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German Energy Agency

Stefan Siegemund, Brussels, October 2019

# GLOBAL ALLIANCE POWERFUELS



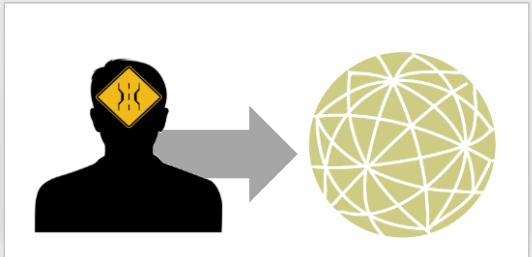
# OVERVIEW GLOBAL ALLIANCE POWERFUELS

# POWERFUELS

## ENERGY TRANSITION'S MISSING LINK

### ENERGY EFFICIENCY

Re-adjusted energy efficiency strategy with systemic approach needed.

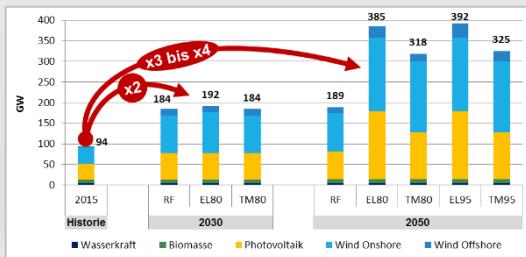


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PTL IN AIR TRANSPORT  
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### DIRECT RENEWABLE ENERGIES

Push RES power generation, define clear RES corridors, coordinate w/ grid expansion.

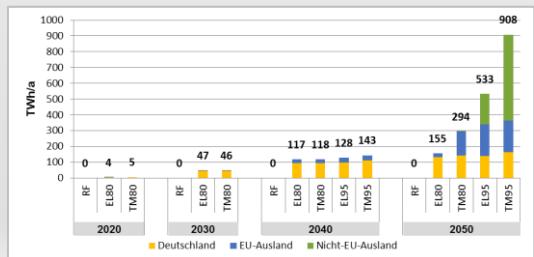


Source: dena study integrated energy transition  
<https://www.dena.de/en/integrated-energy-transition/>

<https://www.dena.de/en/newsroom/meldungen/dena-study-integrated-energy-transition-germany-needs-a-clear-2050-climate-target/>

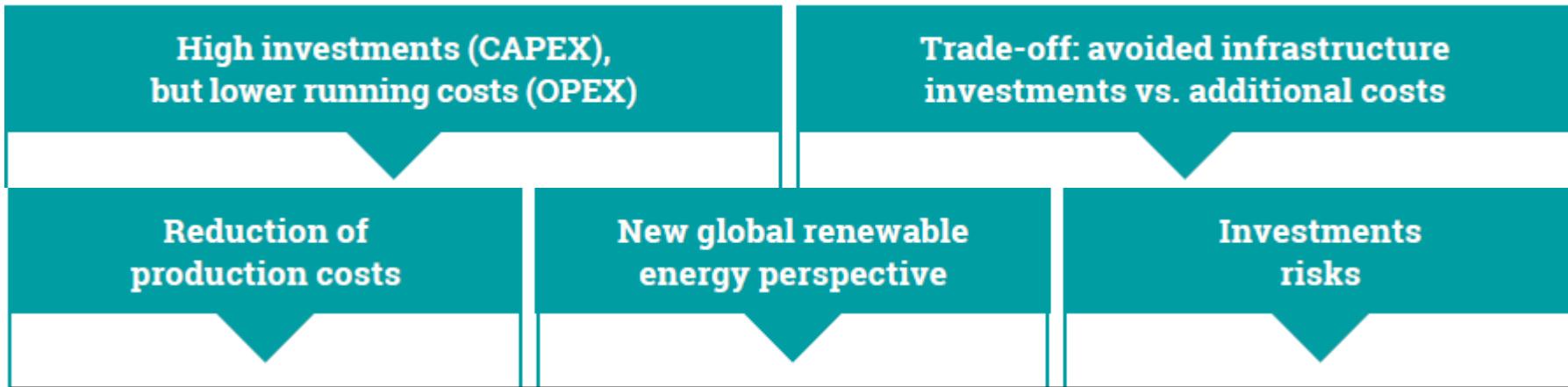
### POWERFUELS

Establish a global market, design frameworks open to a range of technologies.



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# POWERFUELS CHALLENGES



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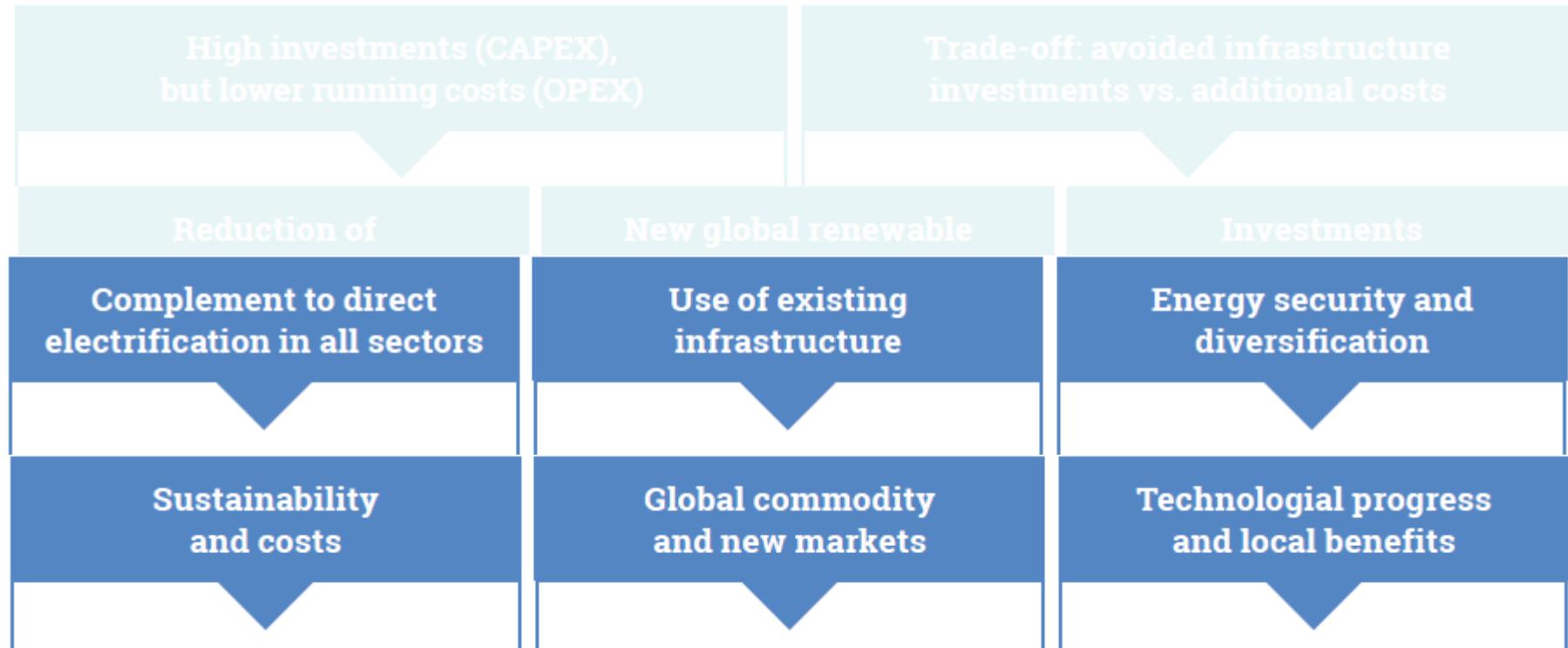
Figure 6: Qualitative assessment<sup>a</sup> of potential effects of using higher amounts of powerfuels in different sectors. Source: Dena

Source: Global Alliance Powerfuels - Guidelines for Market Development  
<https://www.dena.de/en/newsroom/meldungen/2019/global-alliance-powerfuels-presents-guidelines-for-market-development/>

[www.powerfuels.org](http://www.powerfuels.org)

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# POWERFUELS OPPORTUNITIES



# GLOBAL ALLIANCE POWER FUELS BACKGROUND

ExxonMobil

 **BDL**  
Bundesverband der Deutschen  
Luftverkehrsbranche

 **BOSCH**

 **DAIMLER**

Deutsche Post DHL  
Group

 **DVFG**  
Deutscher Verband Flüssiggas e.V.

 **ENERTRAG**  
Eine Energie voraus

 **iwo**  
Institut für Wärme  
und Oeltechnik



 **MEW**  
Mittelständische Energiewirtschaft  
Deutschland e.V.

 Mitsubishi International GmbH

 **MWV** MINERALÖL  
WIRTSCHAFTS  
VERBAND e.V.

 **PAUL WURTH**  
SMB group

**SCHAEFFLER**



 **sunfire**®

 **uni per**

 **UNI TI** Bundesverband  
mittelständischer  
Minerallöunternehmen e. V.



Initiated by dena in September 2018 together with renowned corporate partners.



Partners Network is a collaboration amongst global **initiatives, think tanks, associations and research institutions** to further enhance the discussion and development of Powerfuels globally.

# GLOBAL ALLIANCE POWER FUELS

## MAIN GOALS

1

**Raise awareness and acceptance** of Powerfuels as missing link to reach global climate targets.

2

Support further **enhancement of regulatory frameworks** with a first focus on Europe as demand region.

3

**Stimulate project development** to globally enable production capacities on industrial scale, thus increasing cost competitiveness with fossil fuels.



# **MARKET DEVELOPMENT OF POWERFUELS**

# POWERFUELS MARKET DEVELOPMENT

## Capacity is low

- Numerous pilot plants, but total capacity is low

## Technology is ready

- Sunfire Power-to-Liquid plant in opened Dresden in 2014

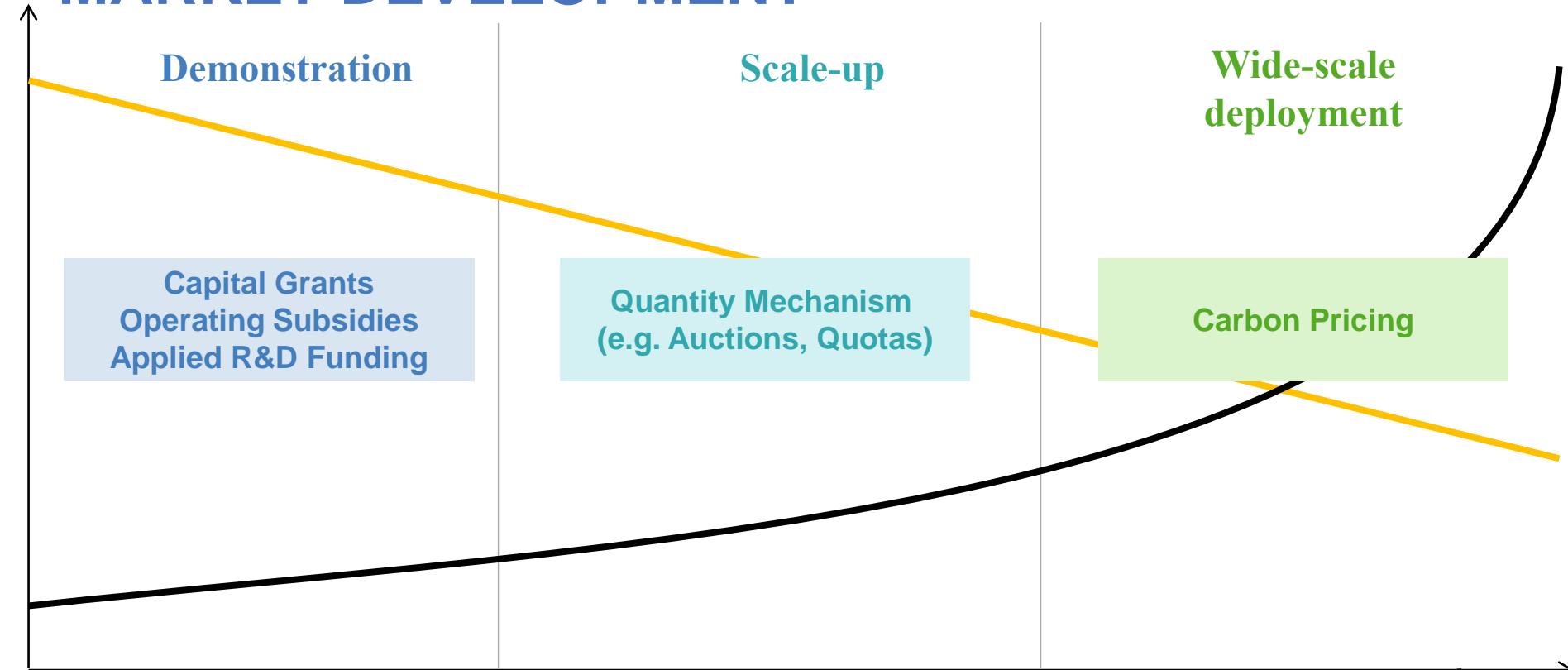
## Costs are high

- Costs of up to 4.5€ per litre



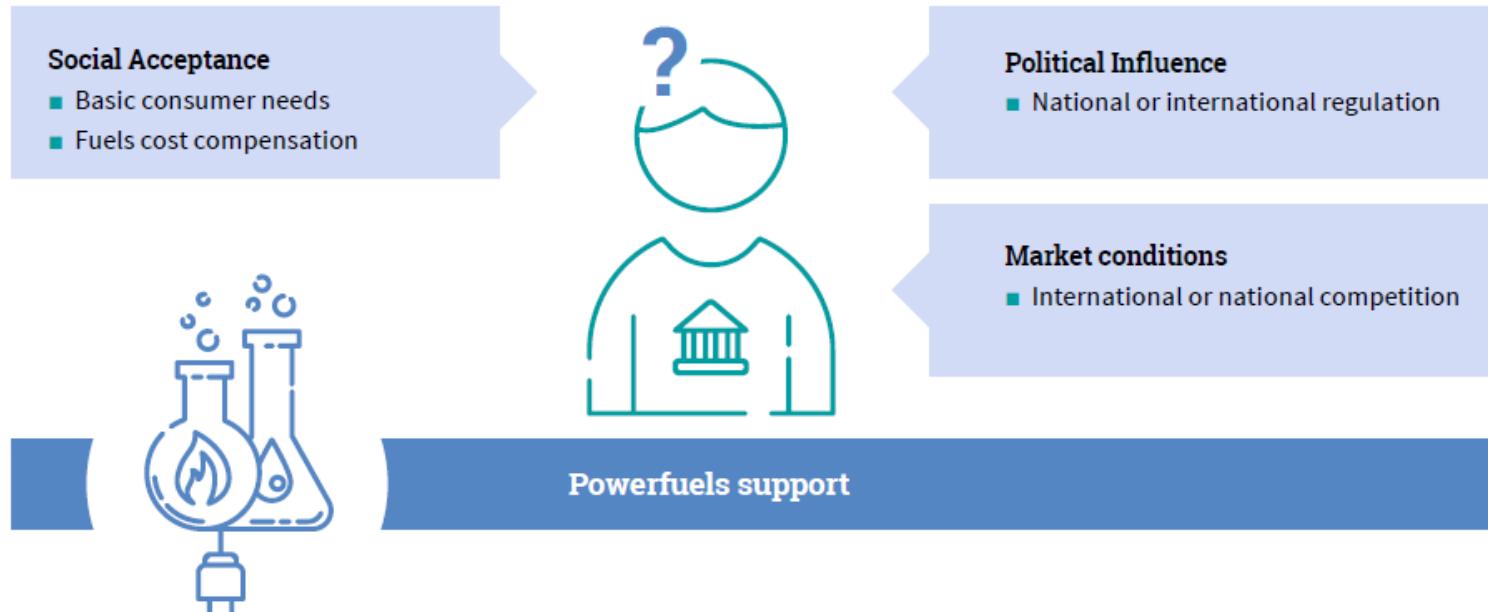
*Sunfire Production Facility, Dresden*

# POWERFUELS MARKET DEVELOPMENT



# POWERFUELS START MARKET DEVELOPMENT – BUT HOW?

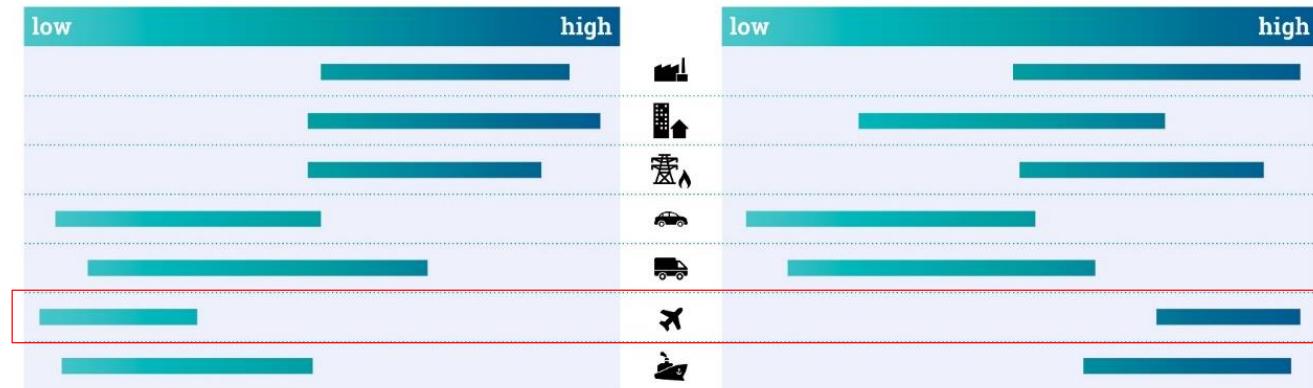
Factors influencing the choice of instruments to support powerfuels



# POWERFUELS

## SECTORAL FRAMEWORK FOR REGULATION

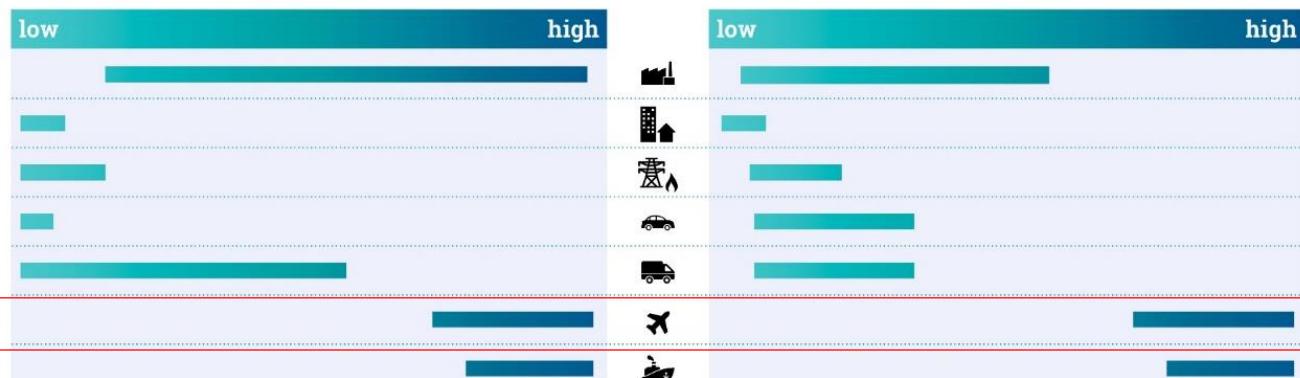
Effect on basic consumer needs



Inability to compensate high fuel costs



Importance of international competition

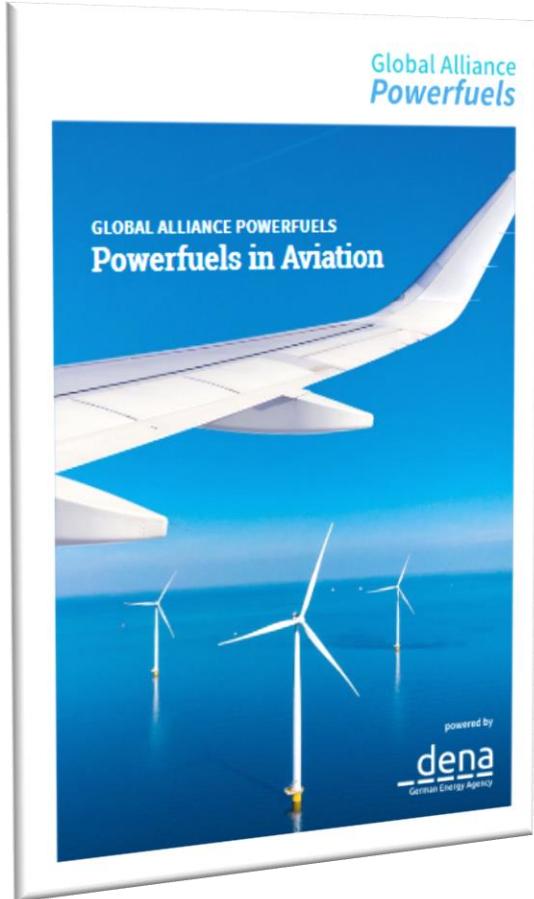


Importance of international regulation



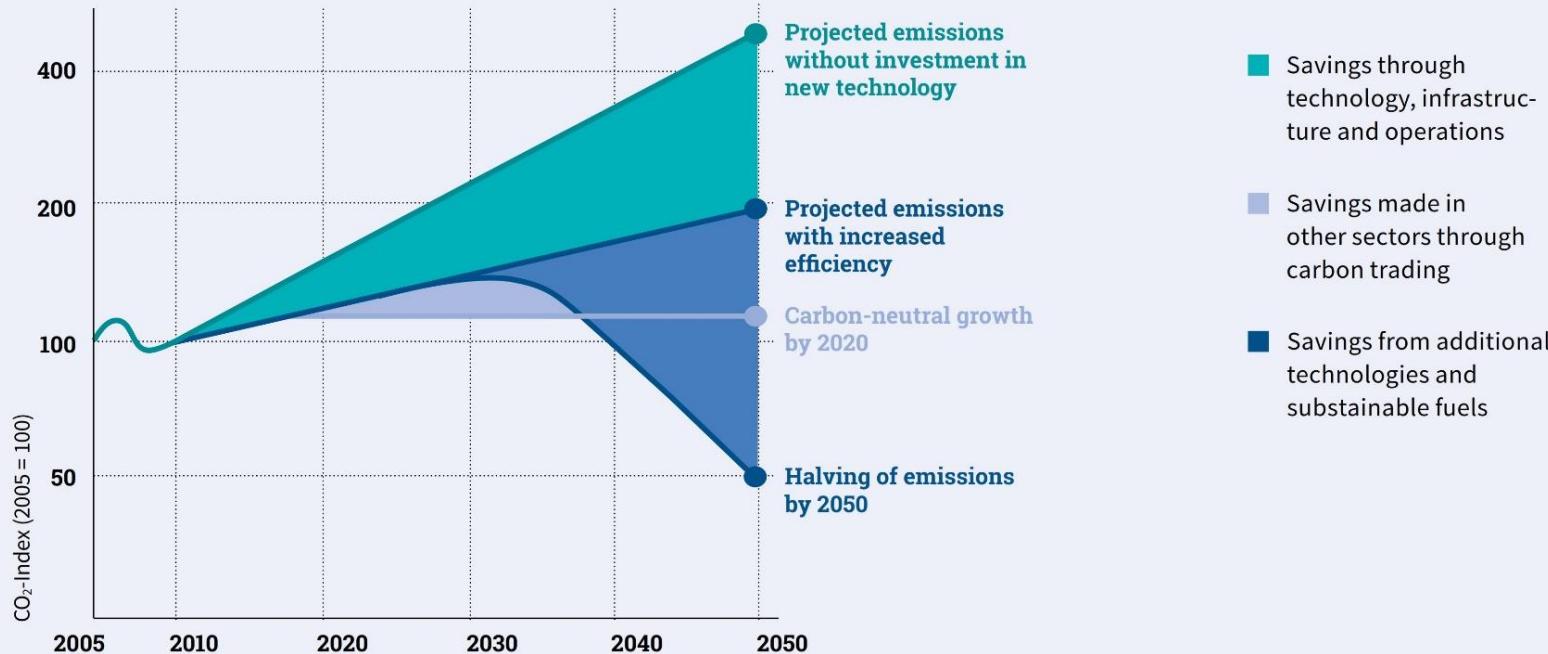
Source: Global Alliance Powerfuels - Guidelines for Market Development  
<https://www.dena.de/en/newsroom/meldungen/2019/global-alliance-powerfuels-presents-guidelines-for-market-development/>

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# AVIATION

# AVIATION NET GHG-EMISSION NEEDS SAF



# AVIATION ADVANTAGES POWERFUELS-JET FUELS VS BIOFUELS

## Water demand per litre of jet fuel

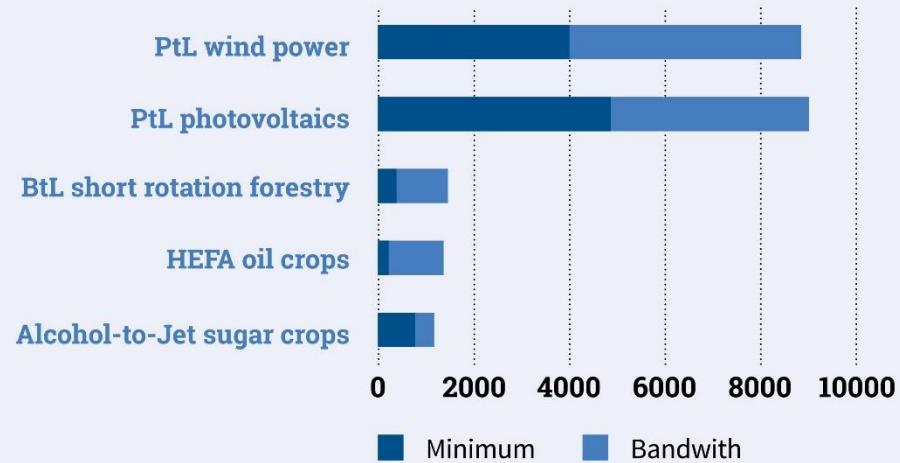
**Powerfuels (PtL) water demand compared to selected biofuels** (volumes representation, PtL water demand  $\sim 1.4$  L<sub>H2O</sub>/Ljetfuel)



Source: LBST/BHL, 2016 [6]

\*Hydro-processed Esters and Fatty Acid

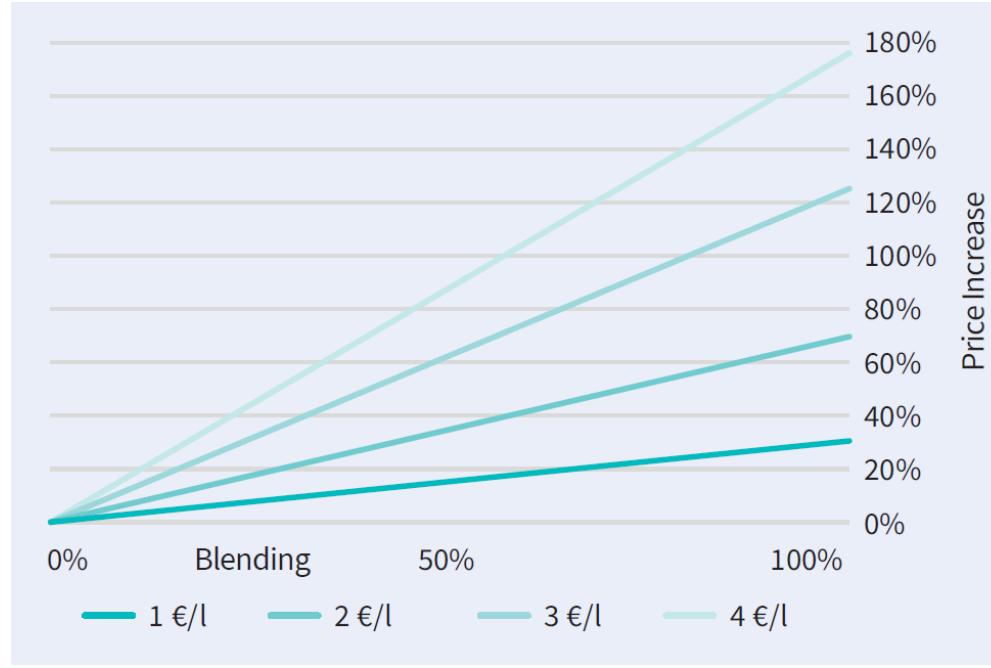
## Achievable air mileage for an A320neo per ha of land (km/(ha\*yr))



Source: LBST/BHL, 2016 [6]

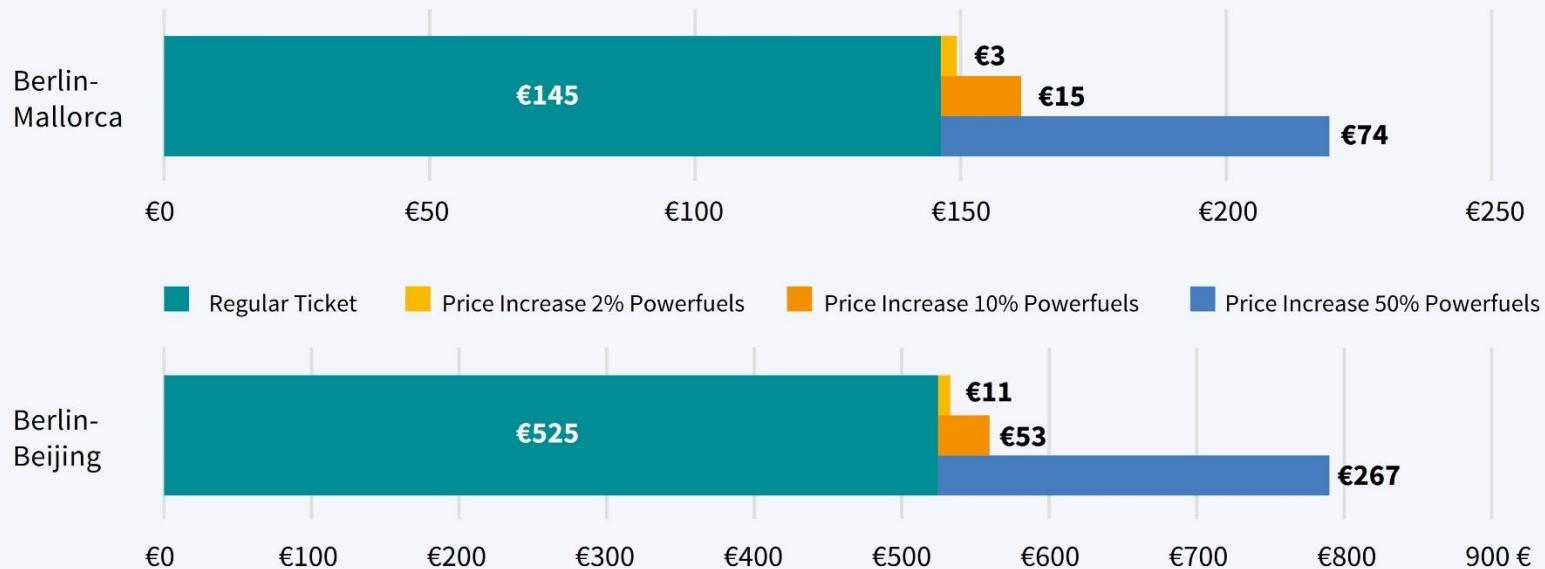
Water demand per litre of jet fuel and achievable air mileage

# AVIATION COST CHALLENGES



Ticket price increases for different powerfuel cost estimates

# AVIATION TICKET PRICE IF POWERFUELS ARE BLENDED



Ticket price increase by blending conventional aviation fuel with different proportions of powerfuels

# AVIATION GAP RECOMMENDATIONS

- Powerfuels should be **explicitly mentioned** and considered in the **ICAO Global Framework for Aviation Alternative Fuels** and the **IATA Sustainable Alternative Aviation Fuels Strategy**.
- ICAO member states should **define** for all airlines an increasing SAF/**powerfuels blending quota** starting with **at least 2 % in 2025**.
- It needs frontrunner markets/regions. But competitive disadvantage for progressive market players has to be avoided. **Revenues of national/regional instruments** may be used to support large scale powerfuels production, and it's use in aviation.



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# SAVE THE DATE

## GLOBAL ALLIANCE POWERFUELS BRUSSELS BRIEF: DEFINING SUSTAINABILITY STANDARDS FOR POWERFUELS.

Monday, 28th October 2019 – 4pm to 6pm

Venue: Landesvertretung Nordrhein-Westfalen

Rue Montoyer 47, 1000 Bruxelles, Belgium

[www.powerfuels.org](http://www.powerfuels.org)

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# THANK YOU FOR YOUR ATTENTION.

Stefan Siegemund

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