



The case for low-carbon transport and chemistry

**Finding sustainable feedstocks, technology
and policy**

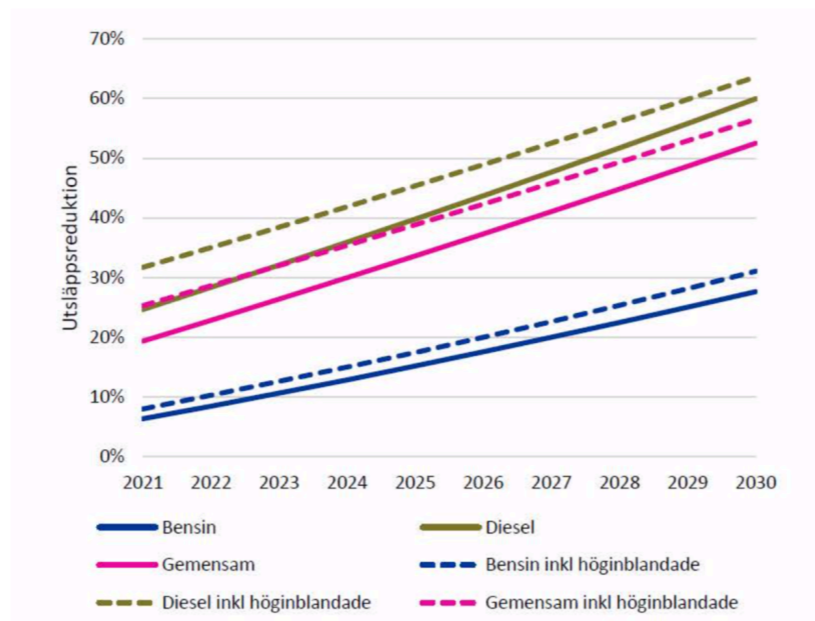
Growing a Green Future | 17 Dec. 2019

Loes Knotter

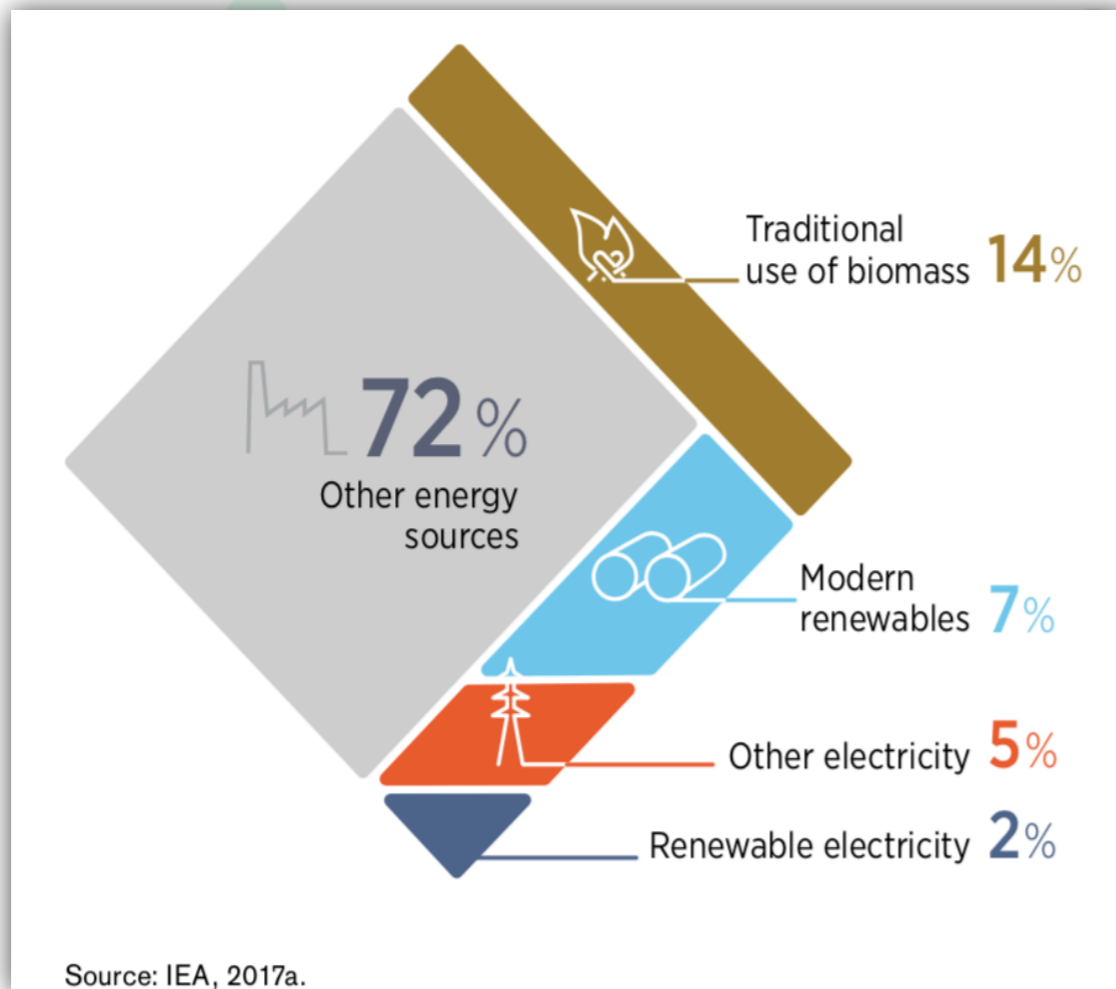
Swedish business sector asks for regulation



Reduction law is the most important tool to increase the use of bio fuel

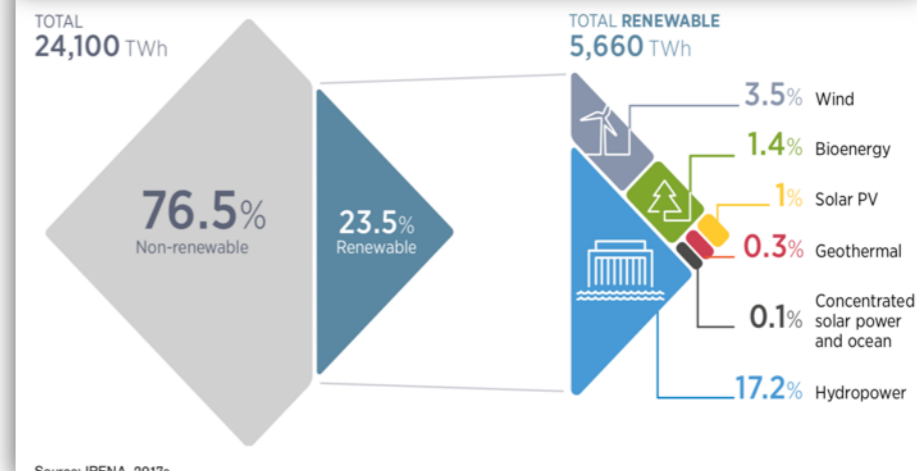
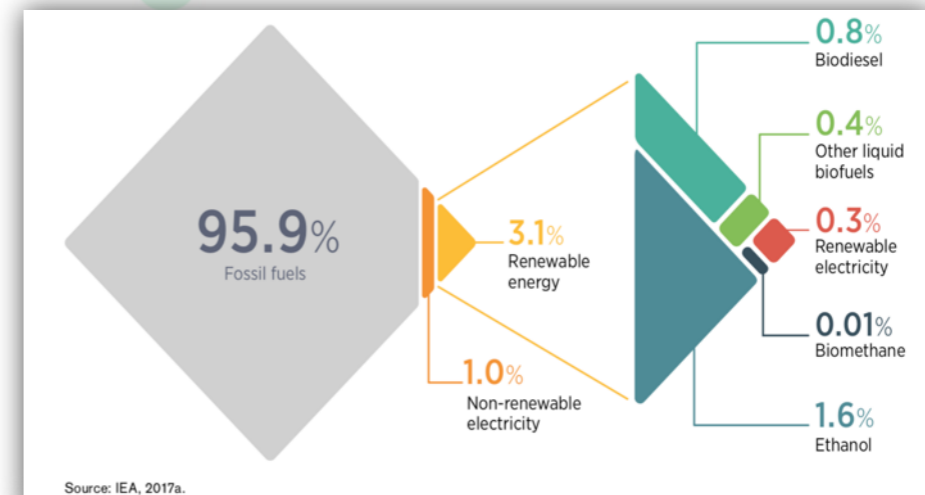


Framing the urgency



Heat (± 50% of total energy)

Transport (± 25% of total energy)



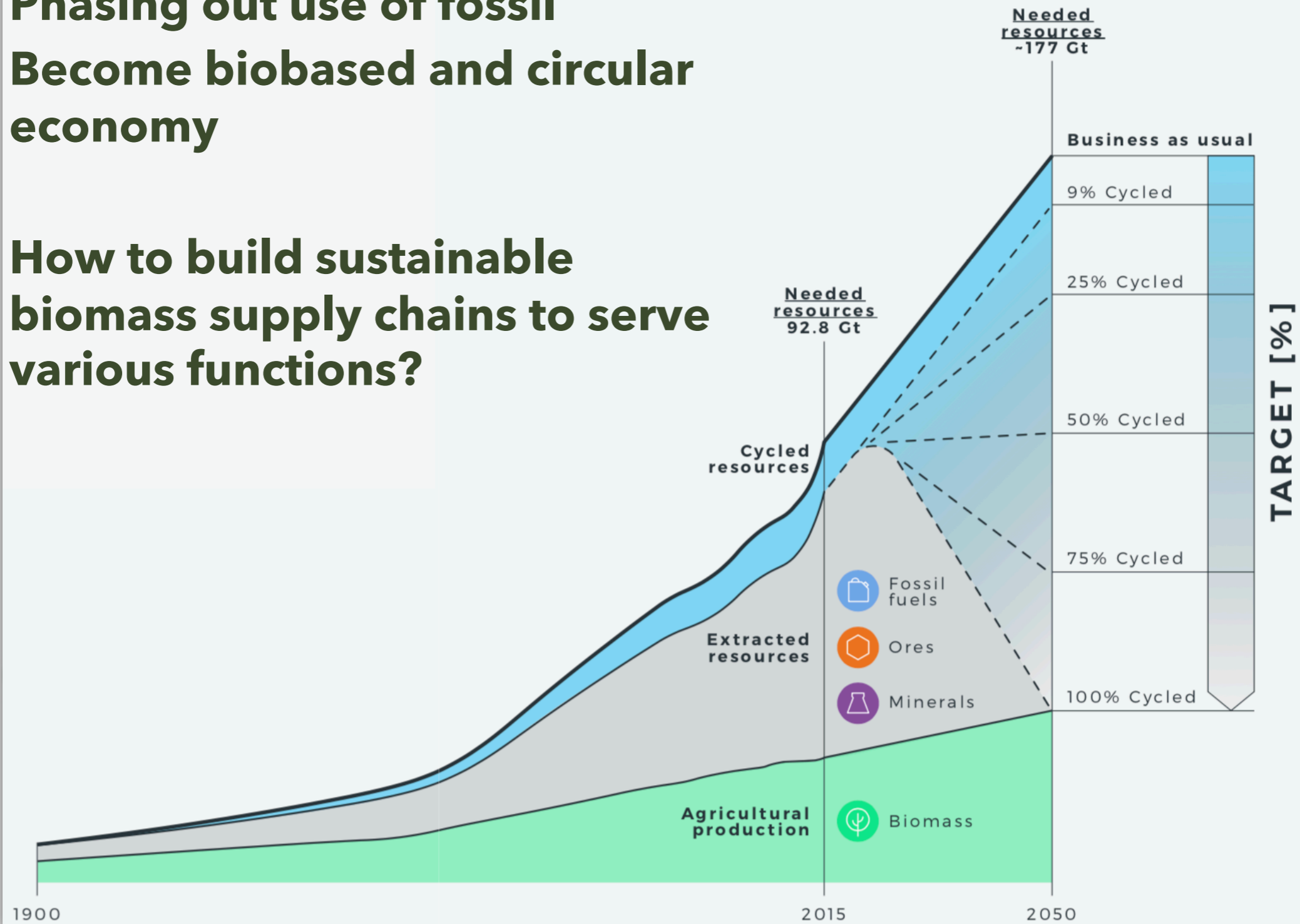
Power (± 25% of total energy)

**Ongoing dominance of fossil in global energy sector.
Quick phase out needed.**

Framing the challenge

Phasing out use of fossil
Become biobased and circular
economy

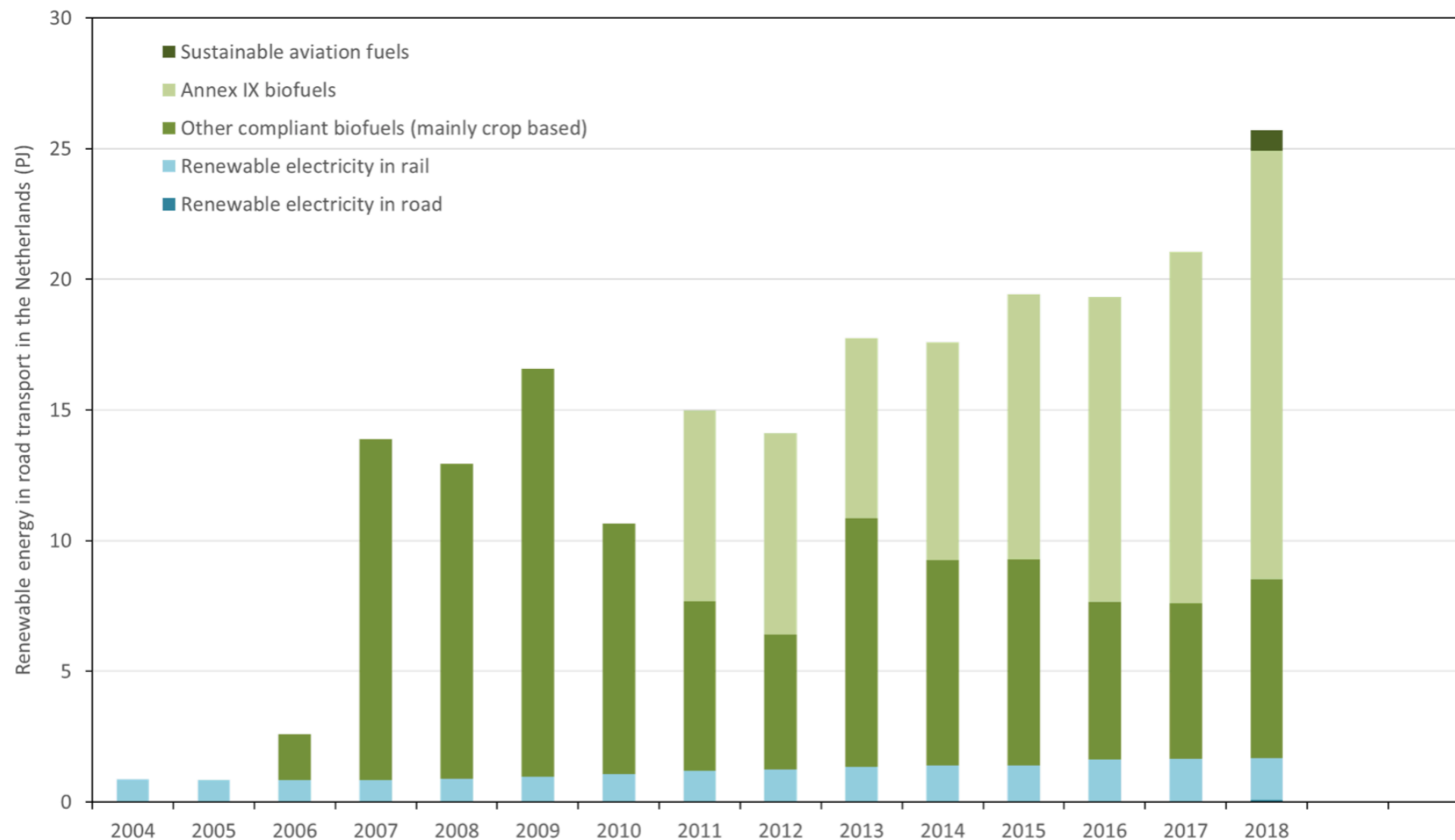
How to build sustainable
biomass supply chains to serve
various functions?



Source: The circularity gap report 2018

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Development of renewable energy in transport



- Figure 2. Development of renewable energy in transport in the Netherlands. Annex IX biofuels in the Netherlands in recent years mainly concern waste-based biodiesel on basis of used cooking oil and animal fat. Renewable electricity in road transport is small (0.1 PJ in 2018) but increasing every year.

Possibilities for renewable energy in transport

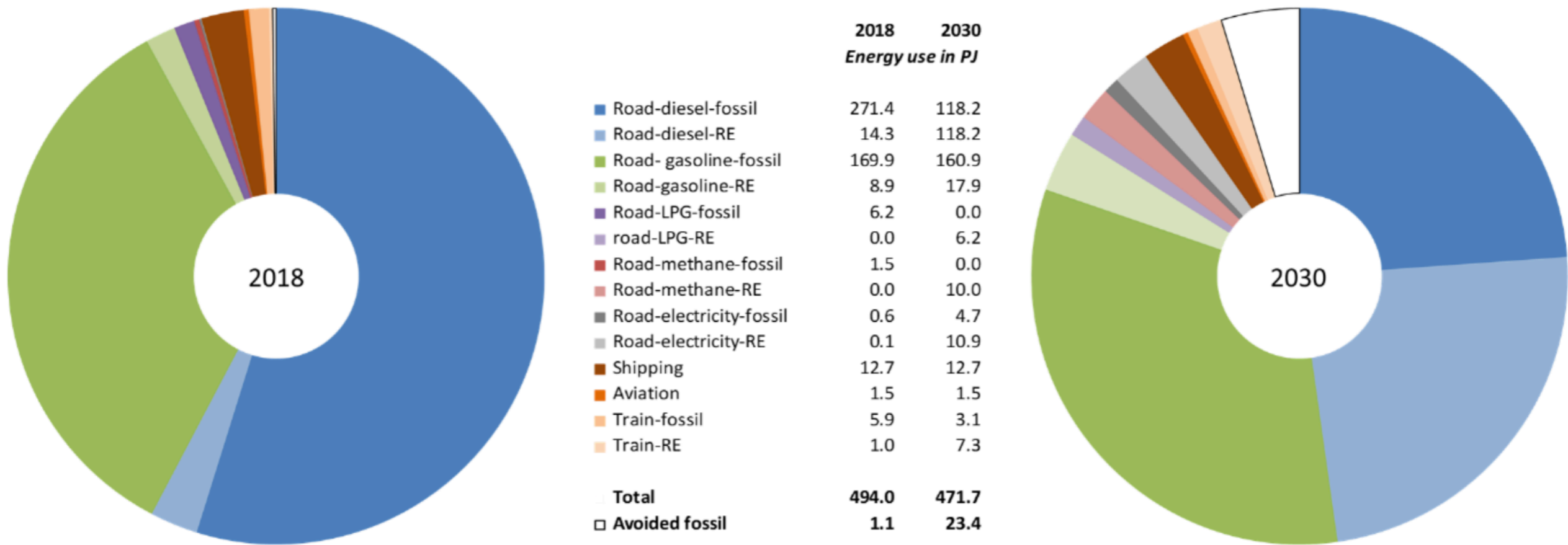


Figure 6. Contribution of fossil and renewable fuels in 2018 and 2030. RE indicates renewable.

Source: forthcoming report Navigant

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Fuel specifications

An overview of the main options to blend (higher fractions of) biodiesel and ethanol in fossil fuels is given in Figure 6. Options for the introduction of higher blends are further explained in Section 2.4.

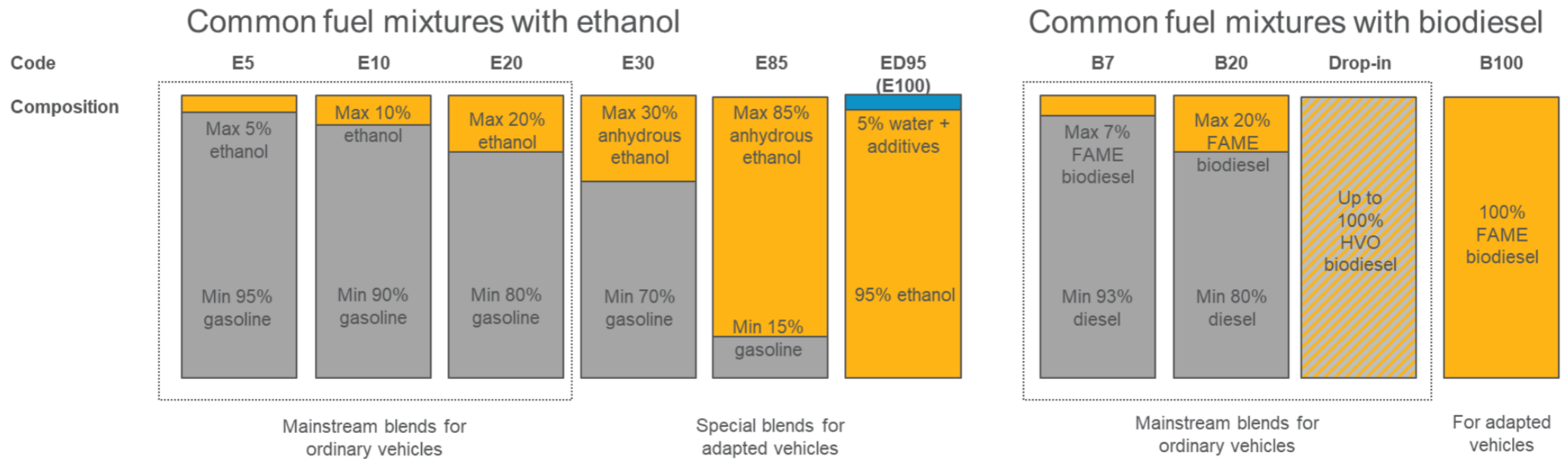


Figure 4. Common mixtures of ethanol and biodiesel.

Feedstocks and Conversion

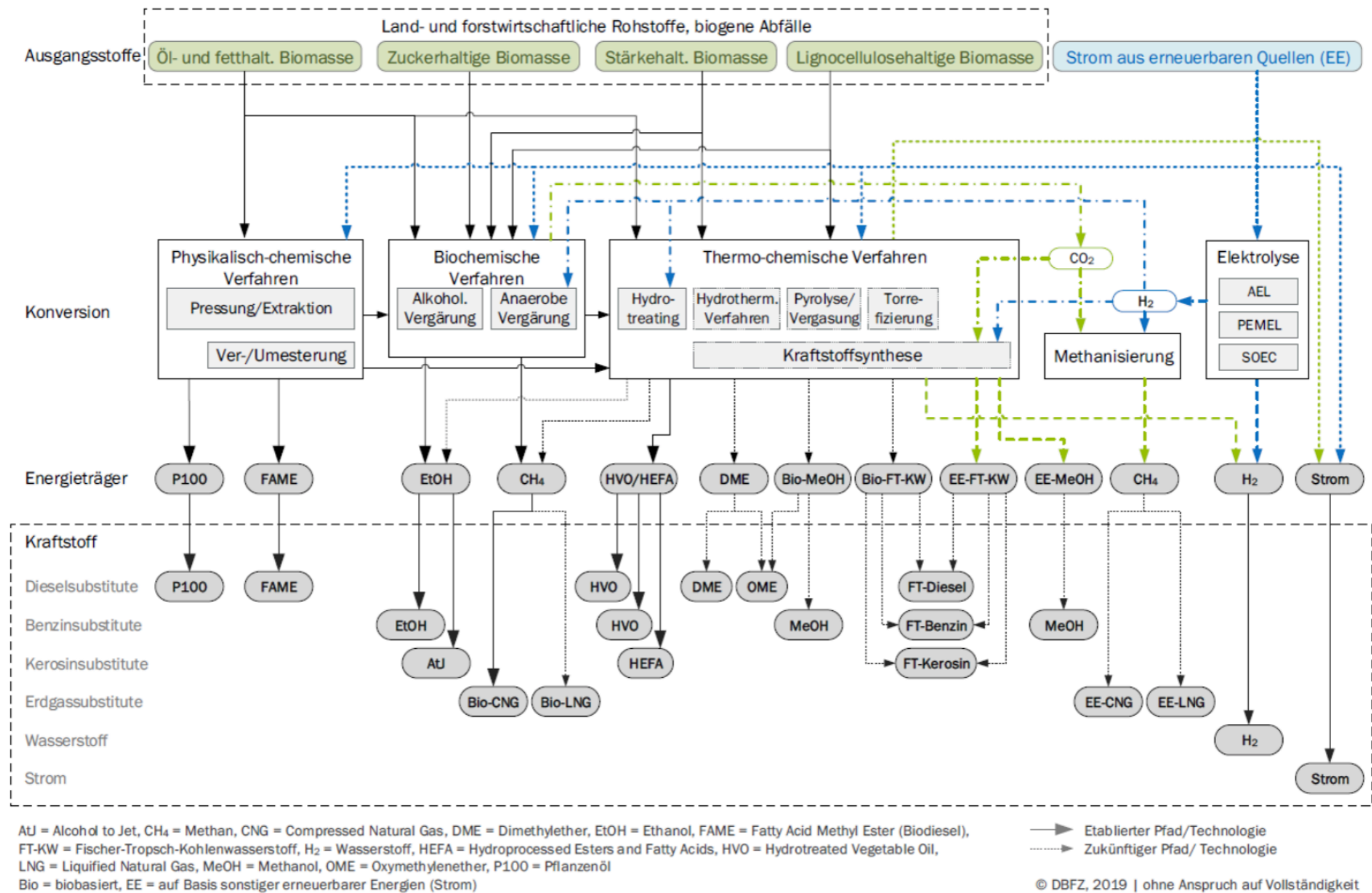


Figure 3. Conversion pathways for biofuels and other renewable fuels, such as produced from renewable electricity, and options for synergy between these (Deutsches Biomasseforschungszentrum DBFZ 2019, Monitoring Biokraftstoffsektor 4. Auflage)

Source: forthcoming report Navigant

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How does regulation look right now

- **Regulation in place for energy in Europe and the Netherland to promote share of renewables**
 - **Renewable Energy Directive 1 (up to 2020) including sustainable framework**
 - **Renewable energy Directive 2 (2021-2030) further improved sustainability framework, expended to other biomass sectors**
 - **'Klimaatakkoord' - Climate Agreement 2 Mton CO2-emission reduction (set op 27 PJ max)**
- **Similar regular is yet lacking for the chemical sector**

Mobilizing demand

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Verken je opties

Duurzame brandstoffen

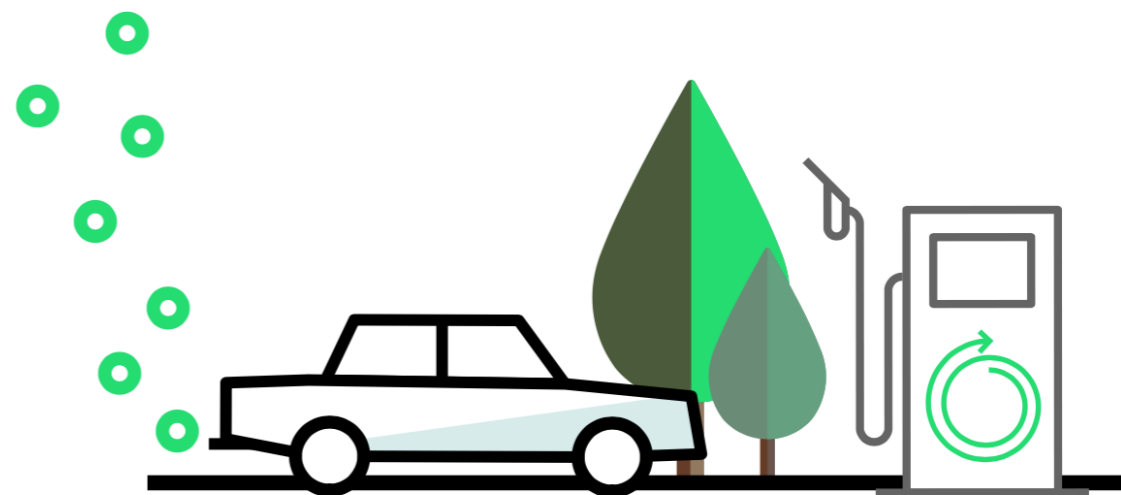
Waar tanken?

In 2050 wil Nederland fossielvrij zijn

Om dat te halen, hebben we duurzame alternatieven nodig voor vervoer. Elektrische voertuigen en hernieuwbare biobrandstoffen zorgen per direct voor een beter klimaat. Benieuwd wat jij nú kan doen?

Verken je opties >

Lees verder >



Energy regulations set very specific conditions on feedstocks

- **Strict sustainability criteria on**
 - Greenhouse gas performance,
 - Origin,
 - Type of feedstock
- **Specificly:**
 - Limits on utilisation of food and feed crop based biofuels,
 - Limits on utilisation of used cooking oil
 - Expansion focus on advance biofuels, based on a list of waste-based feedstocks (Annex IX-A list in Directive EU/2018/2001)
- **Conditions will be extended to chemical sector - as announced in Klimaatakkoord**

Design parameters for sustainable supply chains

- **Strive for high well-to-wheel GHG-emission reductions**
- **Avoidance of undesired land change impacts**
- **Increase of (re)forestation and protection of forests, nature and biodiversity**
- **Contribution to improvements to more efficient agriculture**
- **Strengthening food security**
- **Improving soil and water quality and closing of nutrient cycles**
- **Assuring security in the supply chain**
- **Improving transparency**

Call for action

Work together to get regulation in place

- **To give priority to biobased sustainable value chains**
- **To set a 'phase out' path for use of fossil resources**

Establish European collaboration opportunities to build a bioresource based Europe

Reconnect to agricultural sector to the end-use sectors, like energy, transport and chemistry and biobased materials, as integral part of the sustainable supply chain

More info



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