



# An updated Strategic Research and Innovation Agenda for Bioenergy

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towards 2030  
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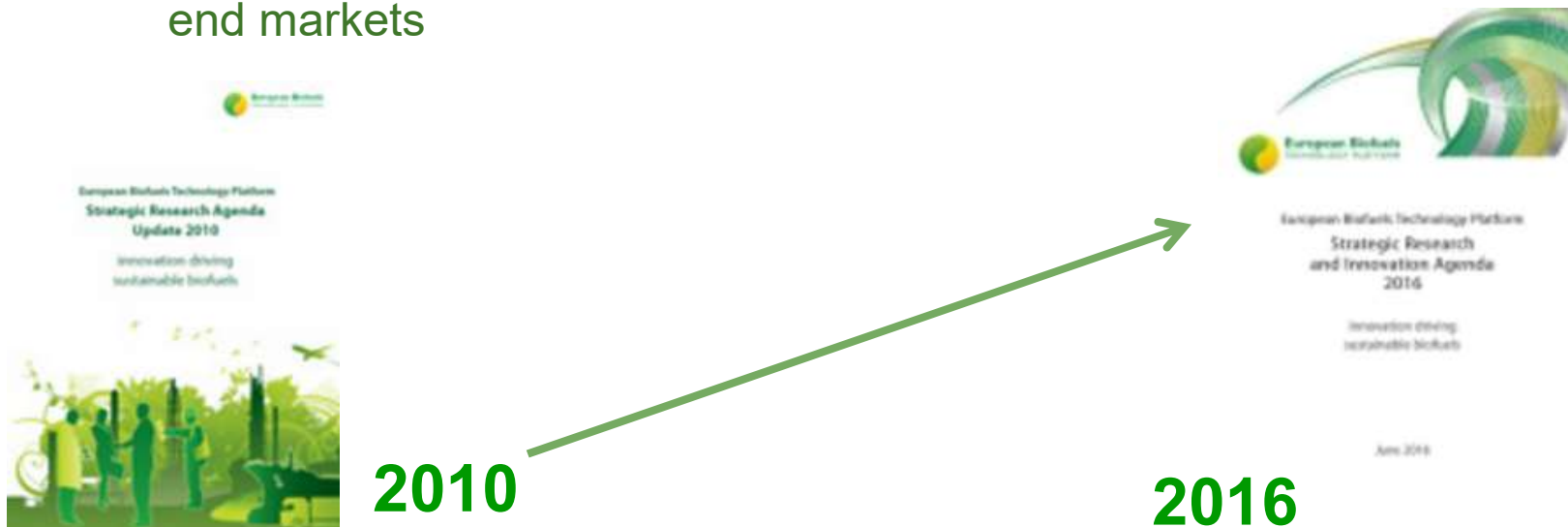


## Outline

- Background to ETIP Bioenergy SRIA
- Key Messages
- Biofuels deployment
- Some SRIA key issues
- Where to find the SRIA

## Background to EBTP SRIA 2016: statements still valid in 2018?

- Uncertainties and fragmentation of policies
- Volatile prices – mineral oil and biomass
- Policy shift from biofuels to decarbonisation of transport sector
- A number of mature technologies for advanced biofuels - move from R&D to deployment
- Holistic view required – value chains, transport systems, sustainability, end markets





## Relevant developments for the SRIA 2018 I

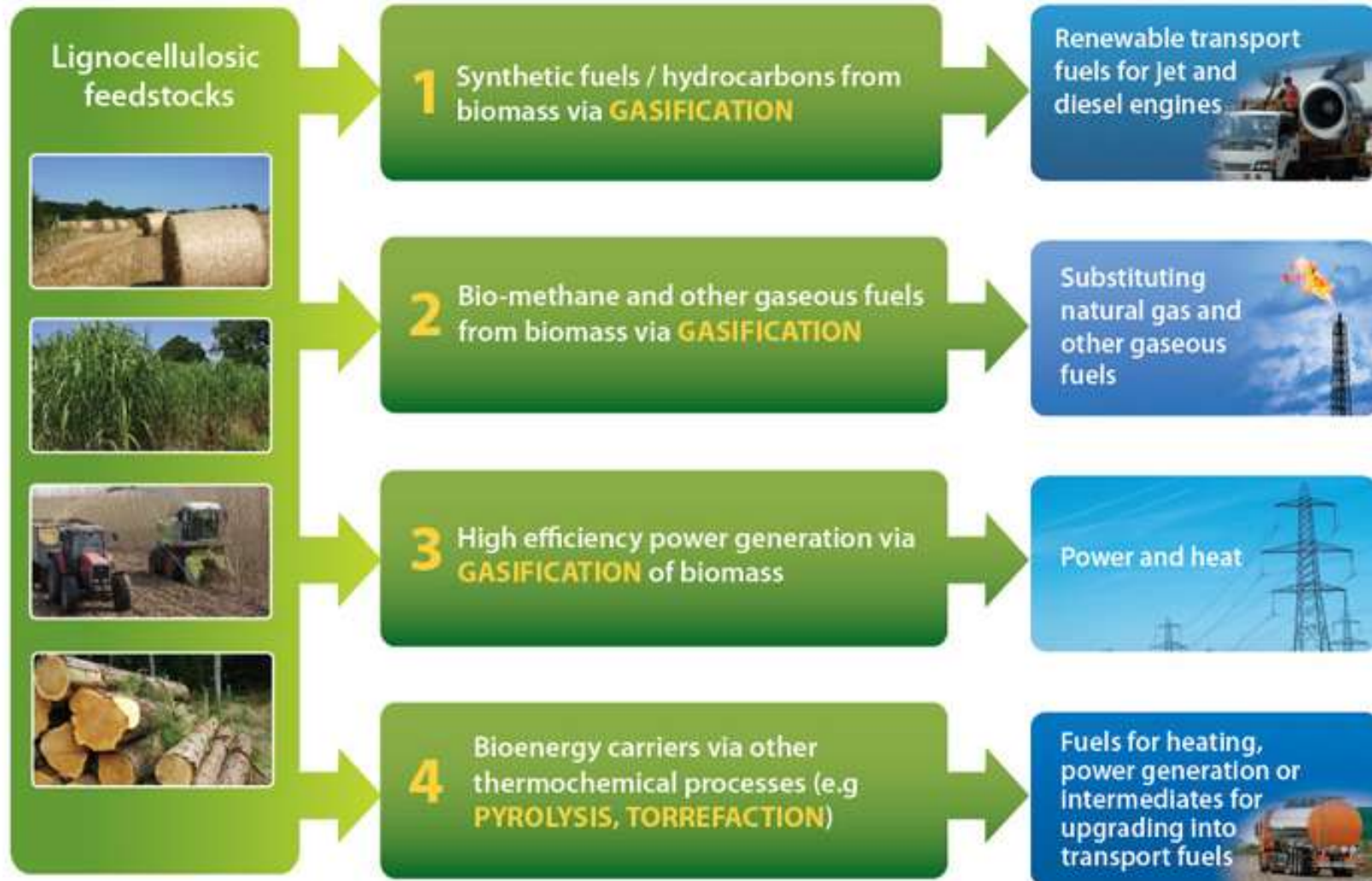
- Political framework post 2020: Still open (Energy Union governance, RED II), hopefully in final stage
- Fossil energy prices: Continue to be low
- Biomass sustainability discussion: Ongoing and far from consensus
- Project/company failures since 2016 – but also successful pilots/demos
- Broadened scope of ETIP Bioenergy



## Relevant developments for the SRIA 2018 II

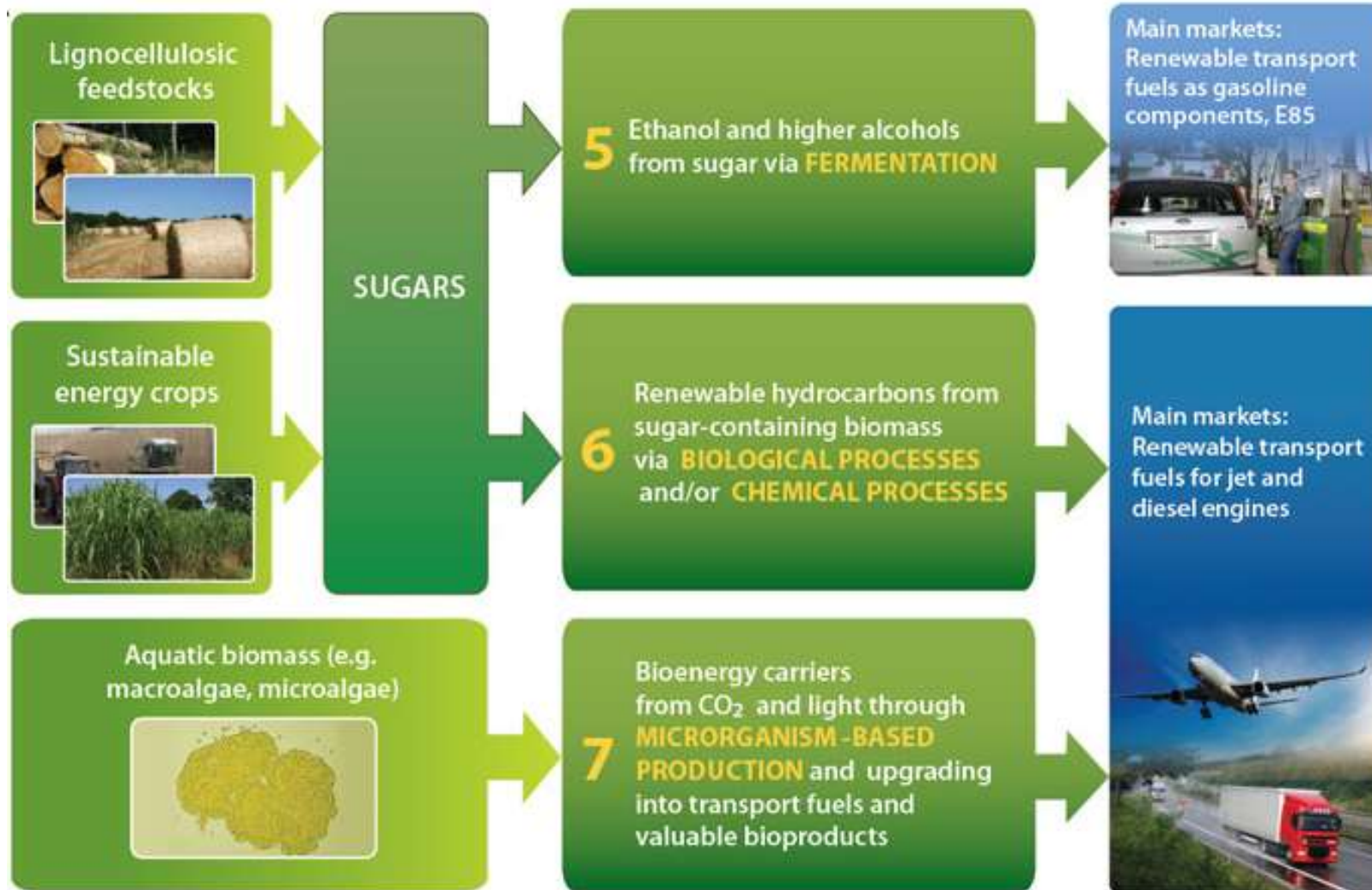
- Significant need for bioenergy in most energy scenarios for 2030/2060
- Market integration electricity/heating&cooling/transport
- Transport sector key market (aviation, maritime, heavy duty road)
- More prominence for gaseous fuels in public discussion
- Increasing market shares of other RES- integration crucial
- Considerable R&I investments (e.g. EU H2020 advanced bioenergy: 350 M€)
- Recommendations by other organisations/initiatives: IEA Bioenergy Roadmap, IRENA, EC ECORYS Study, SET-Plan TWG8, EERA, SGAB Technology Status

# Thermochemical Pathways



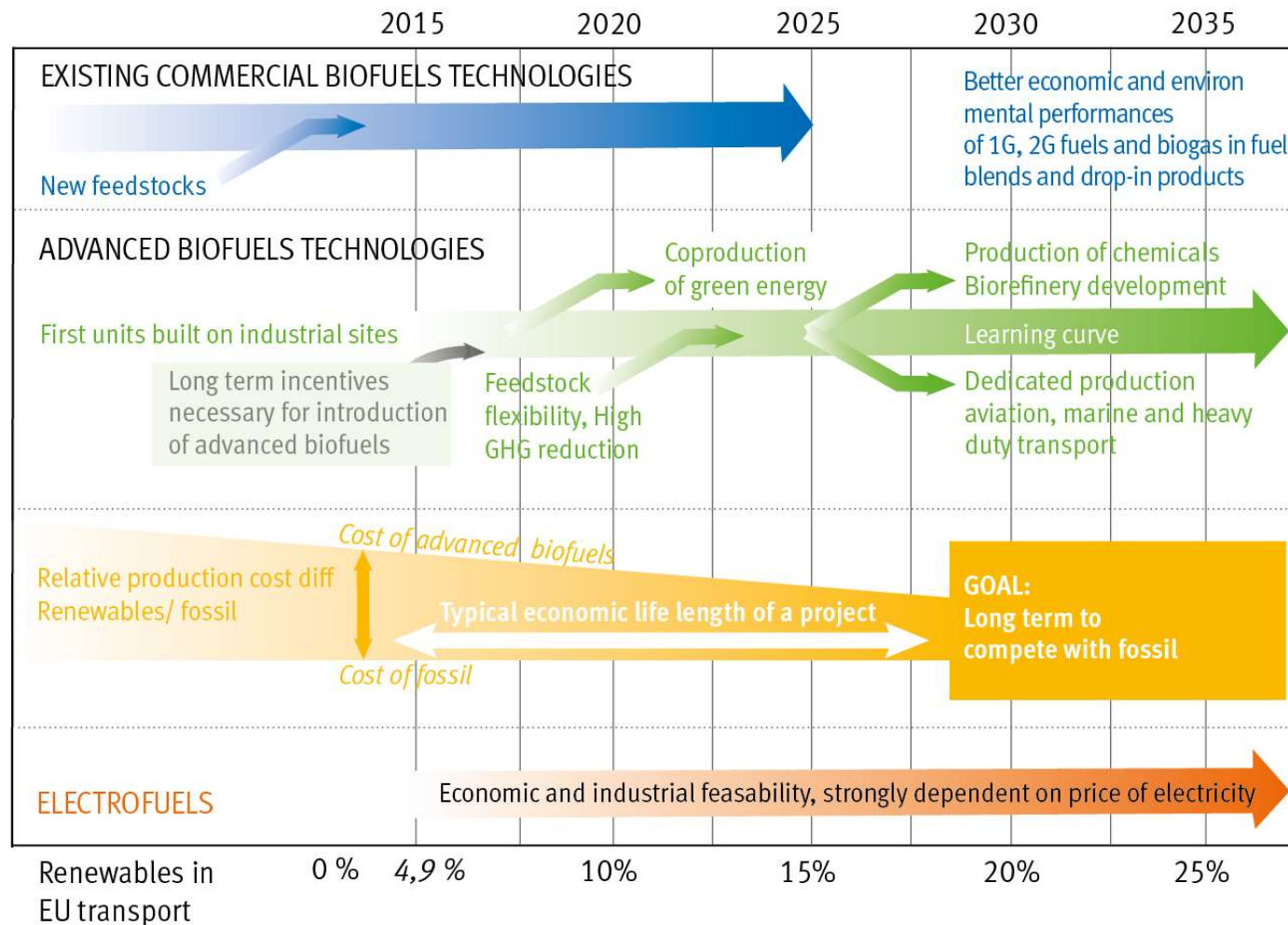


# Biochemical Pathways





# Biofuels Deployment







## Key messages 1

- Policies, market regulations and financing are constant issues to bring advanced biofuels and bioenergy to the market
- Challenge of societal acceptance
- Key criteria for economic viability: ideal locations / infrastructure, secure market for products and long-term raw material supply
- Biomass supply and mobilisation is of paramount importance for biofuels/bioenergy to succeed at larger scale
- “Agreeable corridor“ of sustainable global bioenergy use until 2030, e.g. 70 –90 EJ? (Fritsche 2018, based on IEA Roadmap)



## Key messages 2

- There is no one-fits all situation as each biofuel/bioenergy plant requires its own specific plant design
- Synergies with existing industrial production facilities deserve priority R&D attention, both for biofuels and other products
- The key priorities for biofuel technologies are to improve environmental (GHG, energy balance, water, inputs...) and economic performance and bring flexibility as integrated biorefinery
- Work to ensure a fair appreciation of CO<sub>2</sub> emissions of vehicles running on biofuels (well-to-wheel approach, electric vehicles and vehicles running on renewable fuel should be treated using equal criteria)
- Understanding the 'best fit' of alternatives in the various sectors of transport



## Broaden the European feedstock base for bioenergy

- Best practice technology transfer between forestry and agriculture based value chains
- Understand interdisciplinary issues and assumptions which frame the future biomass supply across sectors by defined sustainable & resource efficient value chain
- Four research challenges:
  - Improving practices for biomass supply and logistics
  - Biofuels from marginal land
  - Biomass cost supply – region specific
  - Certification & standardisation
- Each topic will include, where appropriate, impacts to biogenic carbon, water, soil, biodiversity, eutrophication and acidification.



## Sustainability

- Biofuel/bioenergy sustainability should be embedded in broader efforts towards sustainable use of biomass and land
- Development of innovative land and biomass management strategies is worth pursuing
- Relevant, transparent and science based data and tools for practical implementation of sustainable requirements
- Continued dialogue at national level is needed to achieve compatible standards on actual suitability performance of feedstocks
- Work towards application of suitability criteria across all biomass uses allow a level playing field between energy, food, and other applications of biomass



## Conversion

- Technical challenges for all value chains: feedstock flexibility, energy and carbon efficiency, reliability & maintenance, capex efficiency
- Thermochemical Pathways
  - feeders, gas cleaning, catalysts (VC 1/2)
  - biofeedstock compatible material and technologies, able to process a wide range of biomass qualities (VC 3)
  - handling/stability of bio-oil, materials, specifications of intermediates (VC 4)
- Biochemical Pathways
  - preparation of feedstocks, enzymes (VC 5)
  - microorganisms, catalyst performance, bioprocessing (VC 6)
  - selection of strains, process design, water treatment, scale up (VC 7)
- Integration of other RES





## Markets and End Use

- The most important issue is to really understand the interactions of fuel and engine, and when applied, exhaust after-treatment as well, thereby enabling co-optimisation of all elements in the system.
- Some biofuels, e.g., paraffinic renewable fuels and monomolecular fuels like alcohols and DME enable engine optimisation to enhance engine efficiency and/or emission performance.
- Both modelling activities and actual engine testing is needed to strengthen the base of knowledge.
- Electrification of light-duty vehicles is progressing rapidly. Plug-in hybrid vehicles have implications of fuel quality, both in the form of constraints but also in the form of new opportunities



## Summary

- ETIP Bioenergy SRIA 2018 is still “work in progress”
- Only limited fundamentally new developments since 2016
- Mismatch between (e.g. 2°) scenario needs and activities
- Key issues remain
  - Stable and supportive framework for all applications
  - Broaden and mobilise sustainable biomass feedstock supply
  - Flexible, efficient conversion technologies
  - Biofuel qualities according to market needs, for short term use in existing vehicle fleet preferably drop in qualities



**For more information:**

**SRIA 2016**

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