European Biomass Industry Association

Biofuel for transport. Market competitiveness of new advanced production technologies

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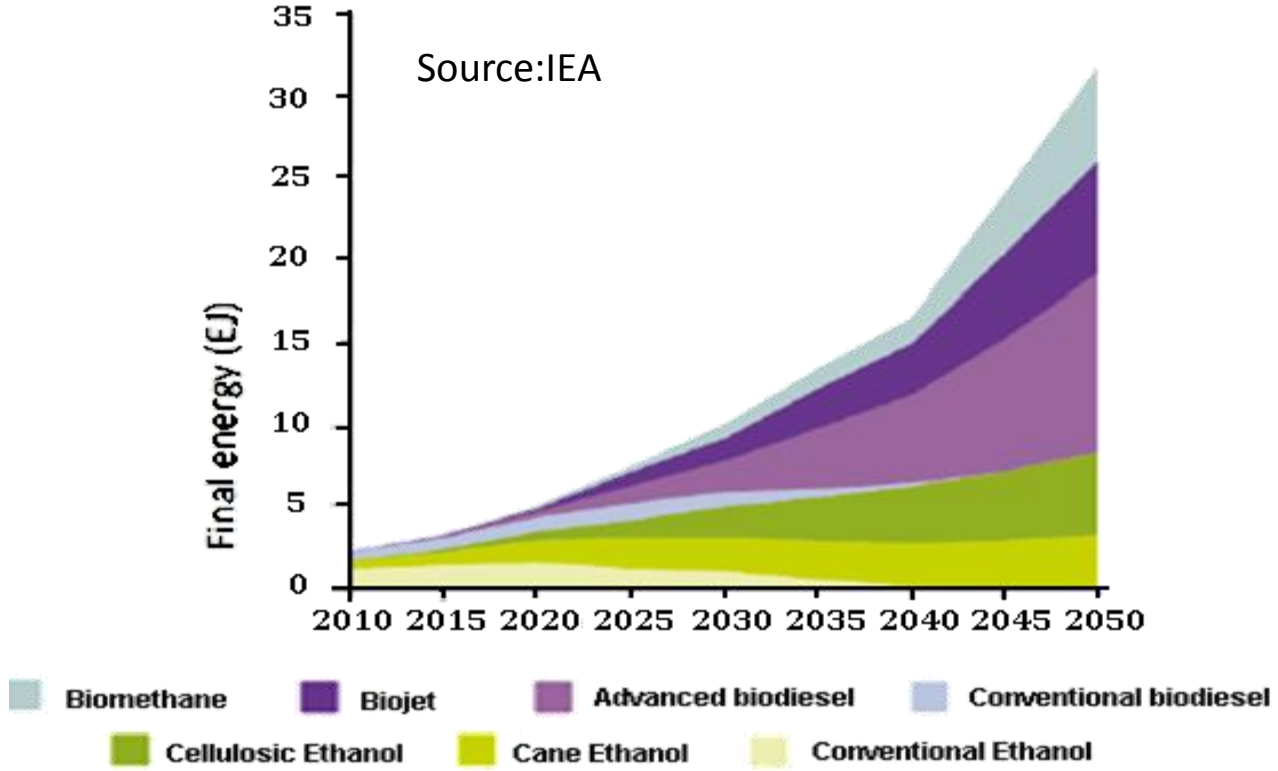
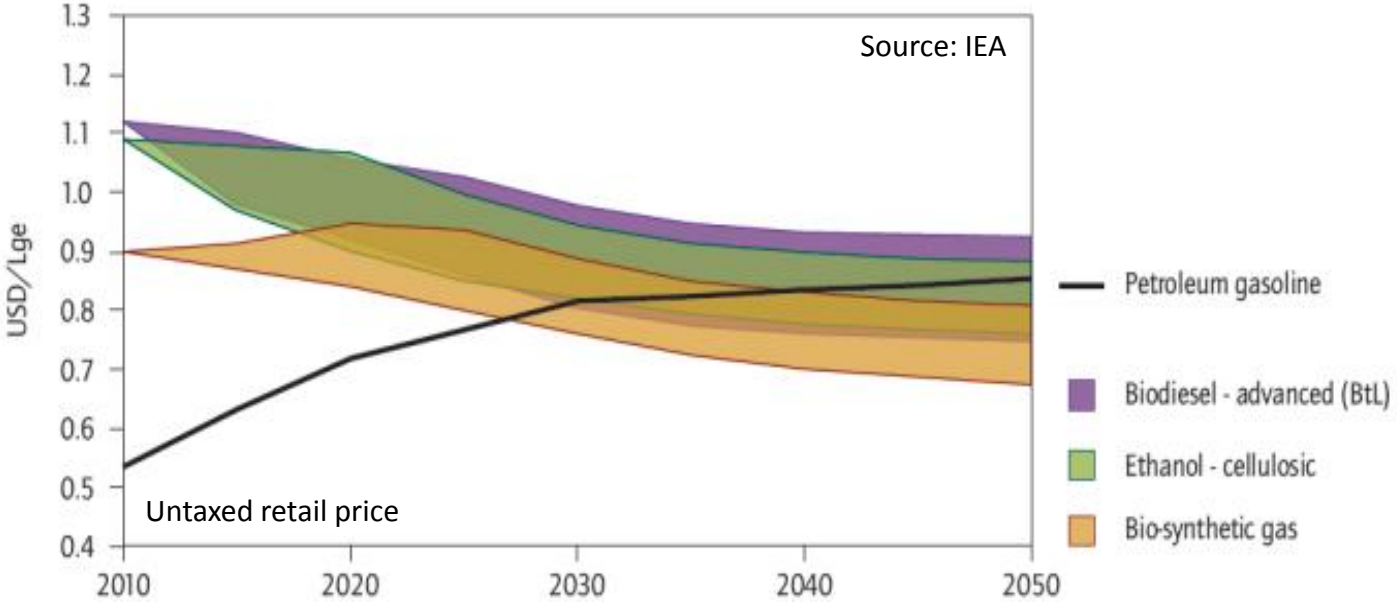
“The future of Biofuels as alternative fuel for the transport sector”.
European Parliament, 16 -10- 2013, Brussels, Belgium.

Expected growth of biofuels global market: 2010 to 2050.



- Land Use conflict with food crops will eliminate first generation biodiesel from the market
- Expected growth from 2.5 EJ today to 32 EJ in 2050
- Biofuels share in total transport fuel increases from 2% today, to 27% in 2050
- Trade will be needed to balance supply and demand for feedstocks and biofuels

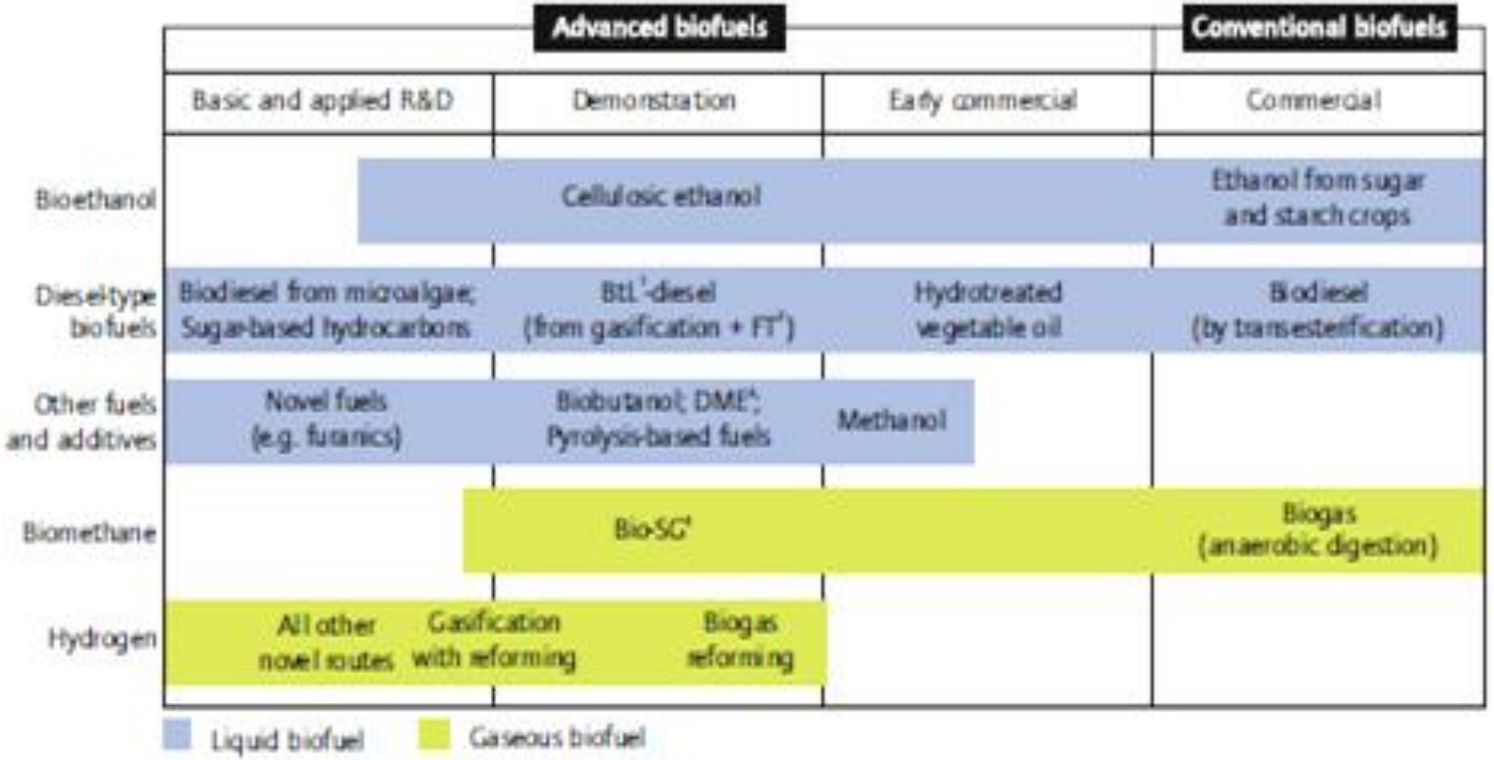
General Estimation of Biofuels cost perspectives compared with petroleum gasoline within the next 40 years



"A valuable Solid Biomass supply chain, with efficient collecting, harvesting and storage systems, could make solid biomass thermochemical processes more competitive and efficient"

- The syngas production, as well as biogas upgrading to biomethane are cheaper than the BTL, 2° generation Cellulosic Ethanol, DME, etc..
- Gasification is already a well known technology largely used in many developed countries for coal gas production and it is going to reduce its installation and operating costs.
- BIO-SYN-GAS can become the cheapest transportation biofuel in the next decades

Commercialization status of liquid and gaseous biofuels



❑Advanced biofuels are still under research and not competitive due to the lignocellulosic biomass pretreatment high costs both when thermochemical and in biochemical cases.

❑Biochemical fractionation of woody biomass is a promising technique but enzimes costs make it still not competitive with fossil fuel in transportation sector.

Deployment of commercial Bioenergy, taking in account its large potential and the wide range of bioproducts diversification possibilties lag much behind other R.E. alternatives energy.

Country / Region	Current mandate/ target	Future mandate/target	Current status (mandate [M]/ target [T])
Argentina	E5, B7	n.a.	M
United States	48 billion litres of which 0.02 bln. cellulosic-ethanol	136 billion litres, of which 60 bln. cellulosic-ethanol (2022)	M
Venezuela	E10	n.a.	T
Mozambique	n.a.	E10, B5 (2015)	n.a.
Bolivia	E10, B2.5	B20 (2015)	T
Brazil	E20-25, B5	n.a.	M
Canada	E5 (up to E8.5 in 4 provinces), B2-B3 (in 3 provinces)	B2 (nationwide) (2012)	M
Nigeria	E10	n.a.	T
China (9 provinces)	E10 (9 provinces)	n.a.	M
Malaysia	B5	n.a.	M
Indonesia	E3, B2.5	E5, B5 (2015); E15, B20 (2025)	M
India	E5	E20. B20 (2017)	M
European Union	5.75% biofuels*	10% renewable energy in transport**	T

"Contribution of biomass to the transport-sector is very modest in EU indeed in comparison to the volume in leading vast countries like USA and Brasil."

Is prevalent among main EU actors a pessimistic feeling and vision on the perspectives for commercial production of biofuels for transport in E.U.

Which are the motivations of some pessimism?(1)

- Stagnant economic activity in general

- Very serious financial situation world-wide

- Very modest economic-environmental sustainability of the 1st generation biofuels (bioethanol from cereals/sugar beet, etc..). Difficulty to recover in EU the investments already done.

- Mandate needed for the contribution of advanced biofuels for transport beyond the year 2020.

  - ✓Competitiveness of Fischer-Tropsch biofuels: 10-15 years
  - ✓Competitiveness of liquid biofuels from algae: 15 years
  - ✓Deployment of advanced 2 gen. biofuels: 15-20 years

- High financial support needed (10 years) to promote large biofuels supply

Which are the motivations of some pessimism? (2)

1. At present still modest participation of private Investors, due to the complexity of the Bioenergy Matrix. The large investments required in general, non homogeneous conditions and authorisation procedures among M.S. make the evaluation of long term risks difficult.

2. Although very large EC/MS effort on R&D is carried out, there is still absence of support measures for transfer of demonstration results and technologies to commercial activities.

3. Once identified reasonable business opportunities especially for new projects, organizations such usEUBIA have great difficulty (no possibilities) to convince investors without providing detailed and clean results of “Techno-economic full feasibility study for bankable projects”. There is a very expensive financial effort (0.5-1 mio Euro) that investors are not ready to anticipate.

4. The present modest market value of CO2-Credit (5€/t), perhaps due to the general economic difficulties but also to the wide carbon credits allowances given in the past., does not stimulate interest for green energy.

Supporting measures for investors: The" Social Credit" Strategy (1)

- The present general tendency to reduce support to Ren. Energy supply is decreasing the interest to invest in clean energy especially when the activity has not reached full competitiveness (i.e. 2° Gen. Biofuels).

- The current world wide support for conventional fuels is 6 times the support given to R.E.

- For important Biomass Activities EUBIA would like to suggest a serious detailed evaluation of possible "social-credits" that could be recognised specifically to Bioenergy-Activities (in particular for Biofuels).

- Having in charge the procurement of the feedstock requiring a large number of people living in rural areas (numerous diversified jobs)

- These social credits (quantified with accuracy for each type of project) are based on the following concept.

Supporting the Investors: The" Social Credit" Strategy. (2)

- Because the long-operation time of a commercial Bioenergy activity (20-25 years) and the large number of diversified jobs involved (75% of which created in rural areas)

- The accumulated man-power salary taxation over the life time of projects could represent a large share of total investment (up to 40%) needed. They could be anticipated by the banks to investors. The public authorities could provide the guaranty of operation to the banks.

- A much larger number of jobs is required for the supply of Biofuels in comparison with transport fossil fuels (~400:1). This has for large-scale supply beneficial effects on the trade balance and on rural development of the coutry.

- Detailed economic assessment specific to different M.S. Situations and different type of activities is required.

Bioelectricity for the new emerging electric vehicles market

Special care should also be dedicated to the potential impact of bioenergy on the future sector of electric vehicles. Massive production of clean bioelectricity could provide a considerable contribution to the deployment of electric vehicles in the EU and worldwide (cofiring-cogasification could provide a means for a fast large-scale deployment)

Type of plantation	Annual electricity production (kWhe/ha x year)	Max Total*4 driving distance (km/ha x year)	N of electric cars (20,000 km/y) fuelled by one ha
Sweet Sorghum (2 cycles x year)	124,000	1,033,000 (Tropical area)	52
Sugar-cane (1 cycle x year)	68,300	570,000 (Tropical area)	29
Corn (1 cycle x year)	30,600	255,000 (Temperate area)	13

***4_Average electricity consumption of Renault Fluence Z.E. car: 12 kWhe/100km**

THANK YOU FOR YOUR ATTENTION

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