

Synthetic fuels at the doorstep? German stakeholder positioning and narratives towards refuels

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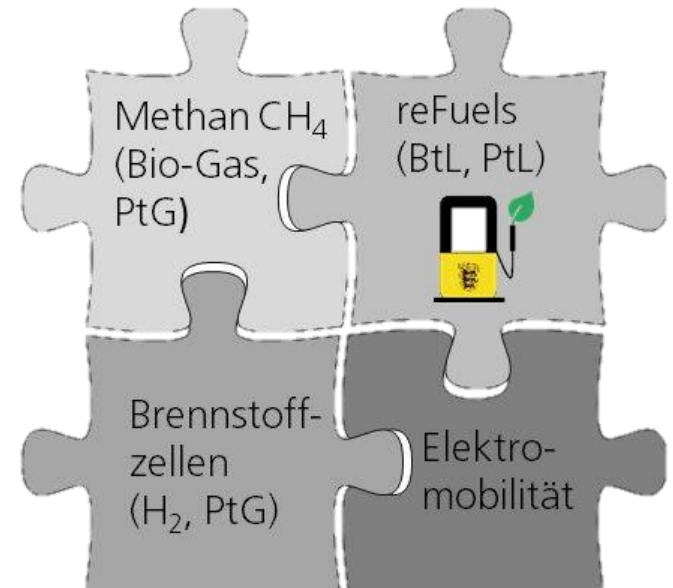
**24th REFORM Group Meeting,
How to reach Carbon Neutrality/Climate Neutrality?
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Mobility transition as a societal task

- The transport of passengers and goods driven by fossil fuels contributes significantly to climate change through CO₂ emissions
- predominantly used gasoline and diesel fuels may also be produced as renewable fuels - so-called “refuels”
- transformation of the energy and transport system towards climate protection is a societal task to which all relevant groups and stakeholders need to contribute
- positions of selected key stakeholders in the fields of economy, environment and society are analyzed in order to identify possible problems at an early stage and take appropriate measures

What are refuels?

- Individual and freight transport powered by fossil fuels is one of the largest sources of CO₂ emissions
- refuels are renewable fuels that have the same energy density as fossil fuels
- refuels can be produced from carbon-containing residues from agriculture and forestry, from waste, as well as through the direct conversion of CO₂ and sustainably produced hydrogen



Research question

- Are refuels promising? And how are these fuels assessed by several stakeholders?
- Stakeholder basically agree on the energy transition - but with own accents in positioning in this context

Main goal:

- Desk research-based document analysis to determine stakeholder positions,
- and to analyze similarities and differences of the refuels assessments

Selection of the stakeholder sample

- 21 organizations identified in three areas:
 - (1) economy,
 - (2) environment,
 - (3) society;
- Statements on reFuels in 42 documents (e.g. position papers, general statements, press releases etc.)



- Desk Research
- 3 steps:
 - Selection of stakeholders & position documents
 - Fact sheet regarding stakeholder positions
 - Evaluation of the data based on the fact sheets



Methodology: Analytical framework

Positioning on the following aspects

- Understanding of the “mobility transition”
- Relevance of reFuels
- Technology openness vs. technology selection
- Location of energy generation and relevance of import
- Assessment of profitability
- Importance of reFuels for storage and flexibility
- Assessment of acceptability
- Assessment of sustainability
- Role for Germany as a business location

Overarching results

- The topic of refuels is inherent part in the German stakeholder discourse
- Electricity-based and biogenic fuels are perceived as possible building blocks for a mobility transition
- Only 4 associations have implicitly positioned themselves in the context of refuels (BDEW, VDV, VCD, KDA)

	VDA	VDB	BEM	BDEW	VDV	bft / MEW	DBV	BDI	BUND	Greenpeace	WWF	Agora	vzbv	ADAC	VCD	IG Metall	KDA
• Overarching position (e = explicit, i = implicit)	e	e	e	i	i	e	e	e	e	e	e	e	e	e	i	e	i
• Understanding of the „Verkehrswende“	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
• Assessment of biogenic fuels	✓	✓			✓		✓	✓	✓		✓	✓	✓	✓	✓		
• Assessment of synthetic fuels	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓		✓	✓
• Areas of application reFuels	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
• Technology openness vs. -selection	✓	✓	✓	✓	✓	✓		✓				✓				✓	✓
• Location of energy generation + relevance of import	✓	✓	✓	✓		✓	✓	✓	✓			✓					
• Assessment of profitability	✓			✓		✓		✓		✓		✓	✓	✓			
• Importance of reFuels for storage + flexibility	✓	✓		✓		✓		✓	✓	✓	✓	✓	✓			✓	
• Assessment of acceptance	✓	✓				✓		✓	✓			✓	✓	✓			
• Assessment of sustainability	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓			
• Role for securing the location	✓					✓		✓								✓	
• Political framework	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓			✓	✓

Results: Perception of the mobility transition

- An efficient internal combustion engine will continue to play an important role in traffic in the future - improving is therefore an important pillar
- In motorized traffic, there should above all be a change to alternative drives (e-mobility and fuel cells)
- refuels are a necessary – although controversial - building block for a successful “mobility transition”
- The focus of a “mobility transition” is on a clear hierarchy of measures in favor of avoiding traffic, then changing the modal split and finally improvement of technologies
- An ambitious turnaround in traffic with zero-emissions is conceivable by 2035

Results: Relevance of biogenic and electricity-based fuels

Biogenic fuels

- Advanced biofuels (2nd gen.) from waste wood, straw, waste and residues are of great importance for the future defossilization of the transport sector
- Concerns of numerous associations from the environment / civil society with regard to biogenic fuels due to environmental problems (e.g. rainforest deforestation, pesticide use, etc.)
- Largely doubted that biofuels alone have the potential to cover future energy needs in traffic

Electricity-based fuels

- In the long term, electricity-based fuels could play a limited but meaningful role in the overall system to meet the remaining energy needs of the transportation sector
- The majority of applications for electricity-based fuels are seen in trucks, long-distance buses, ships and in air traffic.
- The use of electricity-based fuels in private cars is only discussed by very few actors (especially for already existing vehicles)

Results: Importance of reFuels with a view to storage and flexibility

- From the point of view of most economic associations, refuels are suitable for storing energy and can thus contribute to stabilizing the power grid through system convenience and flexibility.
- The environmental associations also see the possibility of storing volatile electricity generation (especially surpluses), but at the same time point to a clearly limited potential.
- On the part of civil society associations, refuels are discussed as a possible storage option. However, reference is made to low levels of efficiency and operational economy.

Results:

Three dominant reFuels narratives

Narrative 1: refuels are crucial for the success of the “Verkehrswende”

- | | |
|---|---|
| <ul style="list-style-type: none">• reFuels as an immediately available building block for the defossilization of the transport sector• Stabilizer for the energy transition• Securing locations in the national transformation process | <ul style="list-style-type: none">• High relevance of a technology openness• Acceptance of end users as a crucial element• Above all, relevant for motorized private transport in rural areas |
|---|---|

Narrative 2: reFuels do have potential - for modes of transport without an alternative and in compliance with sustainability criteria

- | | |
|---|--|
| <ul style="list-style-type: none">• The potential of synthetic fuels is basically there• Areas of application only in those areas where electrification is difficult to implement• CO₂ source from air for the production of synthetic fuels | <ul style="list-style-type: none">• Renewable energies as the only basis for energy generation• Establish and focus on sustainability rules• Only use synthetic fuels after 2030 |
|---|--|

Narrative 3: Transport change as sustainable, affordable, safe and comfortable mobility - if refuels contribute, then yes!

- | | |
|---|---|
| <ul style="list-style-type: none">• Sustainable, affordable, safe and comfortable mobility as the basis for welfare, quality of life and social participation• Use of synthetic fuels to reduce CO₂ emissions, especially where battery-electric mobility is not suitable | <ul style="list-style-type: none">• Intensify research and development on refuels and focus on profitability• Ensure acceptance with a view to users of fuels• Set price incentives and at the same time mitigate unwanted side effects |
|---|---|

Outlook: Next steps

- **Next step:** Group Delphi with all stakeholders in autumn
 - **Main goal:** to verify and complement assessment data as well as to analyse communalities and differences in the assessments of the refuel routes
 - **Method „Group Delphi“:**
 - The Delphi participants take part in a workshop in which the different assessments are discussed and evaluated using a structured questionnaire
 - Around four small groups are supposed to give their assessments as a group. Differing judgments between the groups should be explained for the other participants in the plenum.
 - Through this ongoing discussion process, either a consensus can be established or it is clear what the dissent is due to.
 - Deviating judgments are therefore subjected to a direct peer review process.
 - Clear picture of the assessments and the argumentation patterns behind the assessments
- Assessments and justifications can be used to derive a clear picture of the distribution of consensus and dissent according to the analytical dimensions

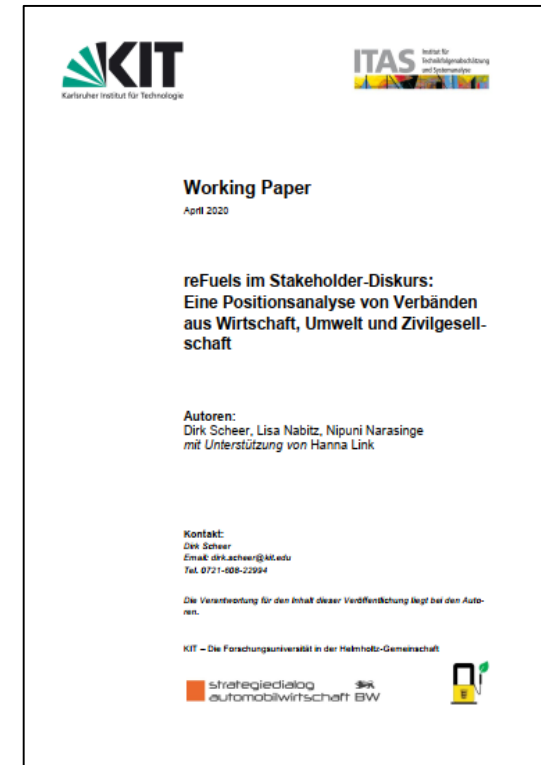
Thank you for your attention!

Questions? Comments?

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Working Paper:

**„reFuels im Stakeholder-Diskurs:
Eine Positionsanalyse von Verbänden
aus Wirtschaft, Umwelt und
Zivilgesellschaft“**

BACKUP: Location of energy production and relevance of import

- From the point of view of some associations (e.g. VDA), the generation of renewable energies in Europe is sufficient for the production of reFuels.
- The existing infrastructure with fuel transport and filling stations etc. can continue to be used, which would save costs.
- In order to ensure climate neutrality, CO₂ should only be obtained from the air. In addition, the water supply in arid areas and the socio-ecological land use should be ensured.
- Either the electricity for the production of reFuels or the already produced reFuels must be imported from the point of view of the majority of the associations.
- A production of high amounts of reFuels in Germany is seen as unrealistic.

BACKUP: Profitability of refuels

- The current economic viability of refuels is assessed by the majority of associations as not given for various reasons (including a lack of political framework and funding for reFuels, current research status, low efficiency).
- The estimate of the future manufacturing costs of refuels lies in a range between EUR 0.70 and EUR 1.30. The prospect of end-user prices is 2.29 euros (including taxes) per liter of diesel equivalent. This means that some actors judge them to be competitive in the future; In contrast, environmental groups such as Greenpeace see more competitive disadvantages in terms of costs in the future.

BACKUP: Assessment of acceptance

- Due to a comparatively low structural adjustment process in infrastructure, consumer investment and consumer behavior, many associations assume that refuels will be more likely to be accepted by end consumers.
- PtX substances are only acceptable in terms of climate policy if only renewable energy is used in production.
- Consumer acceptance depends on the price of the refuels.

BACKUP: Role for Germany as a location for production and application of refuels

- refuels ensure (at least) that part of the added value remains in Germany.
- Know-how and jobs, especially in the areas of industrial policy core technologies, should be secured from the point of view of the associations.
- Germany can continue to be a development and production location for synthetic fuels and battery cells.

BACKUP: Assessment of sustainability

- refuels are an important part of achieving the climate goals through their greenhouse gas reduction potential.
- Ecological impacts should be continuously checked using sustainability criteria and regular reviews.
- When using plant raw materials, attention should be paid to the threat to the habitats of animals and plants.
- A socio-ecological land use and stable water supply in arid areas must be ensured.

BACKUP: Political framework

- Long-term (infrastructure) planning as well as programs for market ramp-up are necessary in order to set clear market incentives and to guarantee planning and investment security for the relevant actors.
- Processes for the design of the interventions take place on different governance levels (EU, national, regional) and thus there are different responsibilities of the European, national and regional departments.
- Various instruments with a direct steering effect and internalization of environmental costs such as CO₂ pricing, CO₂ fleet limits and mineral oil taxes and charges are favored.