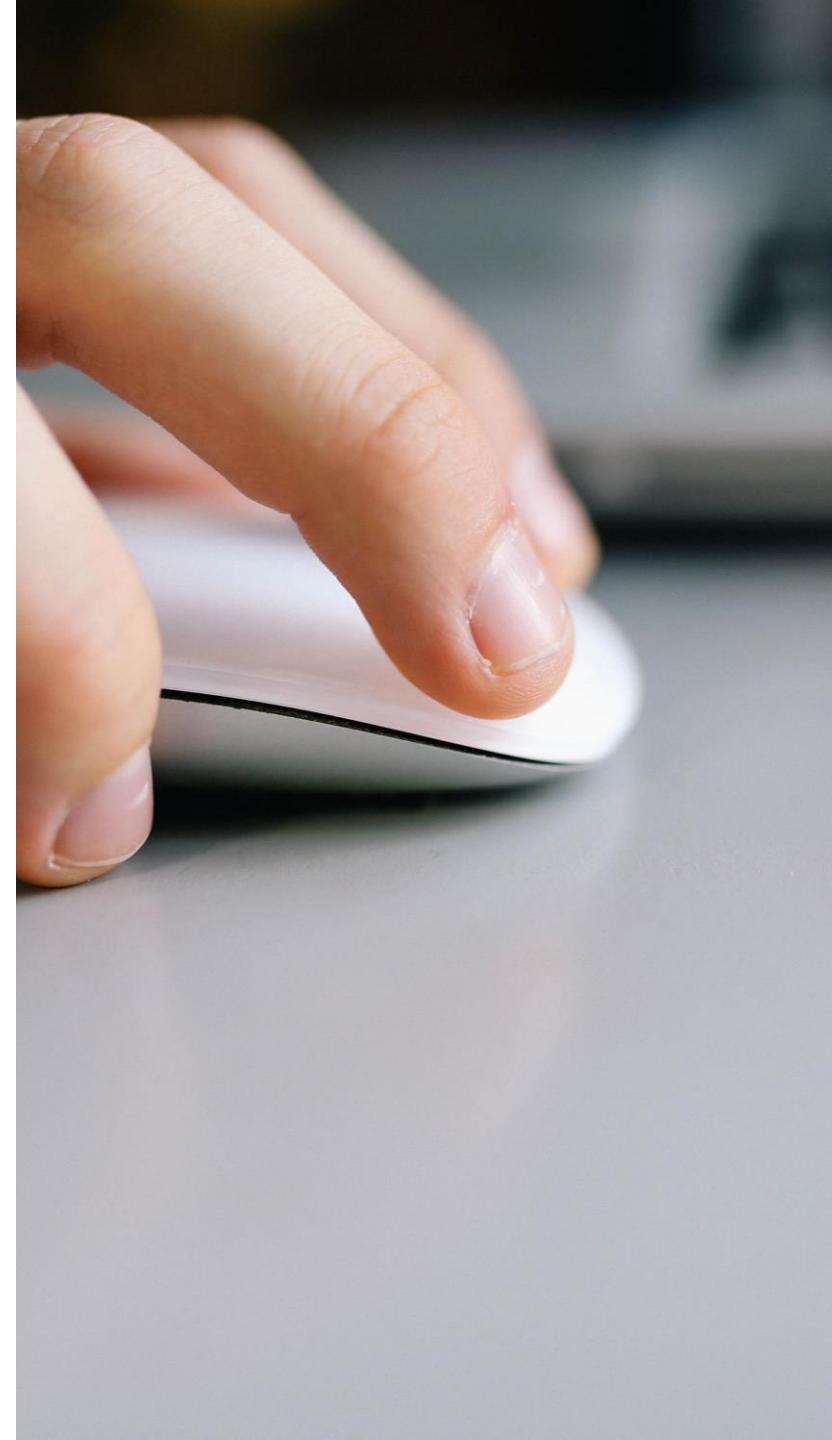
Objectives

- Discourse used to promote electrification
- Displacement effects of electrification
- Environmental and socio-economic implications
- Political barriers and opportunities for electrification and displacement

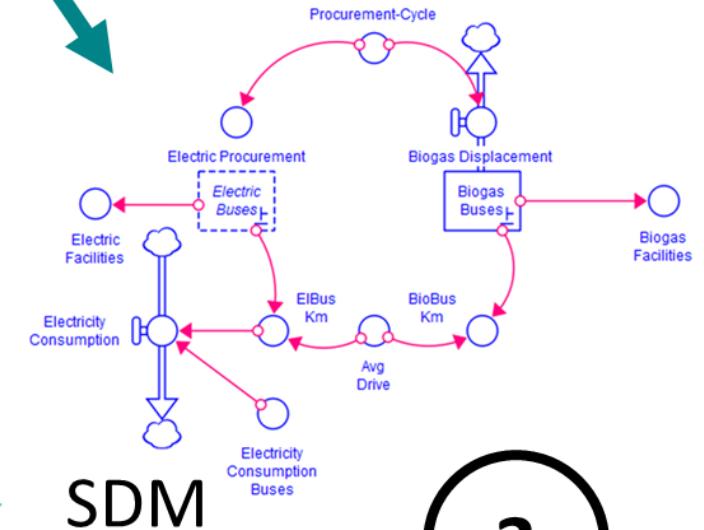
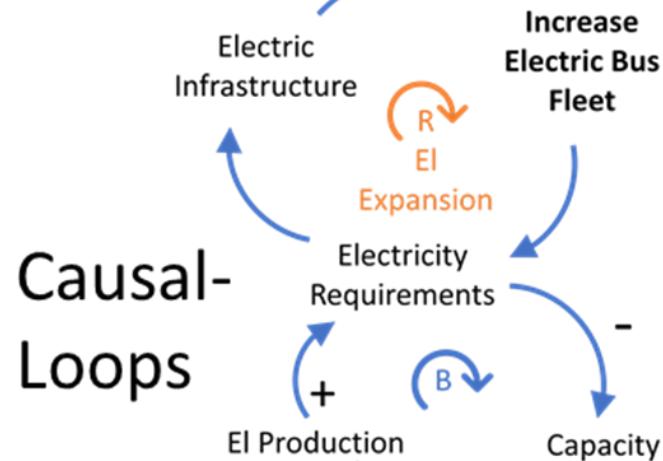


Summary of Findings

- Discourse-Positive to Electrification
- New assessment/modeling technique
- Electrification-Displacement
 - Direct Benefits
 - Indirect Benefits
- Biogas Systems (Important and Valuable)
- Incentives for Displacement
- Stockholm/Context Dependent
- Holistic Input for Decisions

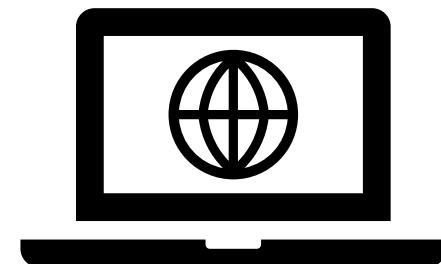
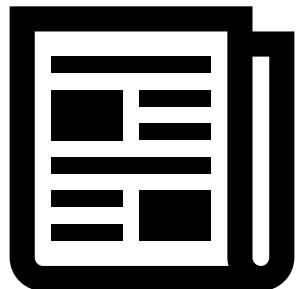


Project (Workflow)



Discourse/Content Analysis

- News, Branch Journals, Reports/Reviews, Interviews
- Potential futures
- Important Aspects and Narratives



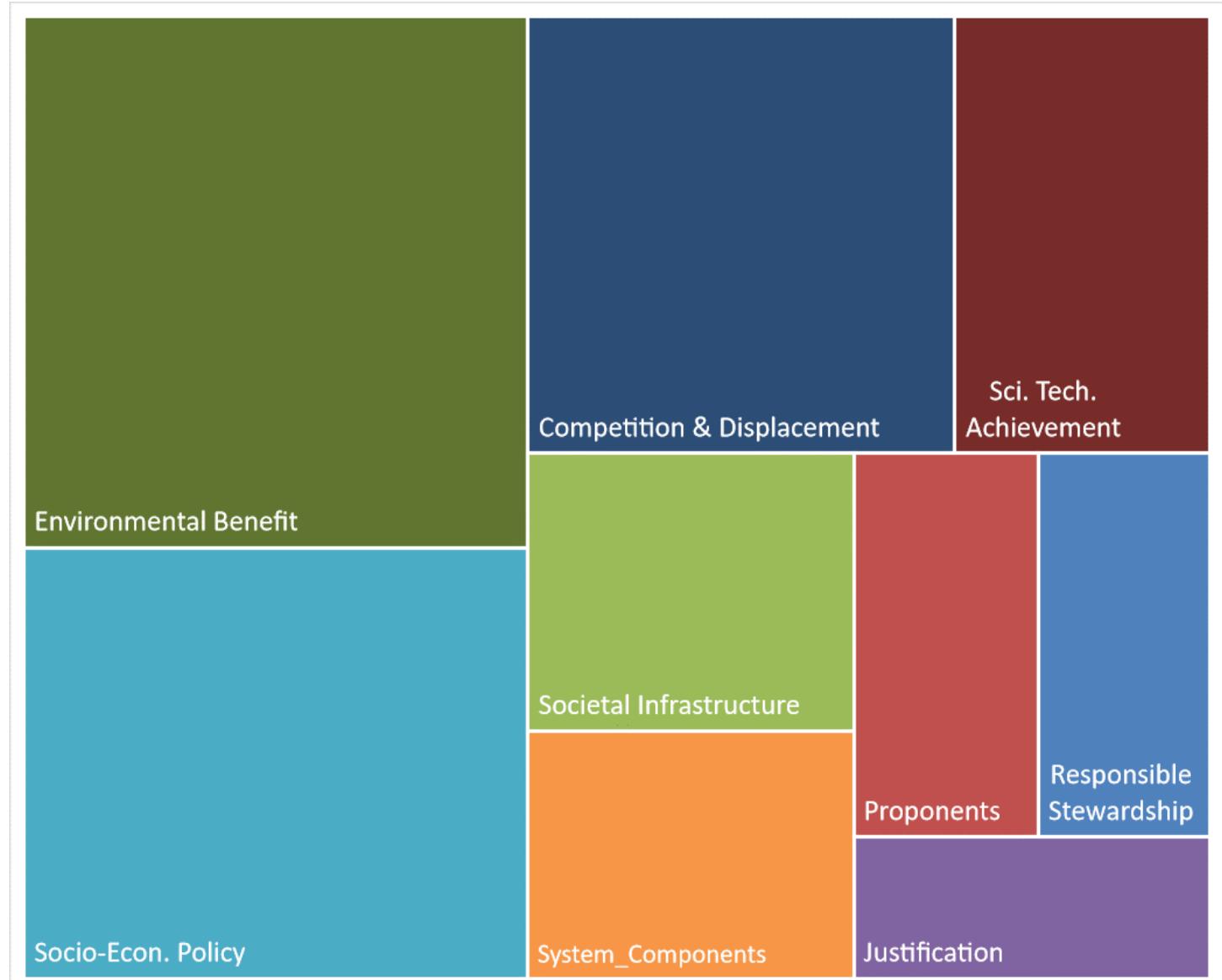
'Possible Futures'

- 1) 'Electrification of all inner-city fleets,'
- 2) 'Biogas and other clean-fuels in peri-urban and regional traffic,'
- 3) 'Biogas and Electric synergies,'
- 4) 'A continued role for biogas'



Narratives

- Positive electrification and perceived benefits
 - Environmental
 - Socio-economic
- **'Big, best, first'**
- Technology
- Justifications

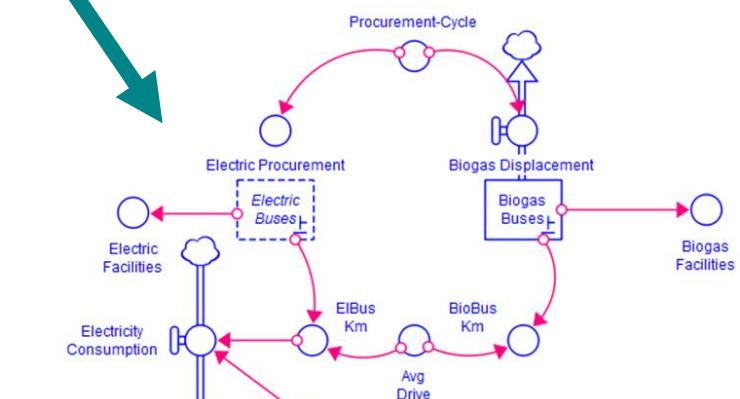
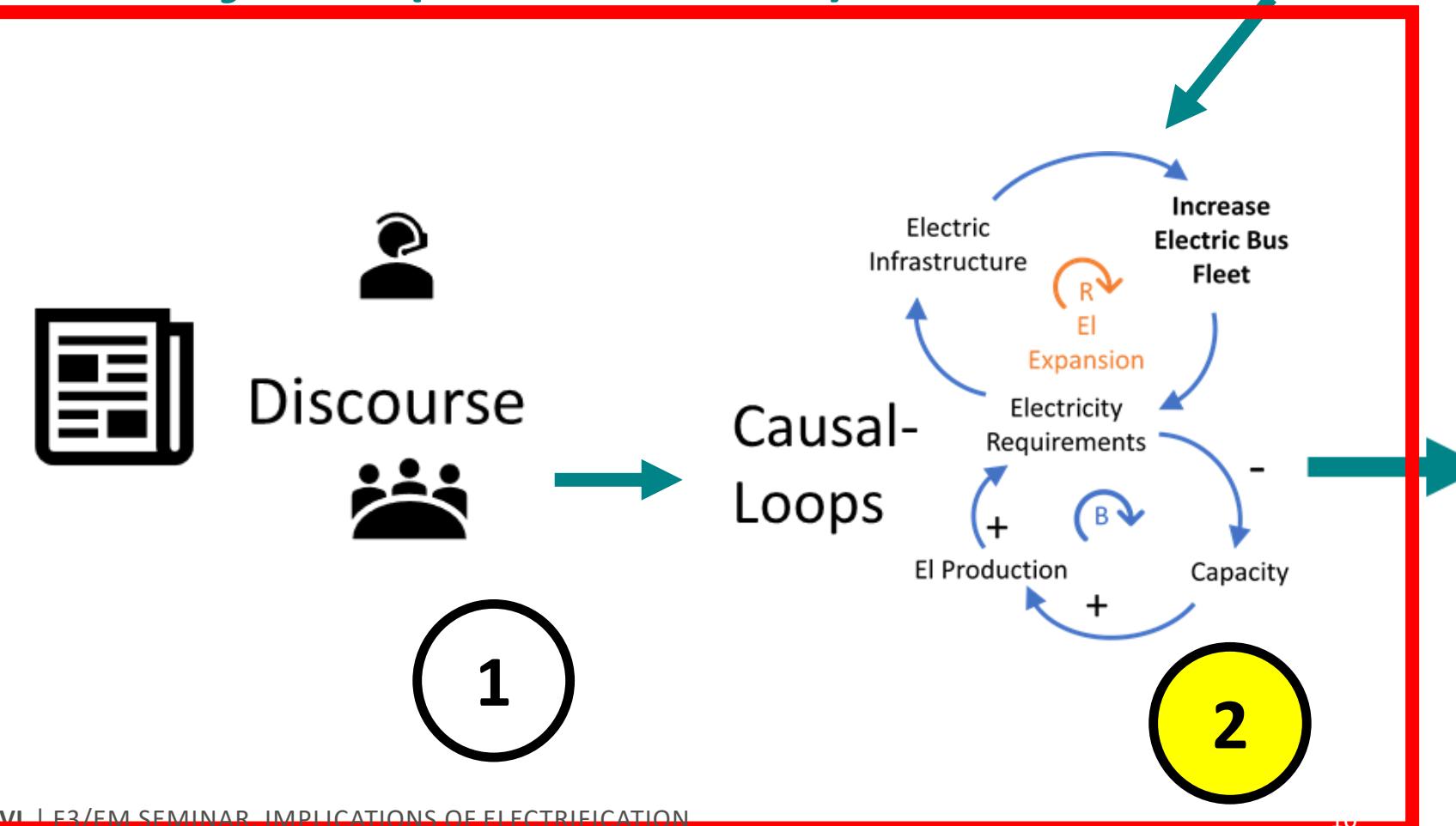


Salient Env/Soc Aspects

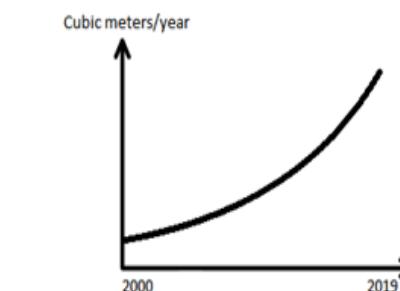
- Promoted as:
 - Clean
 - Silent
 - GHG Reduction

Clean/Particle Free	Climate Change/CO2		Fossil Free
Silent/Reduced Noise	Energy-efficient	Spillover challenges	Spillover Benefits
Waste Mang.	Renewable Energy	Resource Extraction	

Project (Workflow)

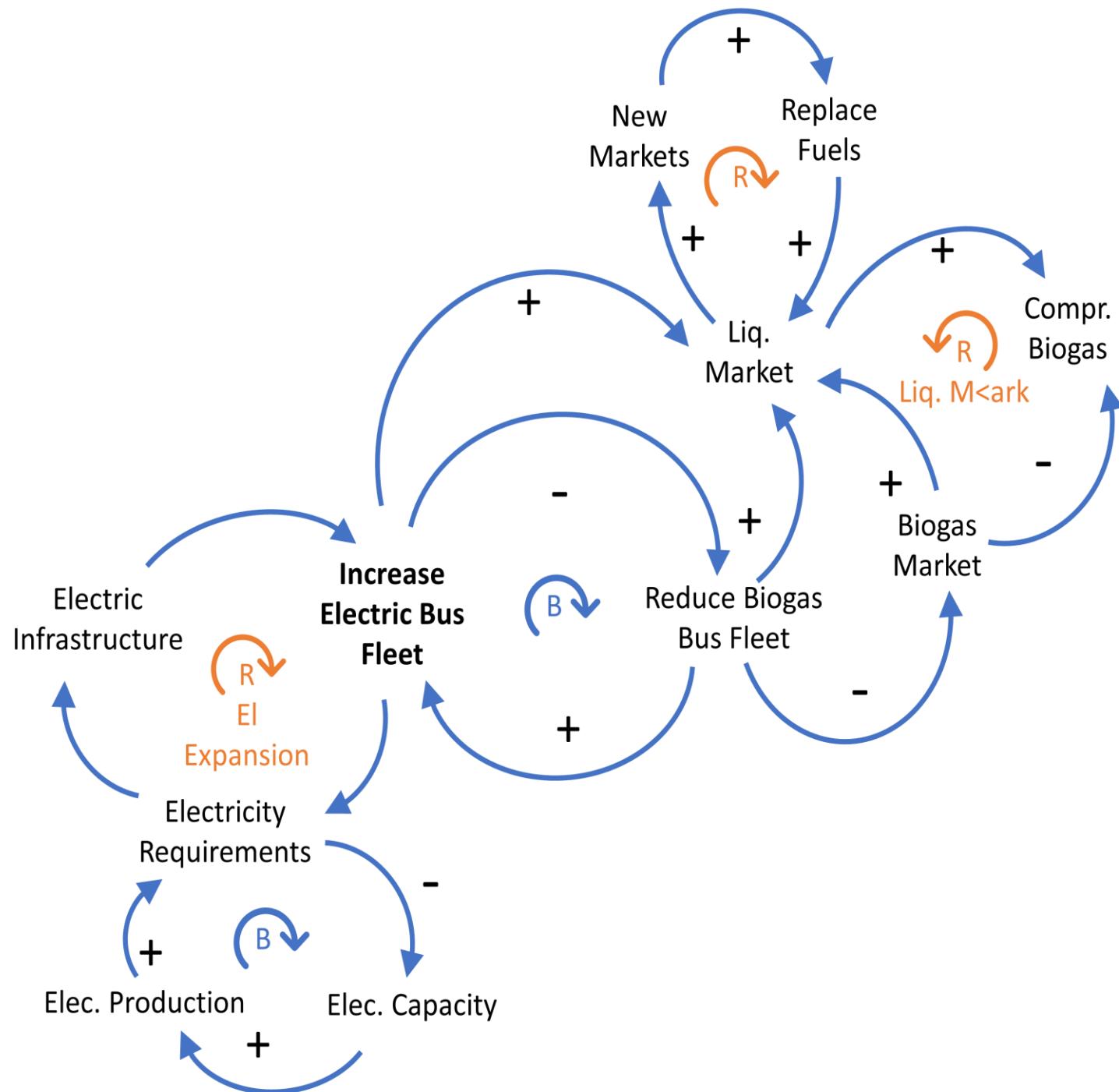


SDM

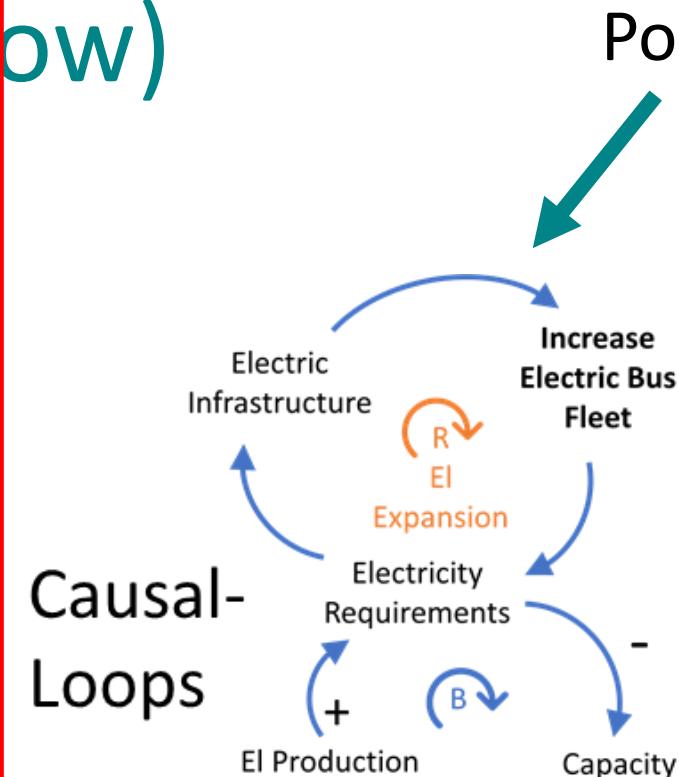


Mapping of Consequences

- Scenario building
- Causal Loops
- Negative/Positive Effect
- Role of different variables
- Important Links and Synergies



Project (Workflow)

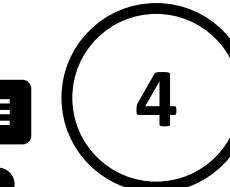


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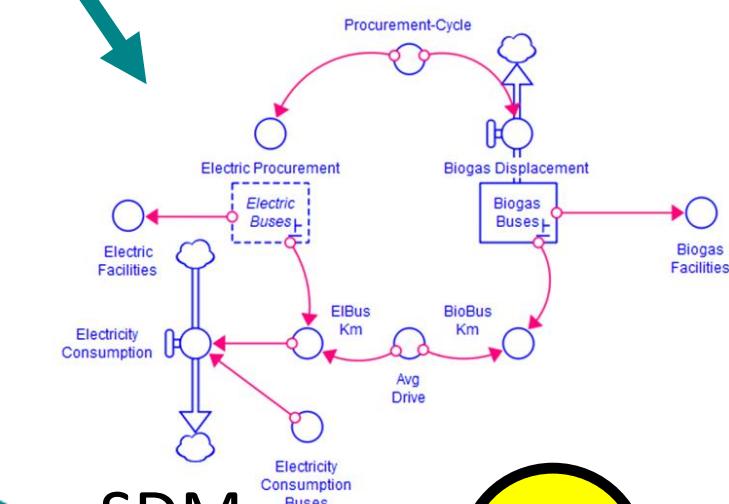
Policy Lab



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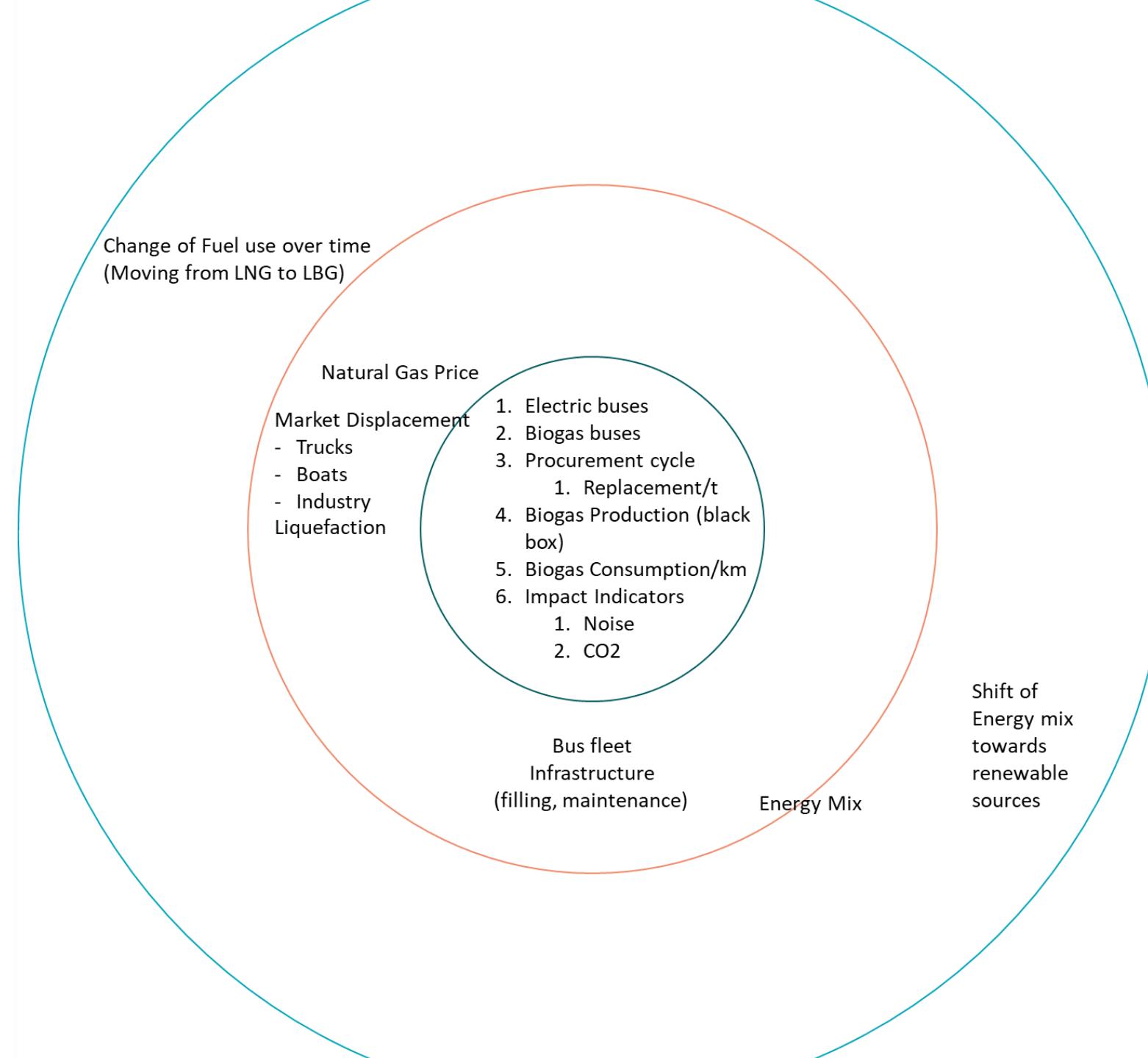
SDM



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SDM Model

- Dynamic nature of the system
- Assess possible outcomes
- Review potential hotspots
- Model implications
- Study direct/indirect effects

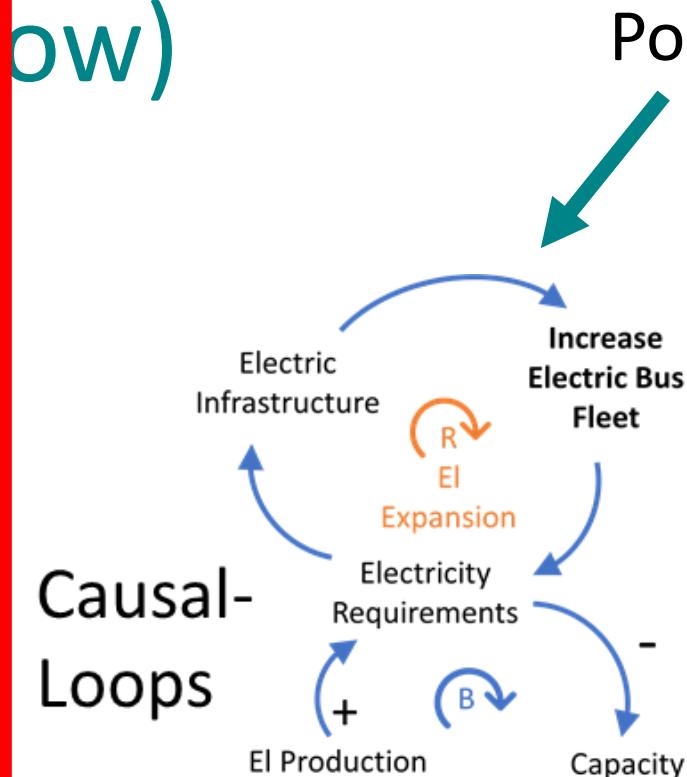


Results from SDM

- Model to develop and expand
- Electrification benefits:
 - Reduced GHG emissions, PM, NOx
 - Socio-economic cost savings
- Noise (minor reduction)
- Displacement → Large improvements in GHG and other emissions
- Increase in employment (FTEs)



Project (Workflow)



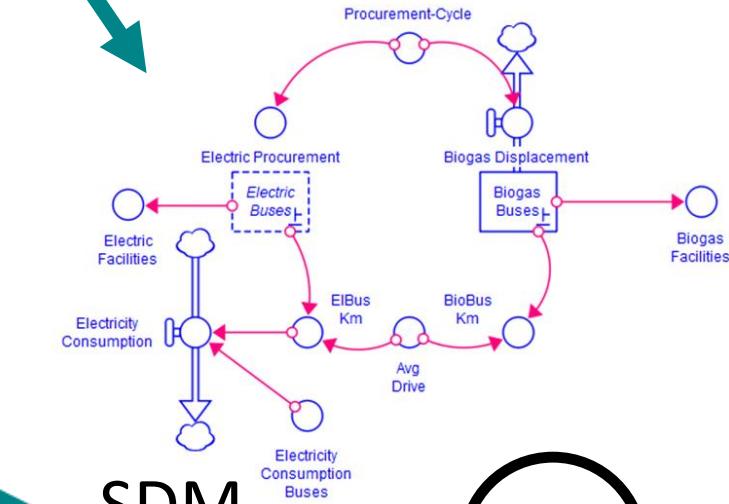
Policy Lab



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SDM

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Policy Lab

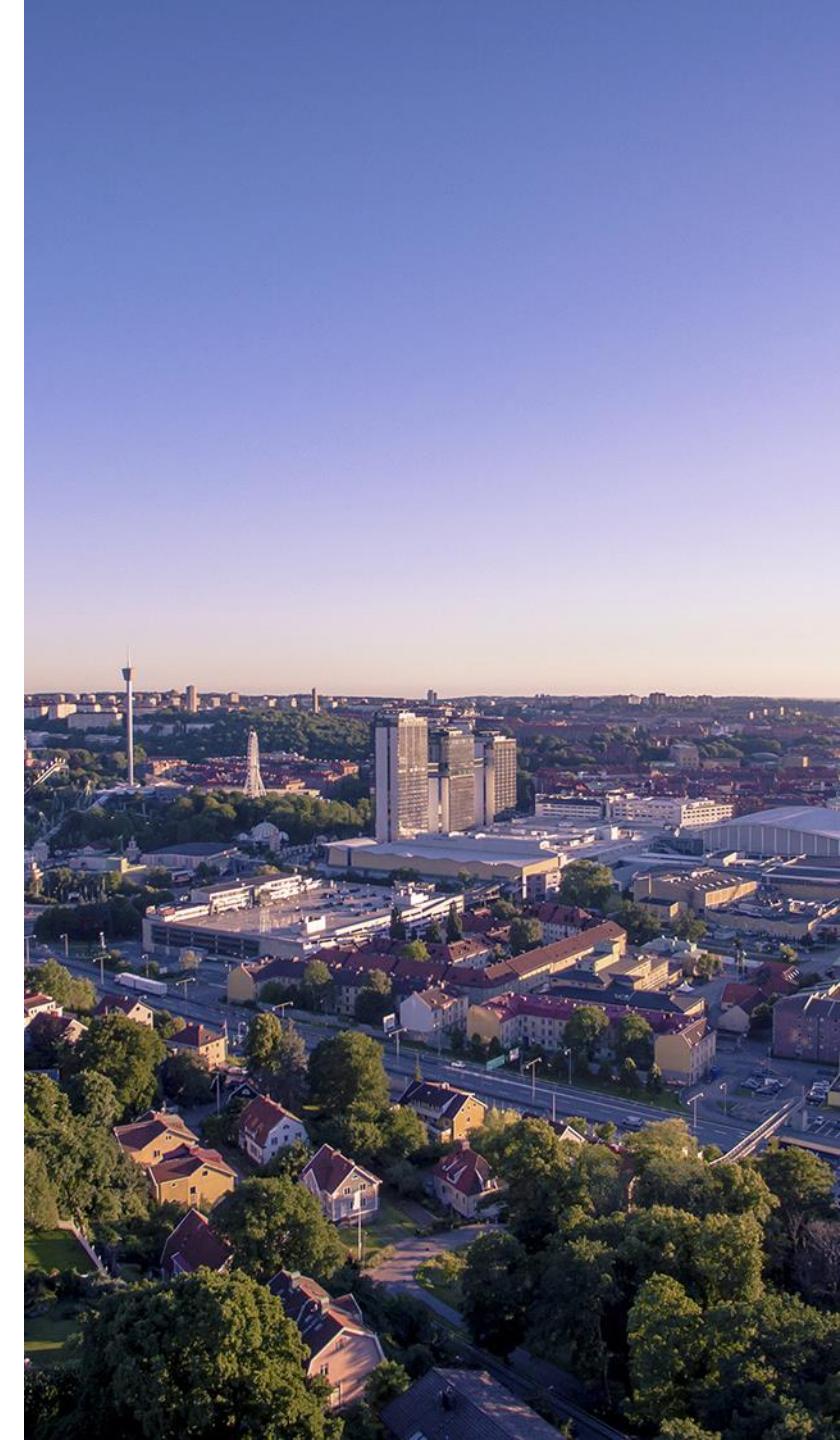
- Identify important incentives to promote biogas in new sectors
- Validation for CLDs and SDM
- Outlined in a Policy Brief
- 8 recommendations
 - Support Displacement Markets
 - Extend Indicators



Ge biogäsen nya förutsättningar att utvecklas
när bussflottan i flera städer elektrifieras

Conclusions

- Discourse/Media Powerful
- Electrification: Validated in assessments
- Biogas of significant value
- How, where, what to improve/implement/intervene to promote systems
- ‘Expanding/Living Model’
- Context dependent systems (not generalizable)
- Skåne through MESAM program



Further details



Ge biogasen nya förutsättningar att utvecklas när bussflottan i flera städer elektrifieras

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Final report

IMPLICATIONS OF ELECTRIFICATION FOR REGIONAL BIOGAS MUNICIPAL TRANSPORTATION SYSTEMS

Exploring Narratives and Systemic Effects

May 2021

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Thank You

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(In Swedish)

Rekommendationer för ökad användning av biogas i Sverige

1. Påverka så att EU-reglerna om klimatnytta beräknas i livscykelperspektiv och spårbarhet för grön gas möjliggörs
2. Skapa incitament för andra nyttor än klimat
3. Ta med biogas när incitament utvecklas för negativa klimatutsläpp
4. Kompletterande incitament behövs för att fler marknader ska utvecklas för biogas
5. Privata och offentliga kunders efterfrågan på godstransporter som använder biogas bör stimuleras
6. Koordinera reformer så de stödjer en övergång till nya marknader utan stora nedgångar i efterfrågan
7. Staten behöver ha beredskap att agera utifrån utvecklingen av import och export av biogas
8. Staten bör uppmärksamma regionernas arbete med biogasutvecklingen



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