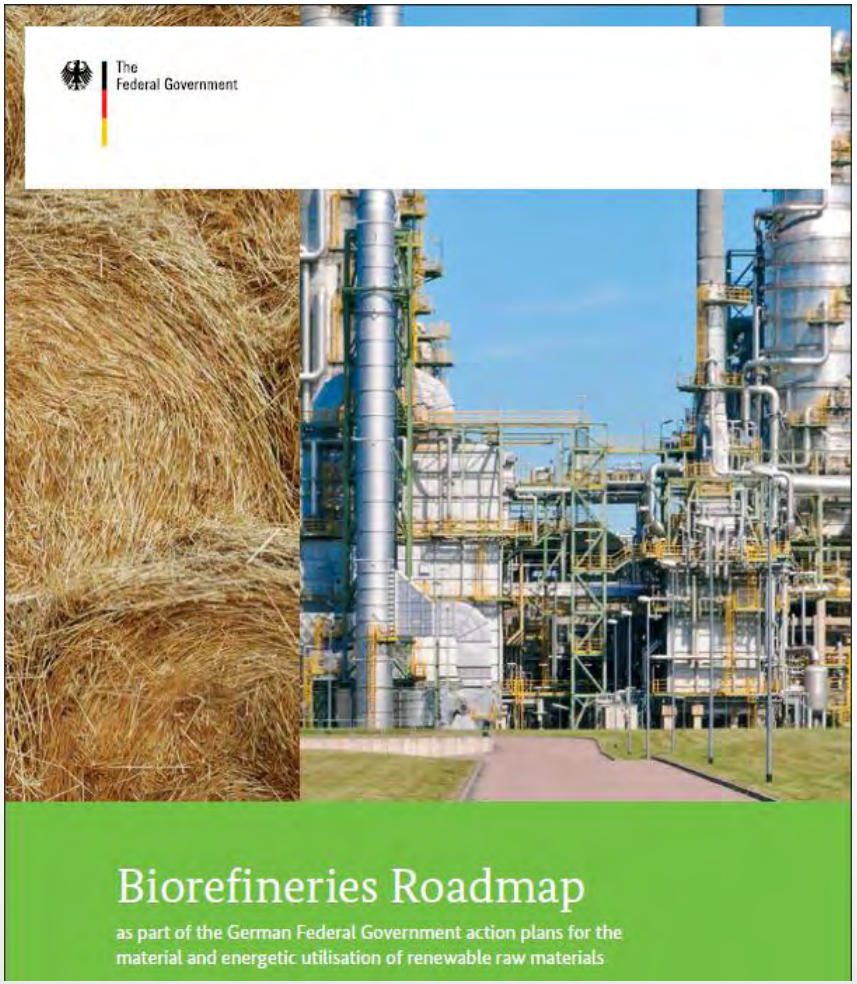
Update on the German Biorefinery Road Map



Four important activities

VEREIN DEUTSCHER INGENIEURE	Klassifikation und Gütekriterien von Bioraffinerien Titelelement 2 Titelelement 3 Internes Arbeitspapier	VDI 6310 *Zur weiteren Bearbeitung zum Gründruck (09/2013)*

INRO Biomasse

Initiative Nachhaltige Rohstoffbereitstellung für die stoffliche Biomassenutzung

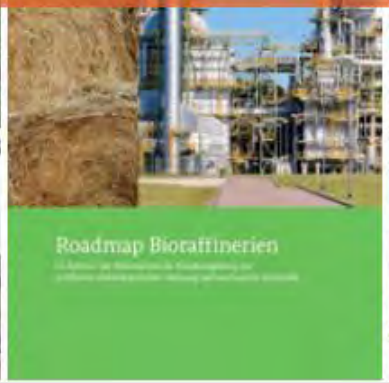
PROGRAMM

9. – 12. Juni 2013
Evangelische Akademie Schloss Tutzing
am Starnberger See

52. Tutzing-Symposion

Ein Jahr Bioraffinerie-Roadmap: Wo steht Deutschland im internationalen Vergleich?

www.processnet.org/tusy52



The Association of German Engineers (VDI) Guideline VDI 6310 (Green-print in preparation)

ICS 13.###.##

VDI-RICHTLINIEN

VEREIN DEUTSCHER INGENIEURE	Klassifikation und Gütekriterien von Bioraffinerien Titelelement 2 Titelelement 3 Internes Arbeitspapier	VDI 6310 *Zur weiteren Bearbeitung zum Gründruck (09/2013)*

First title element – Second title element – Third title element

Einsprüche bis 200#-##-##

- *vorzugsweise in Tabellenform als Datei per E-Mail an tls@vdi.de*
  Die Vorlage dieser Tabelle kann abgerufen werden unter http://www.vdi-richtlinien.de/einsprueche
- *in Papierform an*
  Gesellschaft Technologies of Life-Sciences
  Fachbereich Biotechnologie
  Postfach 10 11 39
  40002 Düsseldorf

Inhalt Seite

VDI Gesellschaft Technologies of Life Sciences

Fachbeirat Biotechnologie

Exchange of experience

Outcome

- Market pull is missing (green procurement)
- Uncertain political conditions – hampers investments
- Missing supporting schemes for demonstation plants
- Reality more complex than biorefinery definition
- Feedstock availability and constant quality
- Communication/cooperation „gaps“ between sectors
- Data gaps for economic and ecological assesment of BR data for fossil counterparts frequently missing

Example – tar sand

INRO-Biomasse - Background

Problems:

- Food versus fuel debate
- Public and NGOs → requirements/standards

(Possible) solution:

- International standard for the certification of sustainable biomass production
- Broad consensus between different actors in the field at an European/international level

Initiative Sustainable Provision of Raw Materials for the Material Use of Biomass

http://www.inro-biomasse.de/en.htm

Home | about INRO | Participants | Events | Documents | Moderation | Schedule | Contact

Renewable resources for material use: social und ecological!

Regrowable raw materials are increasingly used in industrial production. They are to be produced sustainably and given credible certification. The aim of the INRO 'Initiative for the Sustainable Provision of Raw Materials for the Material Use of Biomass' is to reach an agreement with industrial companies on the voluntary certification of renewable raw materials to the point of their first processing.

The participants at INRO are:

- Companies from the chemicals, automobile, packing, consumer goods, materials, hydraulic lubricants and lubricants, varnishes/paints industries;
- Industrial federations and associations
- German ministries and authorities
- Scientists
- Environmental and development organisations and
- German certification systems

Sustainability Criteria

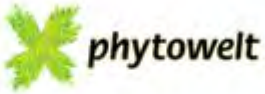
read >

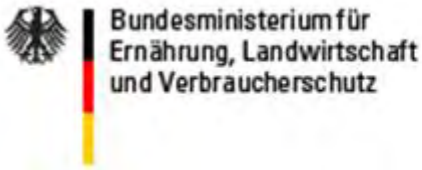
Criteria for good Certification Systems

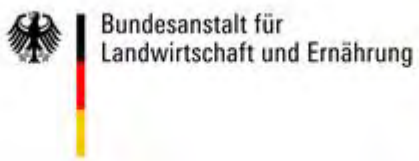
read >

Some participants from industry

Associations, NGO‘s, goverment bodies







What are the goals of INRO-Biomasse?

- Definition of sustainability criteria for biomass provision for industrial processes
- Acceptance and voluntary commitment of the companies for the purchase of certified biomass
- Identical criteria for all sectors in order to avoid distortions of competition
- Comparable criteria for agricultural production
- Strengthening of the advantage for the costumer
- Protection of the companies against allegations by the press, media, NGOs
- As a "first mover“, opportunity to influence the embodiment of international and national rules

Starting premises

- Based on sustainability criteria for bioenergy
- No new certification standard, instead
  use of existing certification systems
- Currently restricted to:
  Oilseeds
  Starch/sugar plants
  Fibre plants
- Later inclusion of
  Cellulosic materials
  Secondary materials (e.g. animal fats, waste, etc.)

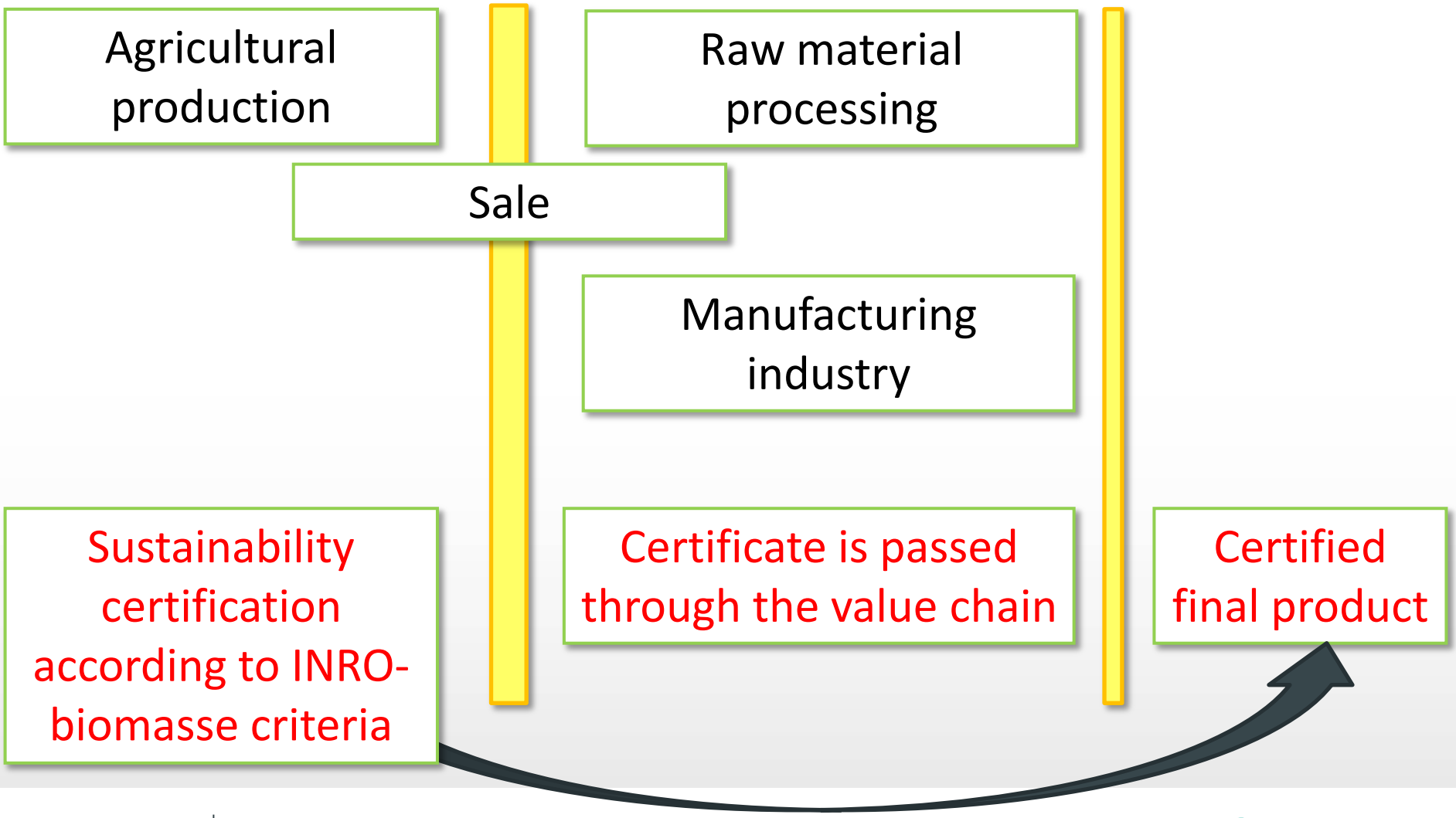
Sustainability criteria

Criteria are classified as

1. **Verifiable**
2. **Verifiable, but**
3. **Non-verifiable, although desirable**

- **Ecological criteria**
  Protection area (HCV, HCS, etc.), soil and water protection, GHG; use of fertiliser and pesticides, waste management…
- **Social criteria**
  ILO compliance, safe working conditions, land use rights, stakeholder involvement, food security, etc.
- **Economic criteria**
  Subcontractor involvement, anti-corruption and bribery measures, registration of cultivation area, etc.

Envisaged procedure



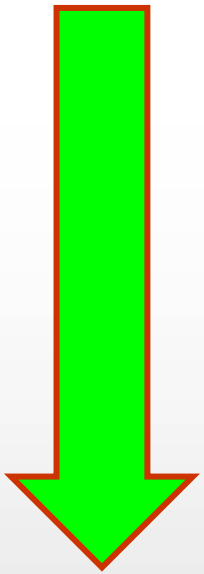
http://www.inro-biomasse.de/en.htm

http://www.inro-biomasse.de/en.htm (schedule)

Public presentation Oct. 2013 in Berlin

Close cooperation with NL „Green deal“ and other European/International initiatives

2014



- Start pilot projects
- Information event EU
- Information event German parliament
- Autumn: Final conference 1st phase
- Second phase?

Fraunhofer Center for Chemical-Biotechnological Processes (CBP)

Laboratory small pilot

Scale-up and process development

Industry

Opening ceremony
Oct. 2012

CBP – what does it contain?

In operation Planning/construction stage				Micro algae
Techical production (Upscaling)	Ligno-cellulosic disintegration	Fermentation	Chemical conversion	Extraction DSP
Upstream processes 10 L to 10 m³ including DSP, e.g. cell separation and homogenation, etc.	Digestor 400 L, 200C, 25 bar Separation Fractionation Dewatering	Scale up to 1m³ Process monitoring unit Advanced laboratory unit	Gas phase reactions up to 500°C Liquid phase reactions up 500L	Extraction (Sc CO2, propane) Distillation (Ultra)filtration Crystallisation Chromatogra. Drying

Conclusions

- Fuel food debate → enhanced precaution
- Investment risk considered as high due to changing political priorities and conditions
- Process development facility for scale-up is available
- Some solutions for identified problems are (shortly) available, e.g. guidance document, network/roundtable
- Voluntary certificaten scheme (work in progress)
- Communication still challenging
- Data and comparable assessment
- Consumer behaviour ??

Contact

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