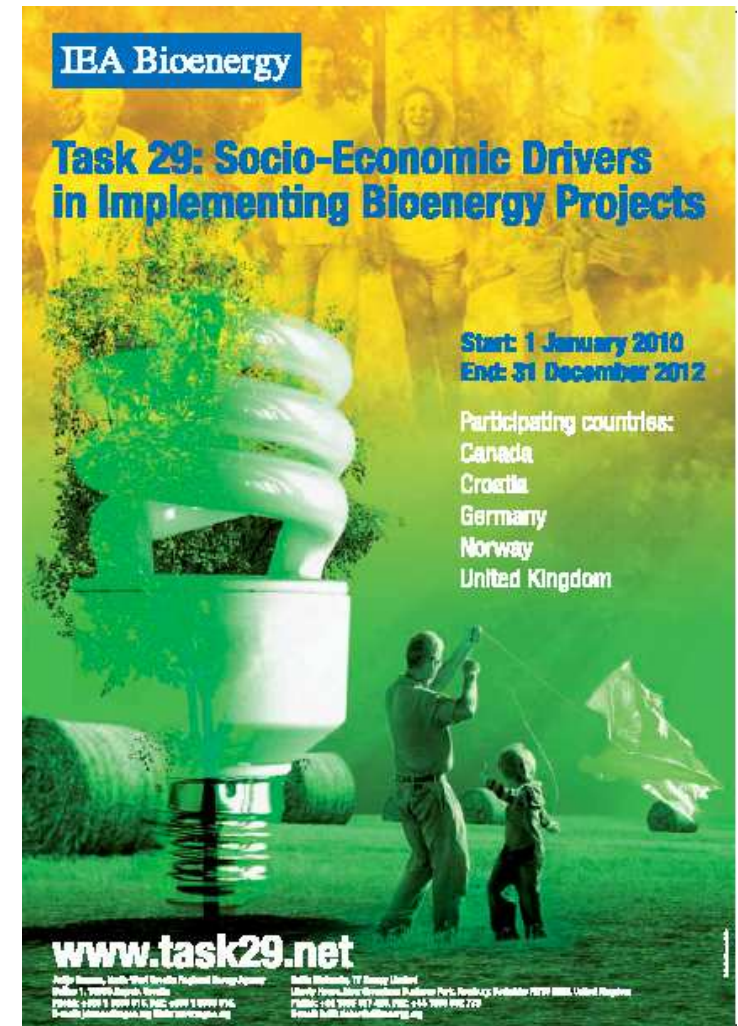




Socio-economic considerations for technology development - some thoughts against the background of IEA Bioenergy Task 29

/// Dr. Sebastian Elbe

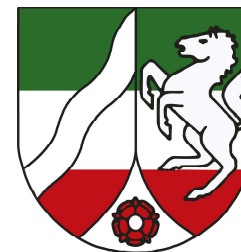
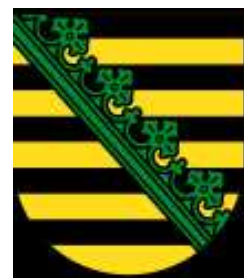


IEA Committee on Energy Research and Technology (CERT). Experts' Group on R&D Priority-Setting and Evaluation. 24. - 25. May 2011, Baden, Austria

Research

Evaluation

Implementation



Own Background

/// Financing the German contribution



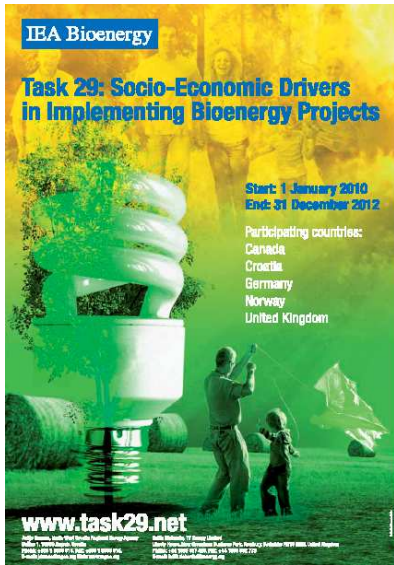
Federal Ministry
of Food, Agriculture and
Consumer Protection



/// The Agency for Renewable Resources (FNR) was founded in 1993 by the German Federal Ministry of Food, Agriculture and Consumer Protection

/// Main responsibilities of FNR:

- /// to support R&D in the area of renewable resources
- /// to inform the public about current research results
- /// to give advice on a range of applications of renewable resources and organise and take part in scientific events



/// Aims of Task 29

/// Socio-Economic Drivers in Implementing Bioenergy Projects

/// Task 29 is an ongoing initiative from 1 January 2000 with the aim to:

- /// achieve a better understanding of the social and economic drivers and impacts of establishing bioenergy markets at the local, regional, national and international level,
- /// synthesise and transfer to stakeholders critical knowledge and new information,
- /// improve the assessment of the above mentioned impacts of biomass production and utilisation in order to increase the uptake of bioenergy and to provide guidance to policy makers.

Social and political sciences

/// Role and Feed into technology R&D

/// 1st: Social and political sciences are **not** accompanying auxiliary sciences!

/// 2nd: Social and political sciences have to be integrated all stages of technology development processes

/ starting with the **education** of engineers

/ covering technology **development** including

/ technology **assessment** and **acceptance/acceptability**

/ and technology **implementation**

Socio-economic



Formal
Felt/sensed



Market/
single enterprise
Public/
society as a whole

?? Costs and benefits ??

	Support instrument	Support in €/t CO ₂ eq	Yield in t/ha of wheat (fuel equivalent)	Support in €/ha	CO ₂ mitigation per hectare (in tCO ₂ eq)	Support per tCO ₂ saved (€)	Support as a proportion of the farm-overhead cost	
Bioethanol (distilled rapeseed)	Pure bioethanol	Energy Tax Act	26.75	1,450	417	3.0	130	20–35 %
	Biofuel mandate (Quota)	Biofuel Quota Act	20–20 (fresh)	1,450	290–725	3.0	67–242	20–60 %
Vegetable oil fuels (Ethanol rapeseed)	Pure oil	Energy Tax Act	28.99	1,450	428	3.0	143	20–35 %
	Bioethanol from cereals	Energy Tax Act	65.45	1,600	1,080	3.7	294	ca. 45 %
Biofuel mandate (Quota)	Biofuel mandate (Quota)	Biofuel Quota Act	60–85 (fresh)	1,600	166–1,411	3.7	269–381	50–85 %
	Biofuel mandate (Quota)	Biofuel Quota Act	90 (crop)	1,600	1,484	3.7	404	70–90 %
From sugar beet	Pure bioethanol	Energy Tax Act	65.45	4,054	2,853	9.4	262	ca. 45 %
	Biofuel mandate (Quota)	Biofuel Quota Act	60–85 (fresh)	4,054	2,432–2,446	9.4	259–307	50–85 %
Biofuel mandate (Quota)	Biofuel mandate (Quota)	Biofuel Quota Act	90 (crop)	4,054	3,568	9.4	382	70–90 %
	Biofuel mandate (Quota)	Biofuel Quota Act	65.45	3,910	2,559	10.0	258	n.a.
Biogas (Mixer*)	EEG	EEG	5–16	20,000	1,000–3,000	7.4	135–432	40–80 %
	EEG	EEG	23–29	270,000	62,100–78,900	185.0	336–423	70–90 %

Social and political sciences

/// Acceptance or acceptability

- ///** Who develops technology for whom and who benefits?
And what are rational reasons?

- ///** Technical perspective: Lack of information/knowledge: Does the technology work?

- ///** Emotional perspective: „Not in my backyard!“
 - ///** protests against nuclear, pumped storage power plants, CCS, biogas plants, wind farms, new high voltage lines, gas/coal power plants ... Although the expansion of renewable energies a social consensus
 - ///** but I can not hear protests against land consumption and pollution for batteries or the danger that China will strongly limiting or stop exporting the necessary “rare earths” (nearly 97% comes from China)

- ///** Not information or R&D results are convincing by their own -
people can convince

The future is always more promising than presence!

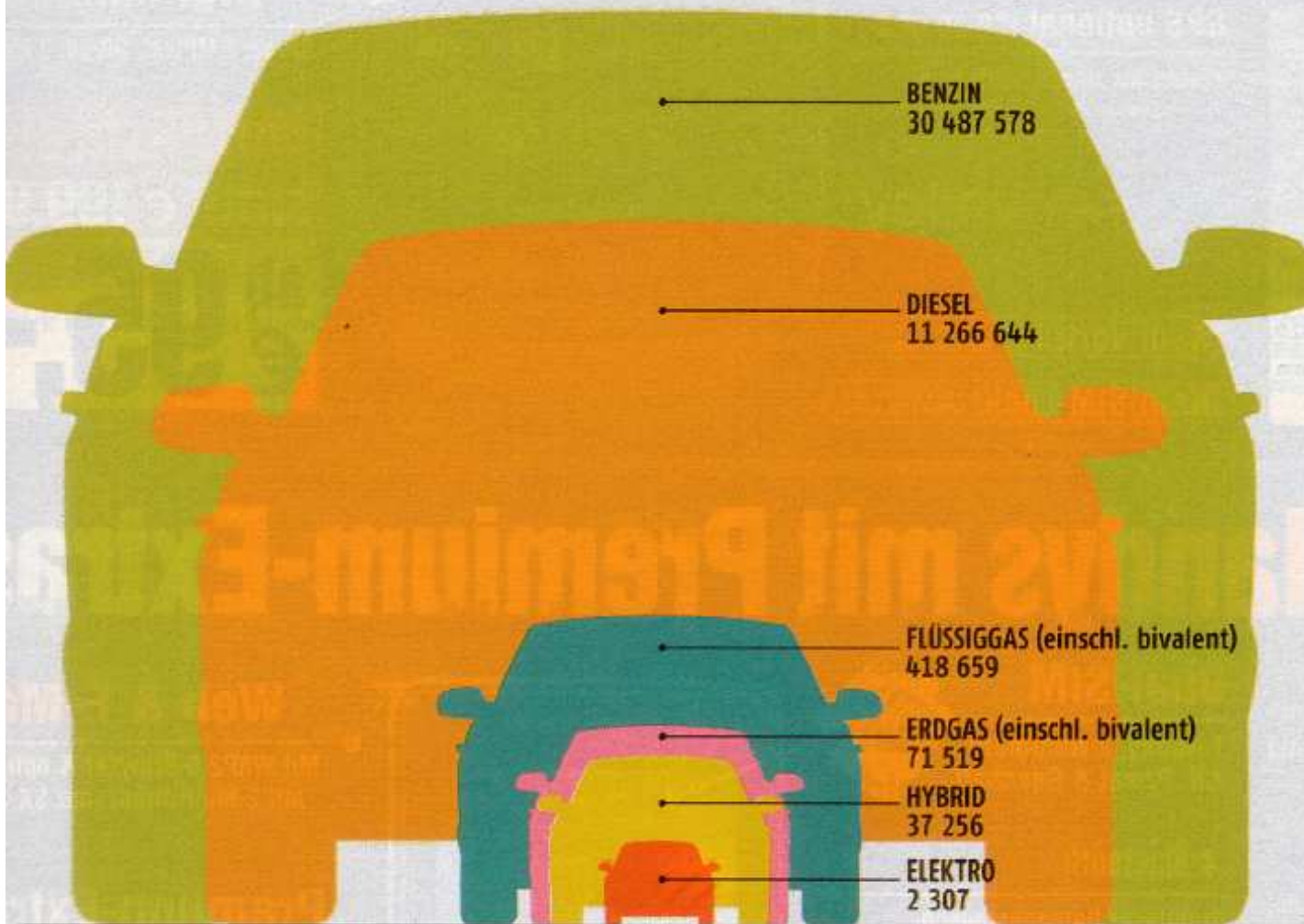
/// Does technology work?

/// LPG and natural gas vehicles: Technique and gas station net available - since years/decades

Deutschland fährt (noch) ab auf Benzin

Die große Mehrheit der deutschen Autos ist mit Benzin oder Diesel unterwegs. Immerhin mehr als 400 000 fahren mit Flüssiggas.

Pkw-Bestand in Deutschland am 1.1.2011



Netz mit Löchern

Nach Benzin- und Dieselzapfsäulen müssen Autofahrer nicht lange suchen. Auch Besitzer von Autogasfahrzeugen finden verhältnismäßig oft eine Tankstelle. Die Infrastruktur für Elektro-, Erdgas und Wasserstoffautos ist noch dürftig.

Anzahl der Tankstellen in Deutschland





“**BIOENERGIE**
sichert Zukunft”

Ulrich Trabold, Forstwirt im Main-Tauber-Kreis

BIOENERGIE Sichert Zukunft

CO₂-Countdown

19403

Wir zählen runter...
Anfangsstand Dezember 2009: 30.000 t.
Bis Mitte 2012 soll der CO₂-Ausstoß um
30.000 t reduziert werden.



Ihr Suchbegriff...



“**BIOENERGIE**
sichert Zukunft”

Melanie Weiss, Mutter im Hohenlohekreis

BIOENERGIE Sichert Zukunft

CO₂-Countdown

19403

Wir zählen runter...
Anfangsstand Dezember 2009: 30.000 t.
Bis Mitte 2012 soll der CO₂-Ausstoß um
30.000 t reduziert werden.



Ihr Suchbegriff...



“**BIOENERGIE**
sichert Zukunft”

Familie Schneider, Landwirte im Main-Tauber-Kreis

BIOENERGIE Sichert Zukunft

CO₂-Countdown

19403

Wir zählen runter...
Anfangsstand Dezember 2009: 30.000 t.
Bis Mitte 2012 soll der CO₂-Ausstoß um
30.000 t reduziert werden.

Social and political sciences

/// Acceptance or acceptability

- ///** Rational or not? Engineer sciences regard emotional reasons as not rational. For social sciences emotional reasons are rational.

- ///** Role of social and political sciences concerning the stages of technology development processes (education, development, assessment, implementation)
 - ///** part of inter- and transdisciplinary approaches integrating environmental psychology, communication sciences, economic, environmental risk research ...
 - ///** bringing in new aspects and methods depending on the particular technology development process - there is no „one size fits all“: e.g. scenario writing or development of arguments for improvement of acceptance/acceptability right from the beginning
 - ///** advocate of the end-user perspective - not only thinking about technology

Social and political sciences

/// R&D must be more than reports and Guideline-fication

- ///** For science reports/publications and guidelines are too often the final product. But these products are not the real aim --> the implementation of the results must be the aim
- ///** May be we need smaller and faster research projects. But we need in every case a follow up process linked to research project, responsible for the implementation of the results including an evaluation of the successes and failures.
- ///** Especially in the field of Bioenergy we have a rising Guideline-fication as core product of R&D projects concerning socio-economic issues. But you read guides and act the way it is proposed?

Technology and social and political sciences

/// It is a question of communication

/// to do so, a sound qualification is a prerequisite: only if someone has an own and secure position in her/his field of work she/he can accept other arguments - if not, it is only defending not discussing or improving...

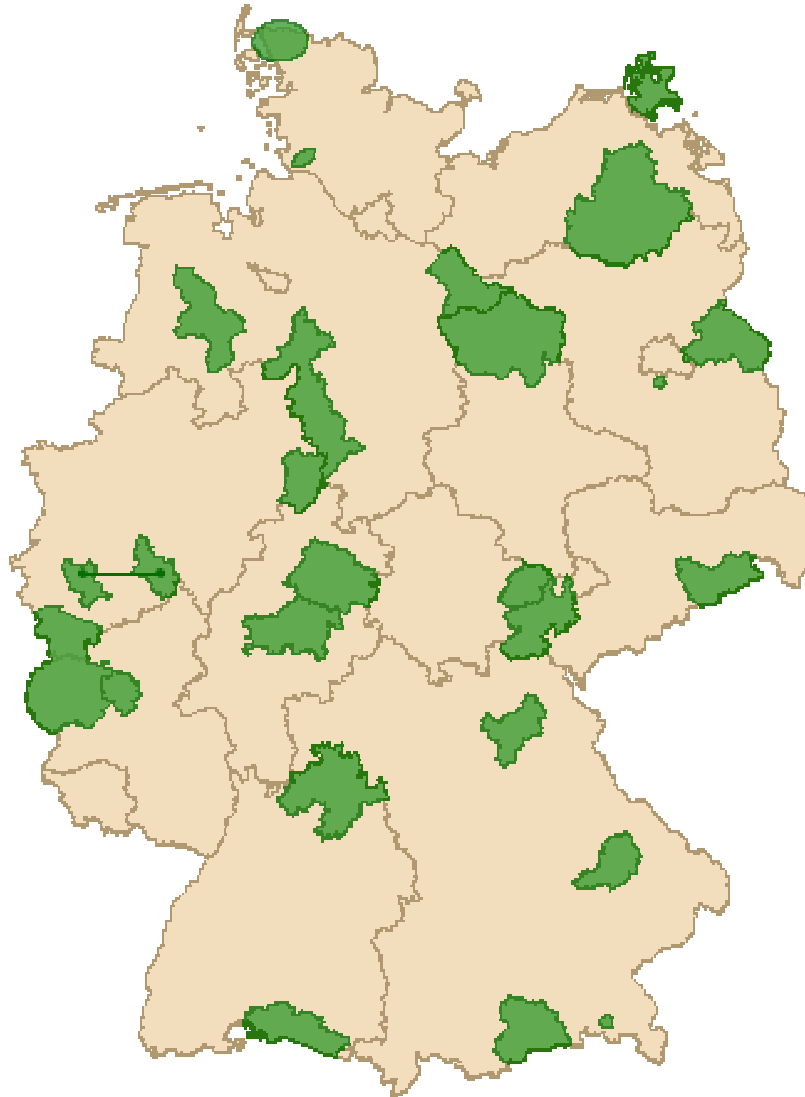
Model Project Bio-Energy Regions

/// Aims of the competition

- /// contribution to the national climate protection aims**
- /// initiation and improvement of regional bio-energy networks**
- /// knowledge transfer and qualification**
- /// motivation of regional actors**
- /// reducing and solving conflicts in the field of bio-energy**
- /// introducing alternatives to energy/oil imports**
- /// exploiting of the regional economic potentials in the field of bio-energy in rural areas**

Model Project Bio-Energy Regions

/// Map, Money, Objectives

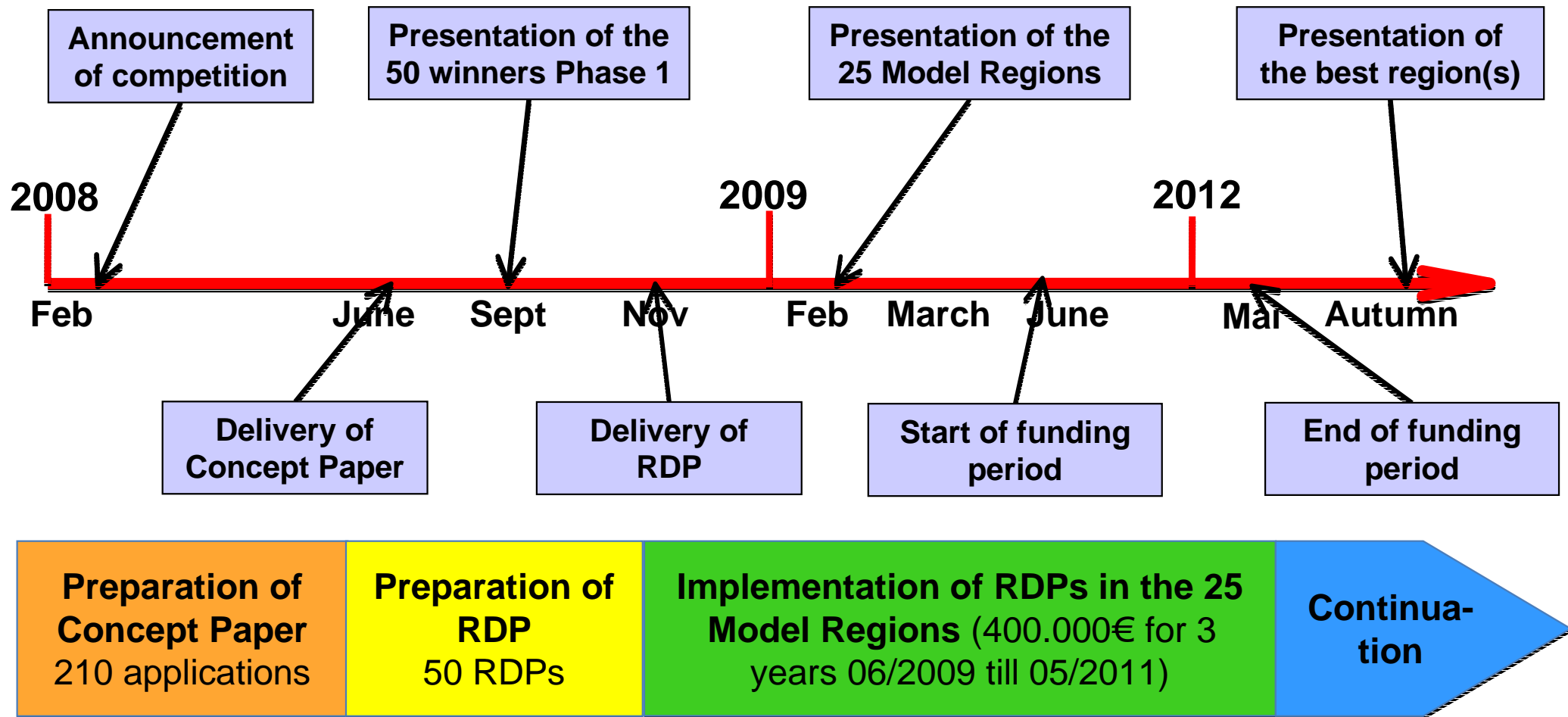


/// 25 regions
400.000€ for 3 years
(06/2009 till 05/2011)
for soft measures
(no direct investments)

/// aims:
creating bio-energy
networks and regional
added value;
combating climate change,
public relations for bionergy
use
...

Model Project Bio-Energy Regions

/// Timeline of the two tier selection process



Model Project Bio-Energy Regions

/// Organisation

- /// National Ministry installed an office (assigned to the Agency for Renewable Resources, FNR) for supporting the implementation incl. assessment of applications, financial issues, networking between the regions, public relations on national level

- /// Accompanying research divided into two parts: Economic-technical (German Biomass Research Centre (DBFZ)) as well as social and political (nova-Institute and SPRINT). Our fields:
 - /// Regional value chains - approaches for regional development
 - /// Regional networks - status and development
 - /// Knowledge management
 - /// Conflicts - how to solve
 - /// Continuation - of networks, management and projects

Regional Competitions

/// It works - also in the field of Bio-energy!

- /// The overall framework conditions constitute the opportunities and threats. Experiences, recommendations and checklists for implementing the 5 principles in a regional competition on both levels (programme level and regional level) are available.
- /// From the viewpoint of the programme level: Competitions are not expensive (Bio-energy Regions: 25 x 400.000€ = 10. Mio. € within 3 years) but with high impact on mobilisation in the regions and public awareness. But do not underestimate the need for supporting structures!
- /// From the viewpoint of the regions: Money for the implementation of RDPs is the crucial point! Money for initiating bio-energy network activities, information transfer and convincing people to invest are crucial

You want to know more?



// Dr. Sebastian Elbe
0049 6151 66 77 801
elbe@sprintconsult.de
www.sprintconsult.eu