

EU activities, plans and directives regarding alternative fuels

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Content

- Key **EU legislation** actions
- Question of sustainability of **biofuels** and position of **biogas** among them
- Support to **R&D** and **market** introduction
- Strategic **outlook** and **Conclusions**

EU legislation – milestones (1/4)

- **COM (2001) 547 final** - For three main alternative ranges of motor fuels defined „optimistic development scenario“ by 2020:

Fuel Type		2005	2010	2015	2020
Natural gas	%		2	5	10
Biofuels	%	2	6	7	8
Hydrogen	%			2	5
In sum	%	2	8	14	23

- ... and for biofuels due to the lack of „*objective reasons not to take action*“ proposed the approval of **two directives** to support their market introduction (obligation of minimum % share addition + favourable taxation)

EU legislation – milestones (2/4)

- **Directive 2003/30/EC** - The Directive specifies indicative targets for member states to secure minimum % share of biofuels on all diesel and petrol consumption in the amount of :
 - >> **2 %** by end of 2005
 - >> **5,75 %** by end of 2010
- For biofuels considered: bioethanol, biodiesel, biogas, biomethanol, synthetic biofuels etc.)
- Accountable their pure use, blending, production liquids derived from them (ETBE, MTBE etc.).

EU legislation – milestones (3/4)

- **Directive 2003/96/EC** - The Directive defines minimum levels of taxation of energy products incl. motor fuels...

Type of fuel	Unit	From 1. 1.2004	From 1.1. 2010
		Tax [€]	Tax [€]
Unleaded gasoline	1000 l	359	359
Diesel	1000 l	302	330
CNG	GJ (t)	2,6 (121)	2,6 (121)
LPG	t	125	125
Kerosin	1000 l	302	330

- ... from which may be **fully or partly exempted CNG and biofuels** or taxed at a reduced rate (Articles 15 and 16)

EU legislation – milestones (4/4)

- **Directive 2009/28/EC** - The Directive introduced as part of „climate action and renewable energy package“
- **Mandatory national targets by 2020:**
 - **Share of RES** in gross final energy consumption leading to EU total share of **20%**
 - Each member state shall ensure that the share of energy from renewable energy sources is at least its national overall target set out in the [attached table](#)
 - **Share of RES in transport: 10%** in each Member State (MS)

Table: RES share on gross FEC in EU member states (status as of 2005 and the target for 2020)

Belgium	2,2 %	13 %	Hungary	4,3 %	13 %
Bulgaria	9,4 %	16 %	Malta	0,0 %	10 %
Czech Republic	6,1 %	13 %	Netherlands	2,4 %	14 %
Denmark	17,0 %	30 %	Austria	23,3 %	34 %
Germany	5,8 %	18 %	Poland	7,2 %	15 %
Estonia	18,0 %	25 %	Portugal	20,5 %	31 %
Ireland	3,1 %	16 %	Romania	17,8 %	24 %
Greece	6,9 %	18 %	Slovenia	16,0 %	25 %
Spain	8,7 %	20 %	Slovak Republic	6,7 %	14 %
France	10,3 %	23 %	Finland	28,5 %	38 %
Italy	5,2 %	17 %	Sweden	39,8 %	49 %
Cyprus	2,9 %	13 %	United Kingdom	1,3 %	15 %
Latvia	32,6 %	40 %			
Lithuania	15,0 %	23 %			
Luxembourg	0,9 %	11 %			



Ultimate goal of EU: 20 – 20 – 20

Question of sustainability (1/4)

- **Directive 2009/28/EC** addresses the problem of sustainability of biofuels production and use via introducing minimum criteria
- They take form of minimum CO₂ reduction limits in order biofuels (and also newly defined „bioliquids“) to be accountable into meeting national targets:
 - from 1 January 2010 at least **35 %**
 - from 1 January 2017 at least **50 %**
 - from 1 January 2018 at least **60 %**
- **Further conditions:** Not come from materials obtained from land with high biodiversity value (eg. natural forests) or with high carbon stock (eg. wetlands)

Question of sustainability (2/4)

- Why we need sustainability criterion – while today available („1st generation“) biofuels often have lower then desired effects...

Biofuel	Energy content (MJ/kg)	Typical greenhouse gas emission savings (%)	Typical greenhouse gas emissions* (g CO _{2eq} /MJ)
Wheat ethanol	27	32 - 69	26 - 57
Sugar beet ethanol	27	61	33
Rape seed biodiesel	37	45	46
Sunflower biodiesel	37	58	35
Pure veg. oil from rape seed	37	58	35

*) Total for cultivation, processing, transport and distribution

Question of sustainability (3/4)

- ... biofuels to come (so-called „2nd generation“) should perform much better...

Biofuel	Energy content (MJ/kg)	Typical greenhouse gas emission savings (%)	Typical greenhouse gas emissions* (g CO _{2eq} /MJ)
Wheat straw ethanol	27	87	11
Waste (farmed) wood ethanol	27	80 (76)	17 (20)
Waste (farmed) wood Fischer-Tropsch diesel	44	95 (93)	4 (6)
Waste (farmed) wood DME	28	95 (92)	5 (7)
Waste (farmed) wood methanol	20	94 (91)	5 (7)

*) Total for cultivation, processing, transport and distribution

Question of sustainability (4/4)

- And position of **biogas**? Far not bad compared to 1st as well as 2nd generation biofuels...

Biofuel	Energy content (MJ/kg)	Typical greenhouse gas emission savings (%)	Typical greenhouse gas emissions* (g CO _{2eq} /MJ)
Biogas from munic. org. waste	50	80	17
Biogas from wet manure	27	84	13
Biogas from dry manure	37	86	12
Biogas from energy crops**	37	> 50	< 30

*) Total for cultivation, processing, transport and distribution

***) SEVEn estimation

R&D and market introduction (1/3)

From Research to the Market



Intelligent Energy  Europe

RESEARCH:

Technology (“hardware”) development,
pilots, demonstration

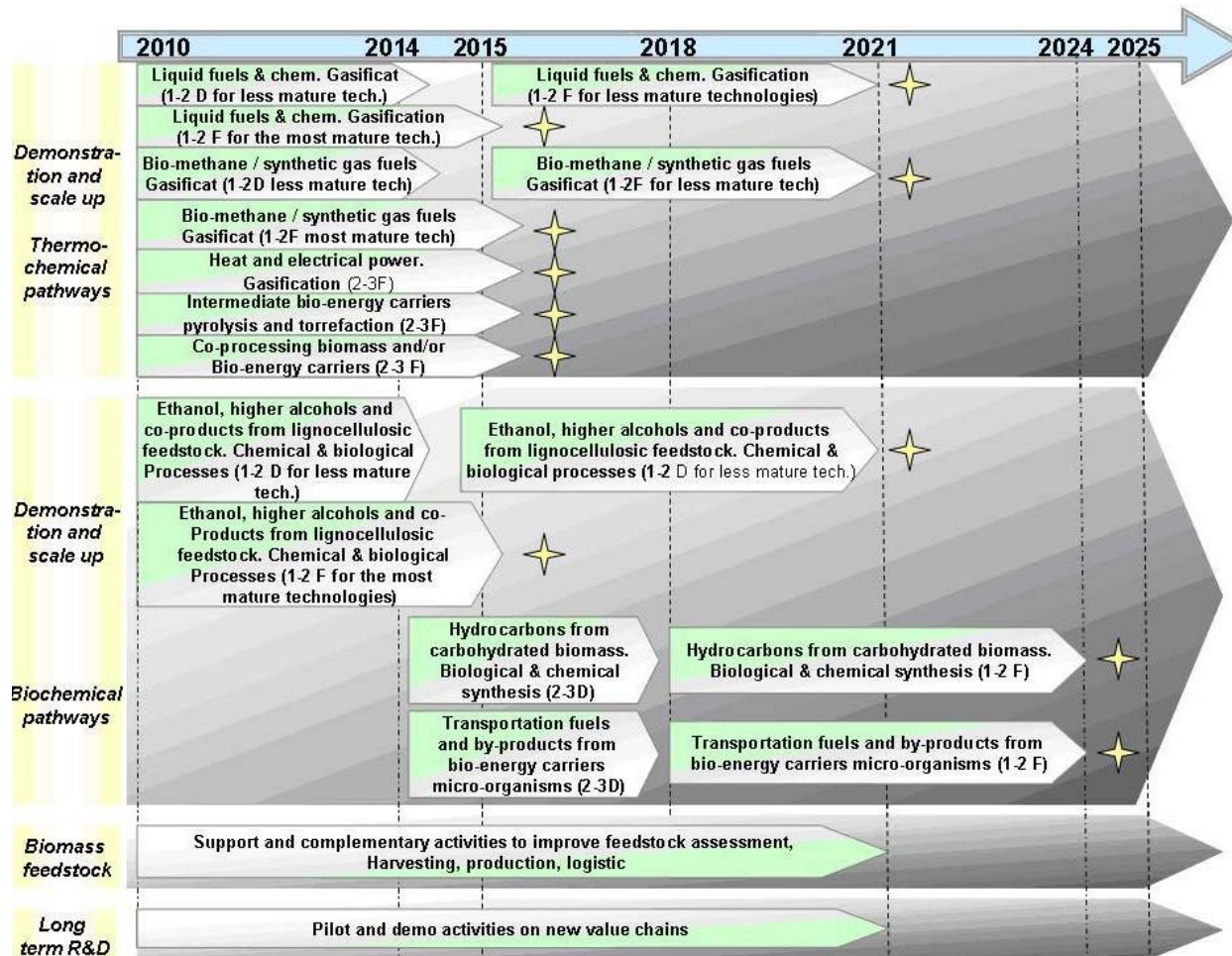
MARKET:

Mass production and use,
promotion, framework conditions

→ Promote / catalyse “innovation”

R&D and market introduction (2/3)

Technology Roadmap:



R&D and market introduction (3/3)

- Supported major projects in R&D (via calls of FPs)
 - TRENDSETTER
 - BIOGASMAX
- Supported projects in market development (via calls of IEE Programme):
 - REDUBAR
 - MADEGASCAR

Strategic plans, Conclusions

- Medium term plan
 - **20-20-20** energy and climate change objectives
 - support biofuels 2nd and 3th generation (from e.g. algae), CNG, biomethane
- Long term plan
 - support hybrid vehicles, electric vehicles, hydrogen, fuel cells

Questions/Disscussion:



Thank you for your attention

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