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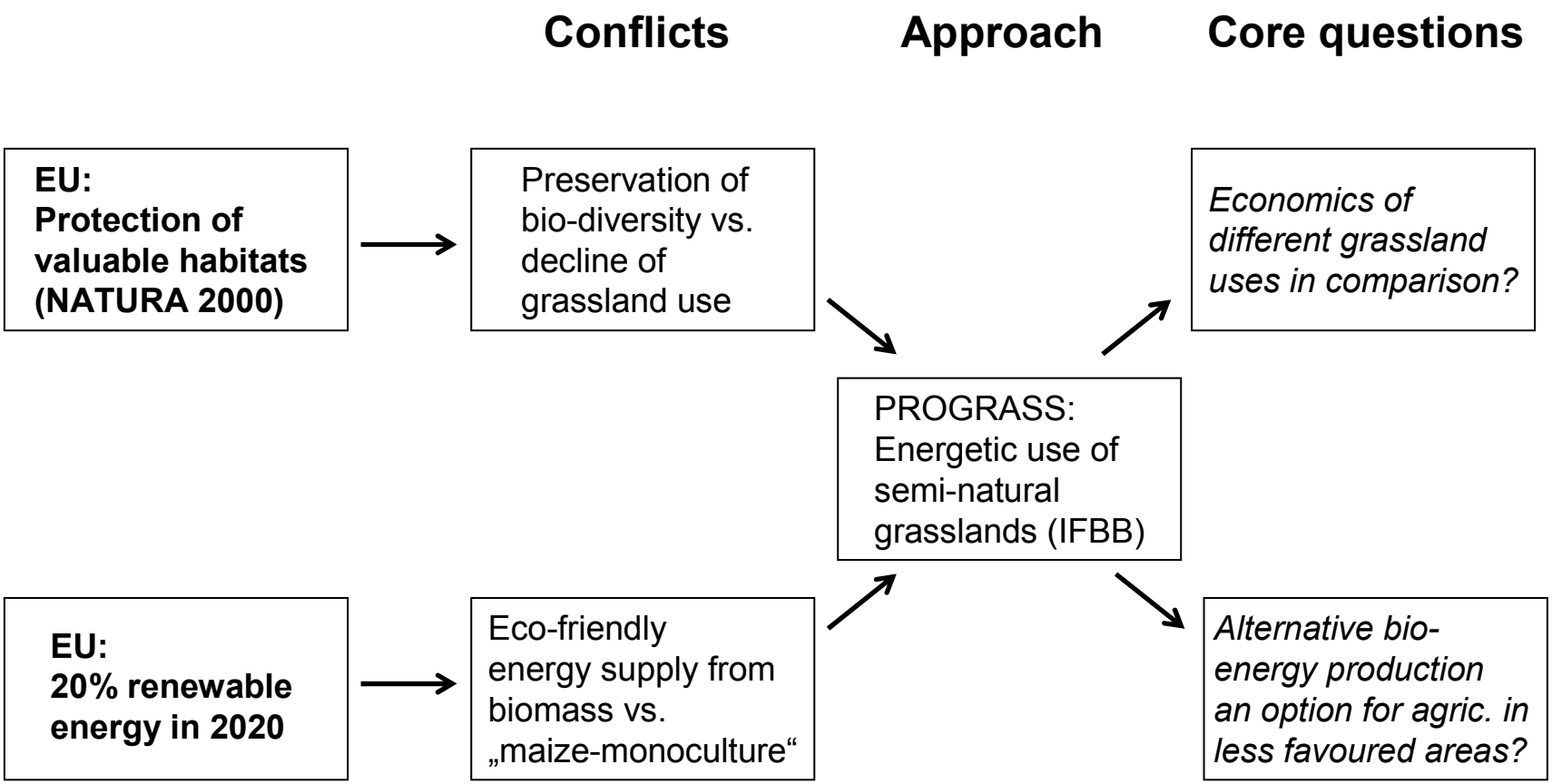
Bio-energy from semi-natural grasslands? – Socio-economics and risk assessment of alternative grassland management in disadvantaged areas

Benjamin Blumenstein and Detlev Möller
Department of Farm Management, Faculty of Organic Agricultural Sciences,
University of Kassel, Germany

Introduction



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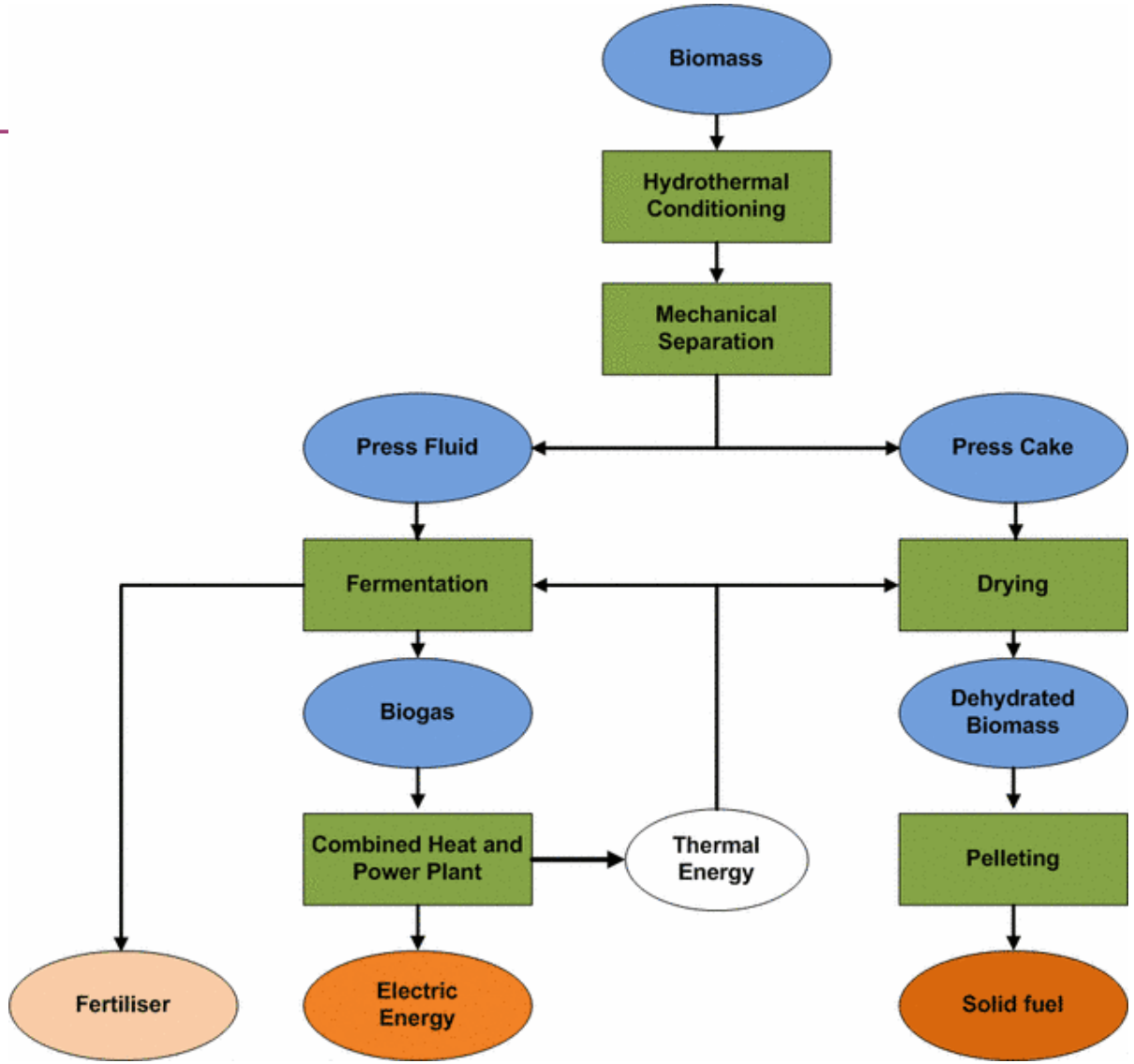
Introduction

Flow chart of the *Integrated Generation of Solid Fuel and Biogas from Biomass (IFBB)*



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Material and Methods

Socio-economic situation analysis:

- Expert interviews and farm surveys in Hesse, Germany, and Wales, UK
  (e.g. Kirchhoff et al. 2010)

Comparison of different grassland production systems:

- Modelling of typical local grassland procedures
  Full cost accounting according to DLG (2004), complemented with standard data (KTBL 2010)
- Calculation of processing values
  (according to Steinhauser et al. 1992)

Risk analysis of selected grassland use alternatives:

- Monte Carlo-simulation (@risk 5.5)
- Input parameters: grassland yields and production costs,
  market-based prices for beef and solid fuels

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Results and discussion – Socio-economic analysis

Influencing parameters on IFBB implementation:

Farm level

Local level

Regional level

- Interest in production of renewable energy
- Involvement in IFBB implementation process
- Personal willingness to invest, to carry risks
- Willingness to cooperate
- Low path dependencies, usage alternatives

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Results and discussion – Socio-economic analysis

Influencing parameters on IFBB implementation:

Farm level

Local level

- Availability of semi-natural grassland sites
- Sufficient harvest yields and site location
- Technical and meteorological requirements of harvest

Regional level

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Results and discussion – Socio-economic analysis

Influencing parameters on IFBB implementation:

Farm level

Local level

Regional level →

- Strong involvement of different stakeholder groups in the implementation process
- Infrastructure of pellet burning ovens
- Subsidy situation

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Results and discussion – Management alternatives





	Suckler cow[1]	Dairy[1]	IFBB[2]	Mulching	Composting
Processing value, €/t DM	**40**	**31**	**42**	**-17**	**-28**

[1]Stock size suckler cow: 60
Stock size dairy: 64

[2]1 MW therm, 50 kW el

Sources: Bühle 2010; EEG 2009, KTBL 2010, Blumenstein 2010

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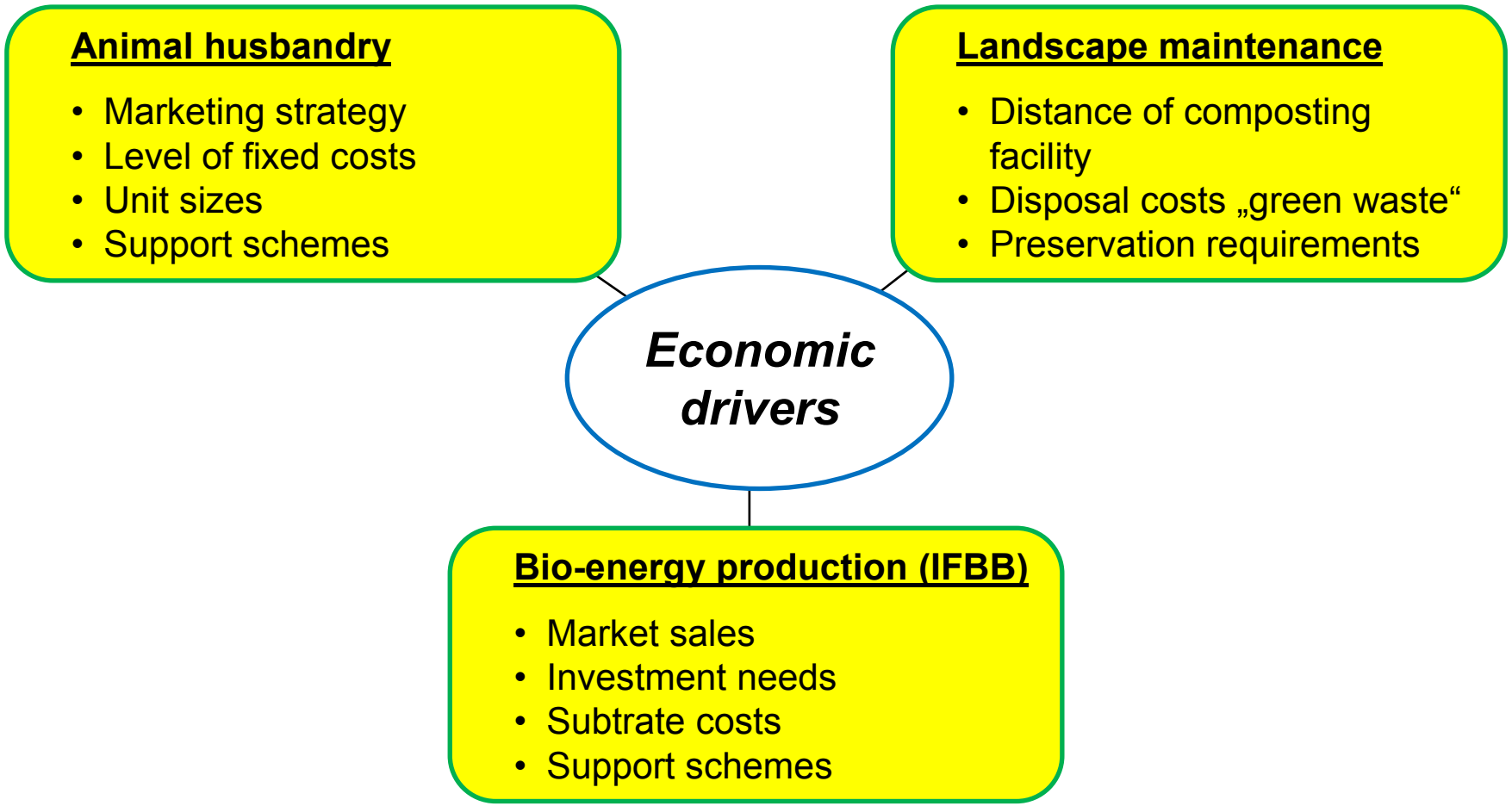
Results and discussion – Management alternatives



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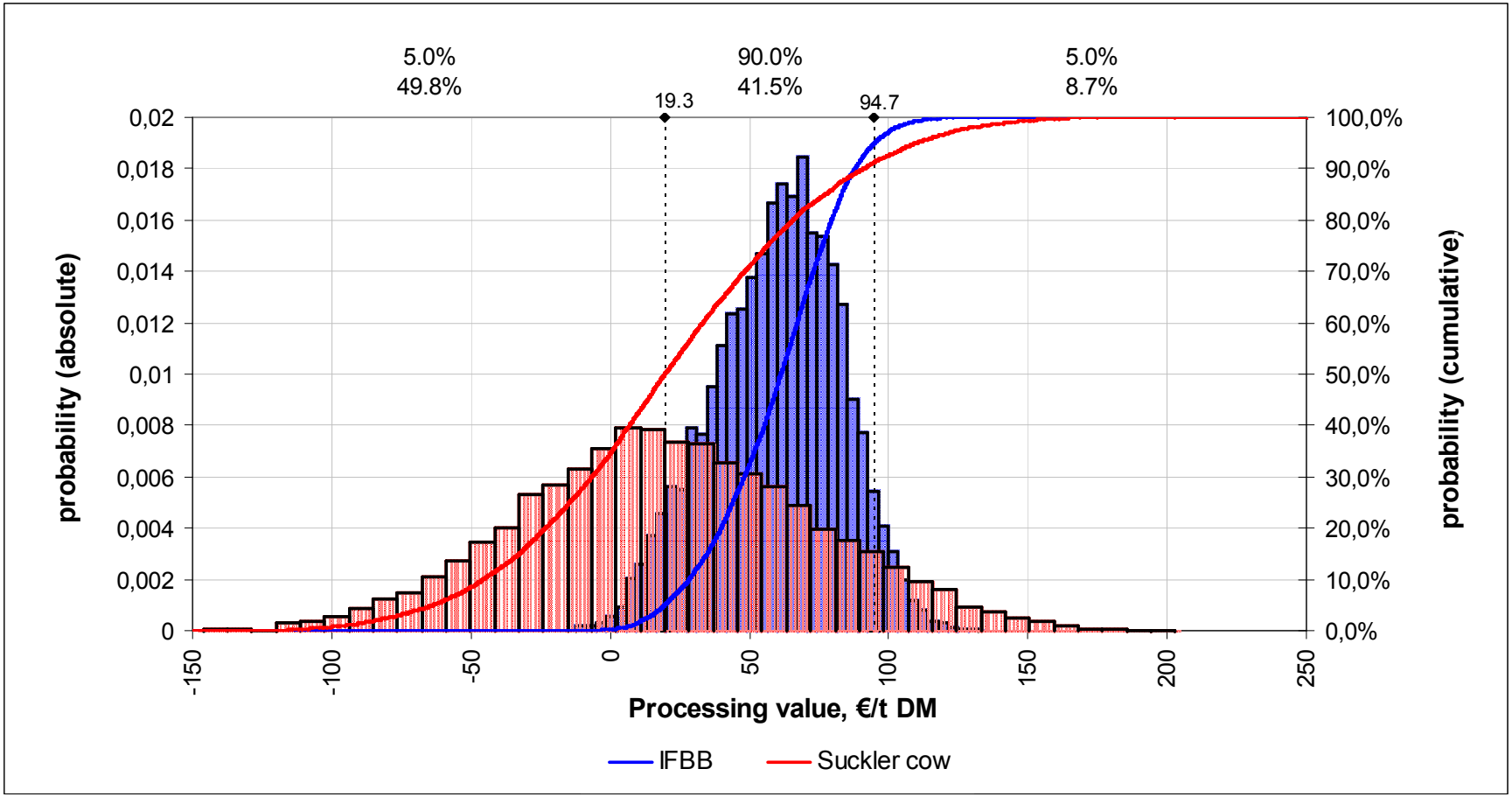
Results and discussion – Risk modelling



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Conclusions

- Processing values and risk modelling indicate favourable semi-natural grassland use within an alternative bio-energy system (IFBB)
- Animal husbandry systems can be competitive under optimal conditions
- Potential approach:
  Continued use of higher value grassland in present farming systems,
  use of surplus grassland in a collaborative IFBB bio-energy plant

→ **Decentralized energy production as a chance for diversification for small scale farming enterprises in less favoured areas**

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Department of Farm Management
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Thank you for your attention!

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