

Advanced biofuels - what holds them back?



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New release from IRENA “**ADVANCED BIOFUELS** – **What holds them back?**” (18 Nov 2019)



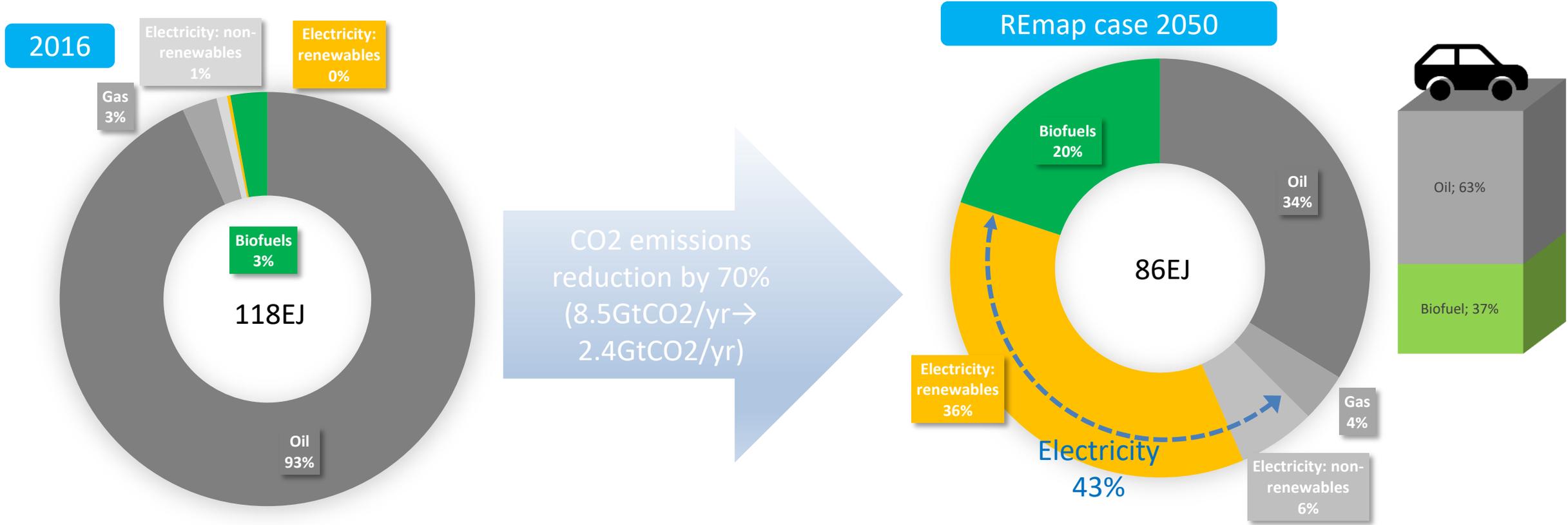
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2. Barriers to advanced biofuels
3. Context and relevance of survey questions
4. Survey results
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Can be downloaded via IRENA’s publication website

<https://www.irena.org/publications>

Transport sector decarbonization pathways (REmap)

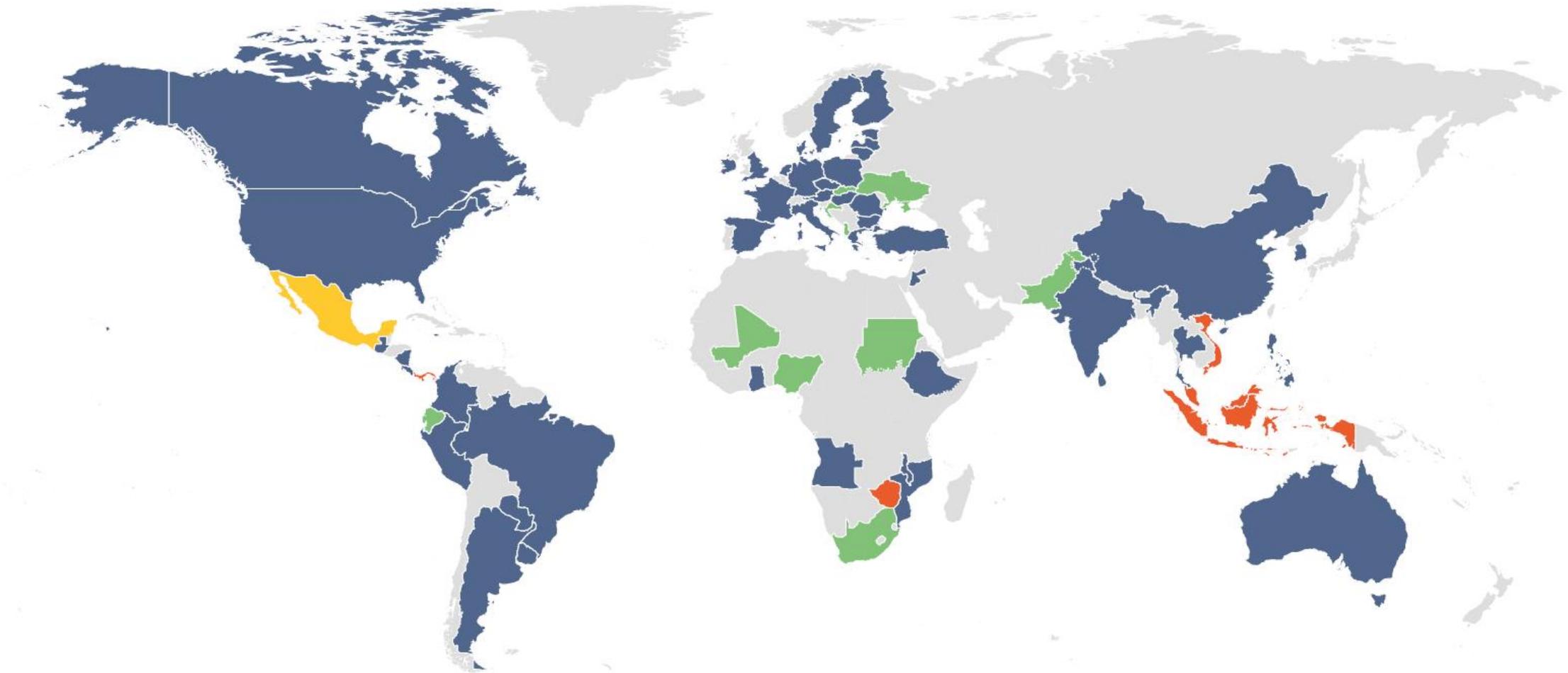


Liquid biofuels	129 Billion L
Ethanol	94 Billion L
Biodiesel	35 Billion L
Biojet	<1 Billion L

5-fold increase of liquid biofuels

Liquid biofuels	652 Billion L
Ethanol	366 Billion L
Biodiesel	180 Billion L
Biojet	105 Billion L

Countries with biofuel obligations for transport, 2016



◆ Countries with obligations in place by 2012

◆ Countries that added obligations during 2013-2015

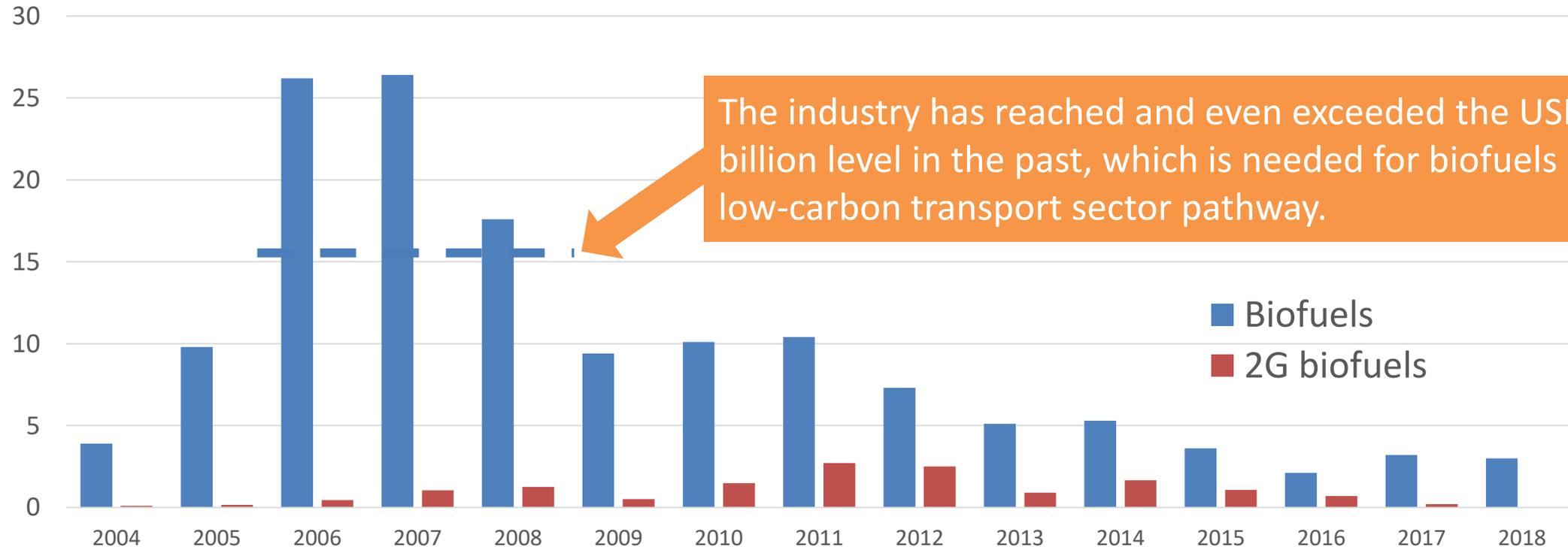
◆ Countries that added obligations in 2016

◆ Countries that increased existing obligations in 2016

Source: REN21, 2017.

Global biofuel investments are on a declining trend

Annual Investments in Biofuels (billion \$)



Source: BNEF

- To achieve the 5-fold increase goal, more than 100 refineries should be developed annually at an investment cost of USD 20+ billion.
- More than 10% of bioliquids should be allocated for aviation but the buildout of biojet refineries is slow.

(Objective)

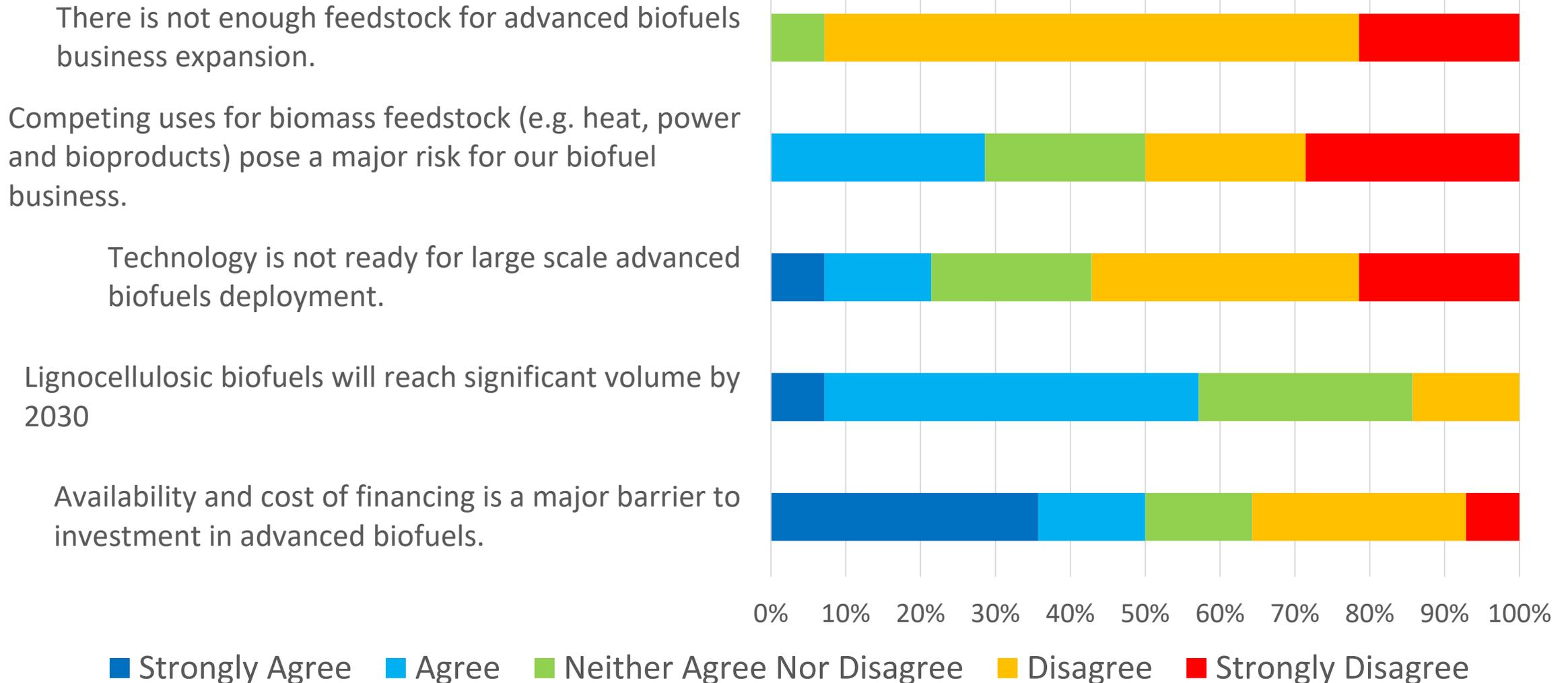
- ✓ Clarify the factors explaining the stagnating investment activity in advanced biofuels

(Method of analysis)

- ✓ A review of past literature + survey by questionnaire with industry executives in companies that have invested in 2G biofuel productions (14 respondents)
- ✓ Statements evaluated on a five-point agreement scale (the Likert Scale) under the five following groups
 - feedstock (8 statements)
 - technology and financing (7 statements)
 - markets through mandates and targets (16 statements)
 - trends in consumer demand (12 statements)
 - environmental and social concerns (11 statements)
- ✓ A ranking question about the level of various possible barriers (rank a minimum of three of the most important areas of risk or barriers from among 14 categories)
 - highest scored barrier = value of 3
 - second scored barrier = value of 2
 - third scored barrier = value of 1

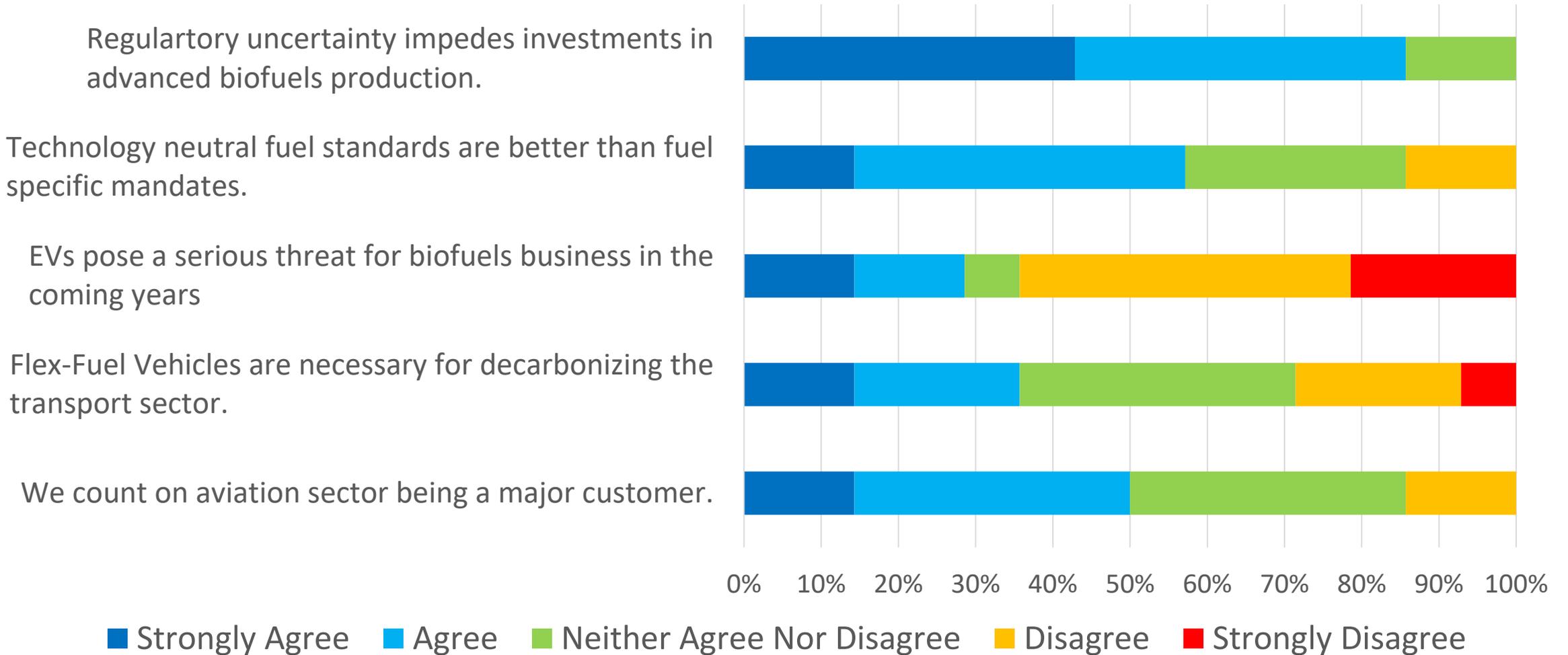
Barriers to investment in advanced biofuels

- feedstock, technology and financing -



Barriers to investment in advanced biofuels

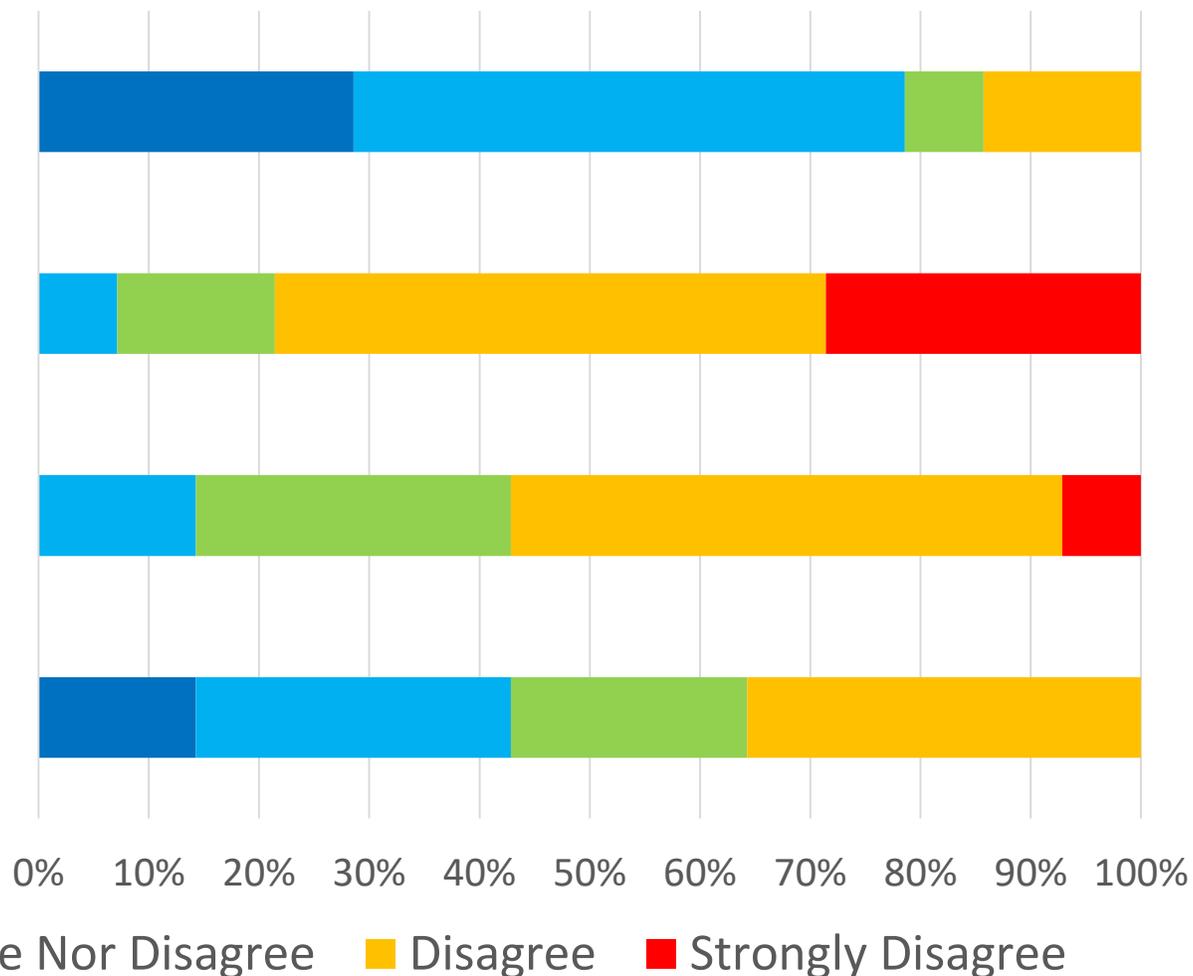
- mandates, targets and demand -



Barriers to investment in advanced biofuels

- environmental and social concerns -

- There is too much confusion about how life-cycle GHG emissions, LUC and ILUC are estimated.
- Methods used for estimating land use change impacts of various biofuels are accurate and reliable.
- Environmental advocacy groups have helped advanced 2G biofuels.
- Investments are hampered by worries that sustainability criteria may become more stringent.



Ranking the barriers to investment in advanced biofuels



- The most important group of barriers relates to lack of stable regulation, including mandates and subsidies.
- It is followed by the difficulty of financing (availability and cost) and cost competitiveness of advanced biofuels production, including conversion efficiency & CAPEX.



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