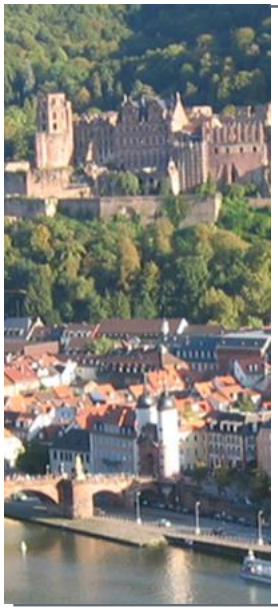
INSTITUT FÜR ENERGIE- UND UMWELTFORSCHUNG HEIDELBERG



Discussion Panel III: Sustainability
Introductory presentation EU

Horst Fehrenbach

CAAFI – CORE-JetFuel Cooperation Workshop,
Alexandria, USA, 28 April 2016

Overview

- The European regulations on biofuels
- The sustainability requirements
- Global initiatives
- Outlook

The European regulations on biofuels

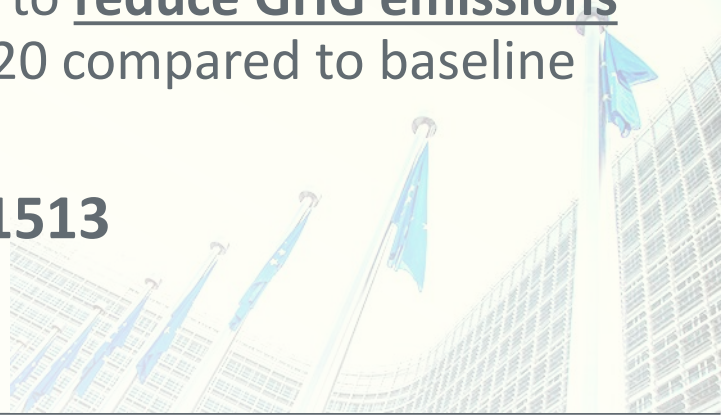
- **Renewable Energy Directive (RED) 2009/28/EC**

  "Each Member State shall ensure that the share of **energy from renewable sources in all forms of transport in 2020 is at least 10 %** of the final consumption of energy in transport in that Member State." (Article 3 (4))

- **Fuel Quality Directive (FQD) 98/70/EC** amended by **2009/30/EC**

  „Member States shall require suppliers to **reduce GHG emissions from use of transport fuel by 6%** in 2020 compared to baseline scenario" (Article 7a)

- **Both amended by Directive 2015/1513** (the so-called **ILUC** directive)



The sustainability requirements

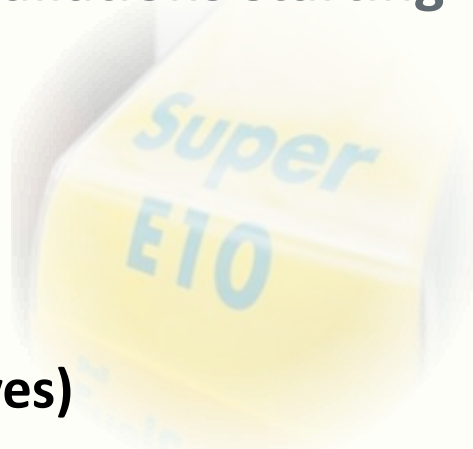
Biofuels eligible for the RED 10%-quota and for the FQD-6%-target need to fulfil following sustainability criteria:

- **GHG emission saving from the use of biofuels shall be at least: 35% (currently), 50% in 2017 and 60% for biofuels and produced in installations starting operation after 5 October 2015**

- **Rules for GHG emission calculation:**

  You can

  - **use default values (→ annex of the directives)**
  - **make your own calculation of actual values (rules → annex)**
  - **Combine partial default values and own calculations**



The sustainability requirements

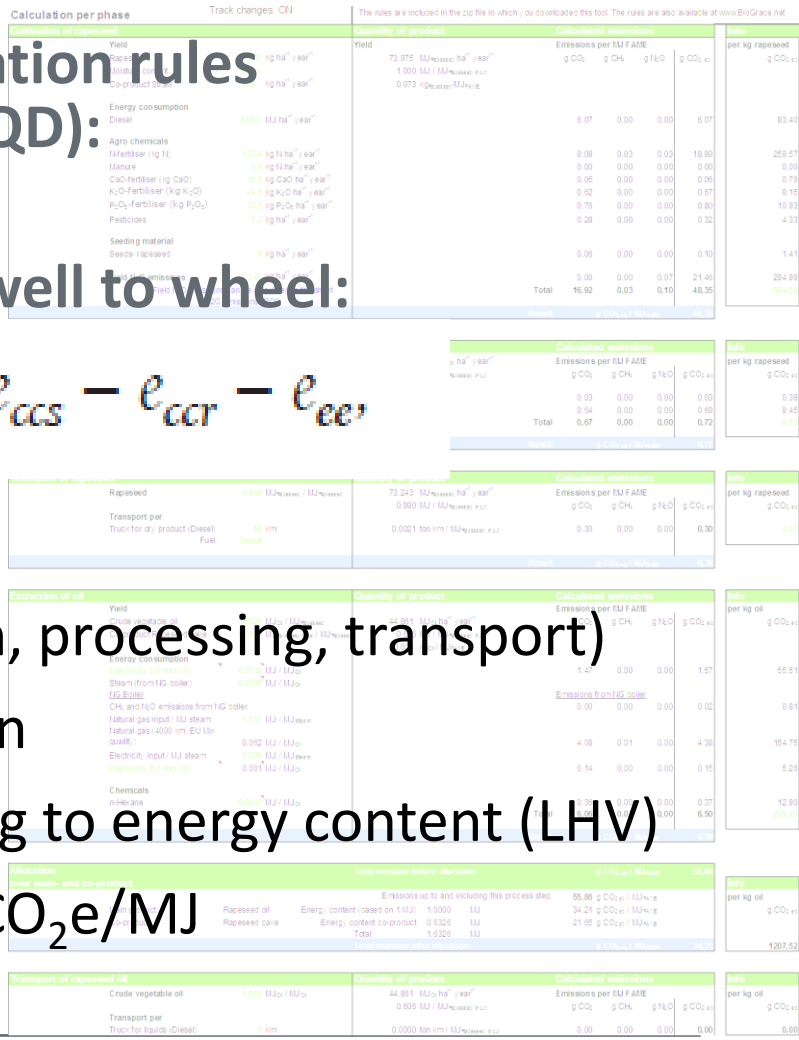
Some essentials about the GHG calculation rules (annex V of the RED, annex IV of the FQD):

- **The calculation shall be done from well to wheel:**

$$E = e_{ec} + e_l + e_p + e_{td} + e_u - e_{sca} - e_{ccs} - e_{ccr} - e_{ee},$$

including:

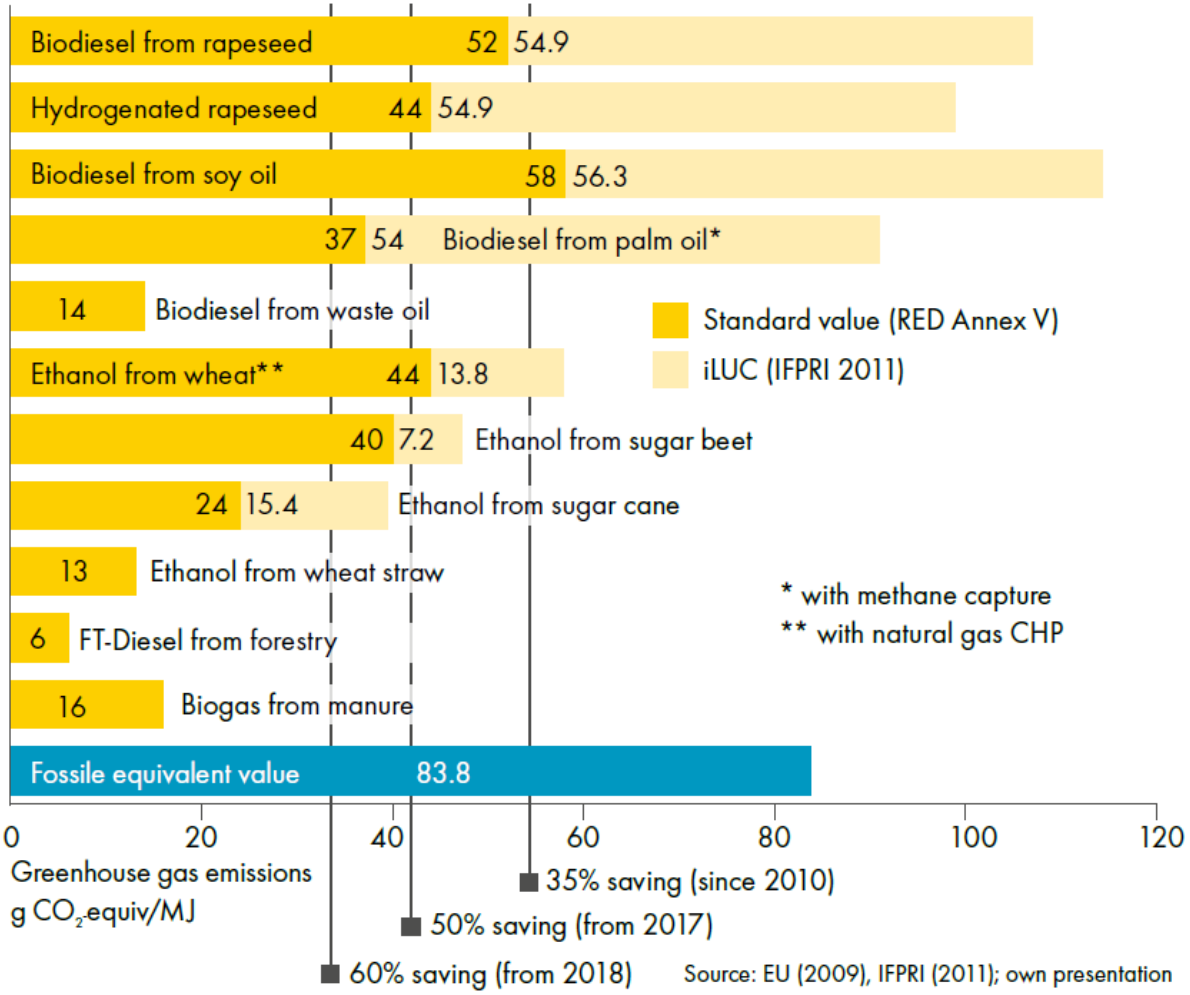
- all upstream processes (cultivation, processing, transport)
- and **direct land-use change** is given
- **allocation** of co-products according to energy content (LHV)
- a fossil fuel comparator of 83.8g CO_2e/MJ



The sustainability requirements

RED and FQD

GHG default values

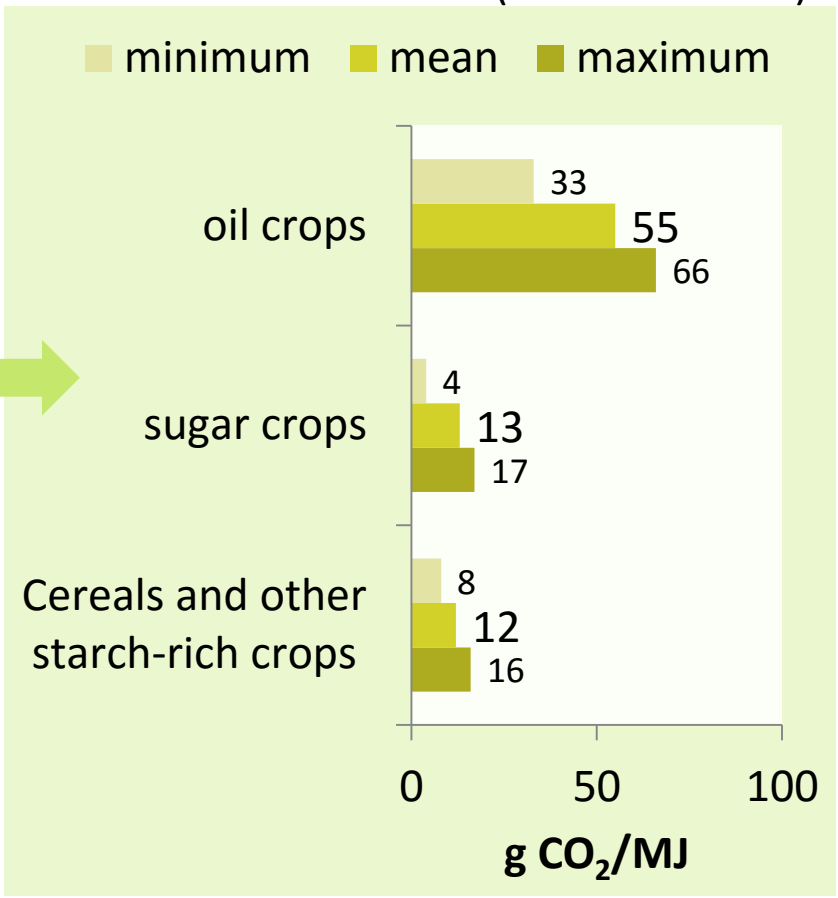


The sustainability requirements

The ILUC case
indirect land-use change
Directive 2015/1513

- **National reporting on GHG emission savings shall include the ILUC emissions**
- **These crops shall take no more than 7 % in 2020 (cap!)**
- **Advanced biofuels** (from non-land-using feedstocks) **should aim at 0.5% in 2020 (gap?)**

Provisional estimated ILUC emissions from biofuel feedstocks (Annex VIII RED)



The sustainability requirements

The EU strategy to overcome the ILUC issue (Directive 2015/1513)

Supporting „advanced biofuels“ by double-counting, made from

- Algae, bacteria
- Diverse sorts of bio-waste, organic waste etc.
- Diverse sorts of residues from agriculture or forestry (aka non-food (ligno-)cellulosic material)
- Diverse sorts of agricultural residues
- Used cooking oil and animal fats
- *Renewable* liquid and gaseous transport fuels of *non-biological* origin (aka Power-to-Liquid, PtL)

The sustainability requirements

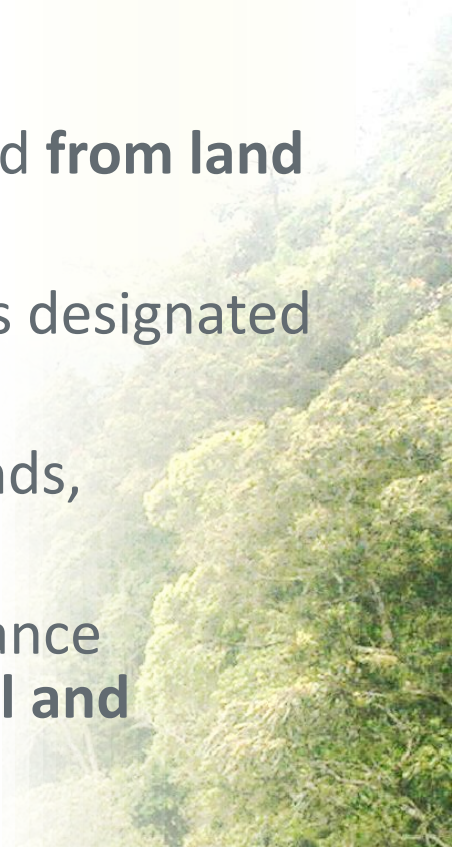
Beyond GHG emissions

Mandatory requirements:

Biofuels shall not be made from raw material obtained **from land** (status after January 2008)

- with high **biodiversity value** (Primary forests, areas designated for protection, highly biodiverse grassland)
- and with **high carbon stock** (forested areas, wetlands, peatlands)

Raw materials cultivated in the EU must be in accordance with the minimum requirements for **good agricultural and environmental condition**.



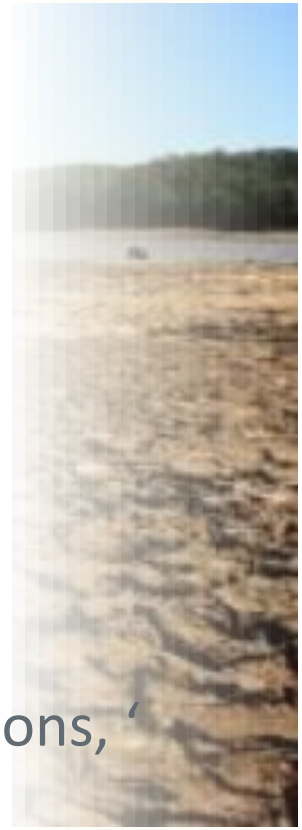
The sustainability requirements

Beyond GHG emissions

Reporting requirements:

The member states have to report on:

- measures taken for **soil**, **water** and **air** protection
- the restoration of **degraded land**,
- excessive water consumption in **water-scarce areas**
- impact of EU biofuel policy **food prices**
- respect of **land-use rights**
- Ratification and implementation of **ILO** core conventions, ‘ the **Cartagena protocol** and **CITES**.



The sustainability requirements

and verification?

Verification of compliance with the sustainability criteria:

The member states shall require economic operators to show that the sustainability criteria have been fulfilled:

- by every consignment
- by applying mass balance systems,
- performed by recognized voluntary national or international schemes

→ Certification of complete chain of custody!

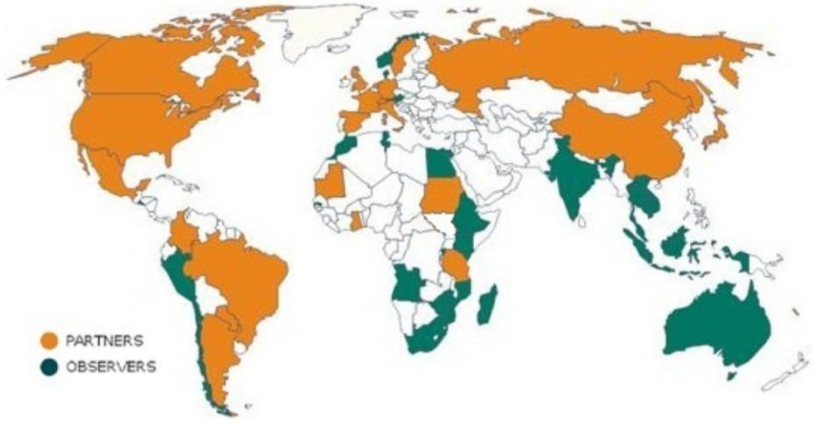
Global initiatives

GBEP
Global Bioenergy Partnership

THE GLOBAL BIOENERGY PARTNERSHIP SUSTAINABILITY INDICATORS FOR BIOENERGY
FIRST EDITION

24 sustainability indicators
agreed by 50 countries
and 26 International Organizations
(members & observers)

ICAO is currently an observer



Global initiatives

International Standard ISO 13065:2015

Sustainability criteria for bioenergy

specifies principles (12), criteria (17) and indicators (61) for the bioenergy supply chain to facilitate assessment of environmental, social and economic aspects of sustainability.

Outlook

The EU policymakers have shown their readiness to adapt the sustainability requirements according to the scientific discourse.

→ **The discussion and implementation of sustainability requirements has not come to an end.**

It will advance to

→ **find agreements on globally harmonized principles and compatible schemes**

→ **transfer the lessons learned to any other „bio-related“ sector any fuel, bio-based materials, food and feed.**

Only this will solve the ILUC problem, the risk of leakage, an provide an level-playing ground.

Thanks a lot for your attention

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