

Reed as a Renewable Resource 2013

# Sustainability assessment of common reed-based production

Greifswald , Germany



Leverage from  
the EU  
2007-2013



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# Contents

- 1 Sustainability of using common reed
- 2 Methods assessing sustainability=
  - 2.1 Life-cycle assessment (LCA) +
  - 2.2 Multi-criteria (decision) analysis (MCA)
- 3 Description of an empirical setup
- 4 Discussion on methodological and empirical challenges

# Sustainability of using common reed

- Common reed can be used for various purposes (energy, construction, fertilizer etc.)
- Utilization of common reed has several beneficial sustainability impacts:
  - Improved nutrient balance, positive biodiversity impacts
  - Recreational values improved, jobs for contractors
  - Economic profitability?
  - etc.

**What is the most sustainable way to utilize common reed?**

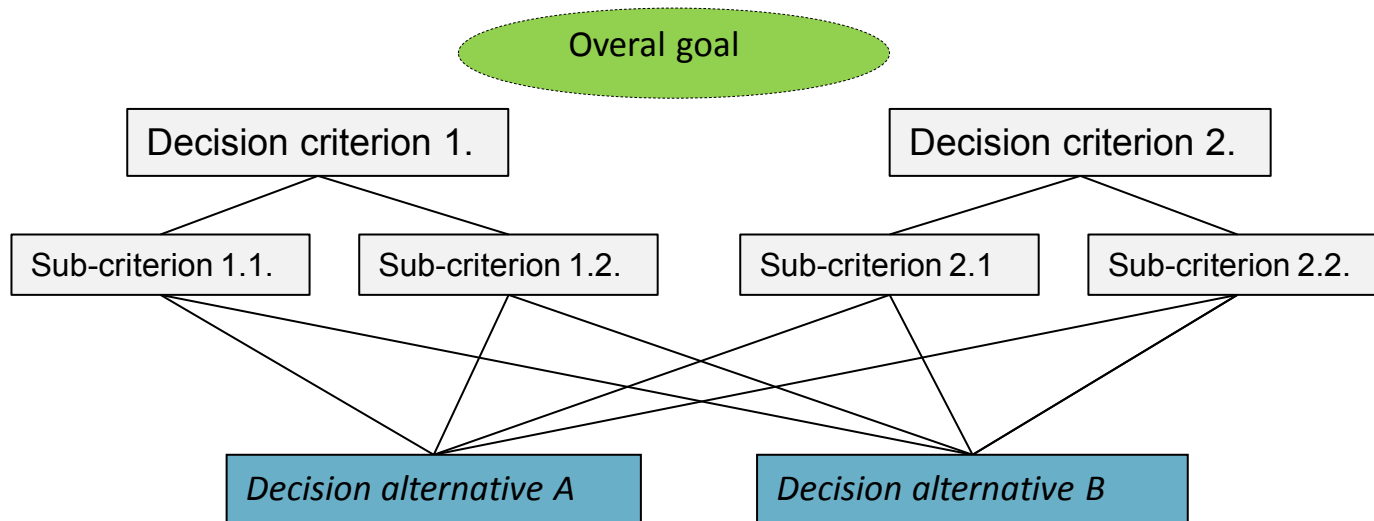
# Methods assessing sustainability: Life-cycle assessment (LCA)

- Environmental impacts of a product from a cradle to a grave

	Characterized Impact assessment scores	
	Alternative A	Alternative B
Climate change	55 kg CO <sub>2</sub> -Eq	89 kg CO <sub>2</sub> -Eq
Acidification	17 kg SO <sub>2</sub> -Eq	10 kg SO <sub>2</sub> -Eq
Metal depletion	25kg Fe-Eq	8 kg Fe-Eq

- No unambiguous comparisons of alternatives!

# Methods assessing sustainability: Multi-criteria (decision) analysis (MCA)



- MCA determines the decision alternative with the highest utility with respect to decision-makers preferences
- no advanced tools for assessing environmental (or other) impacts

# Methods assessing sustainability

## Life-cycle assessment (LCA)

### +Multi-criteria (decision) analysis (MCA)

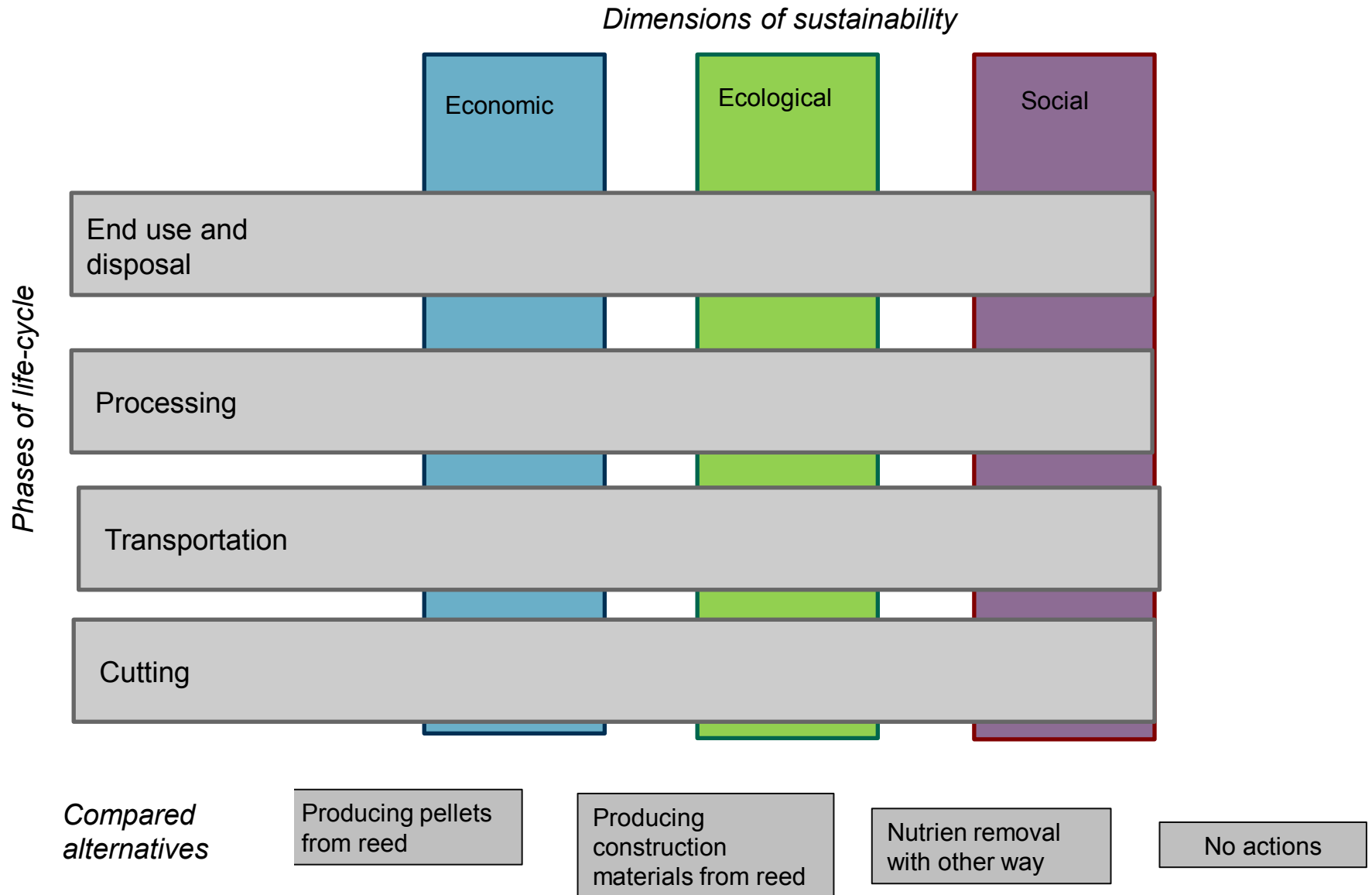
	Characterized Impact assessment scores		
	Alternative A	Alternative B	Weight
Climate change	55 kg CO2-Eq	89 kg CO2-Eq	0.33
Acidification	17 kg SO2-Eq	10 kg SO2-Eq	0.33
Metal depletion	25kg Fe-Eq	8 kg Fe-Eq	0.33

Single scores:

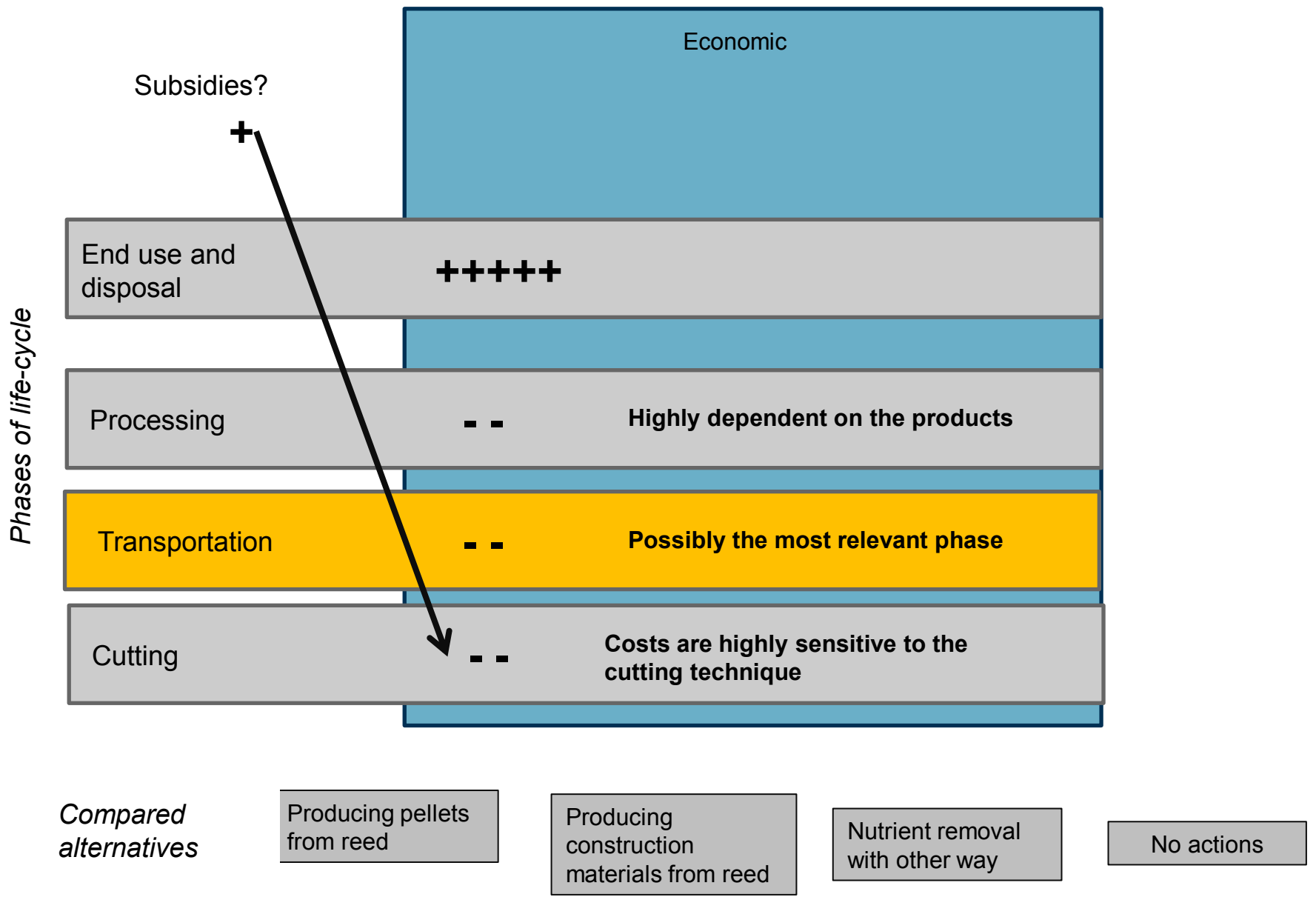
Alternative A = 32.01

Alternative B:=35.31

# Sustainability assessment of common reed-based production (a case-study in Eastern Finland)

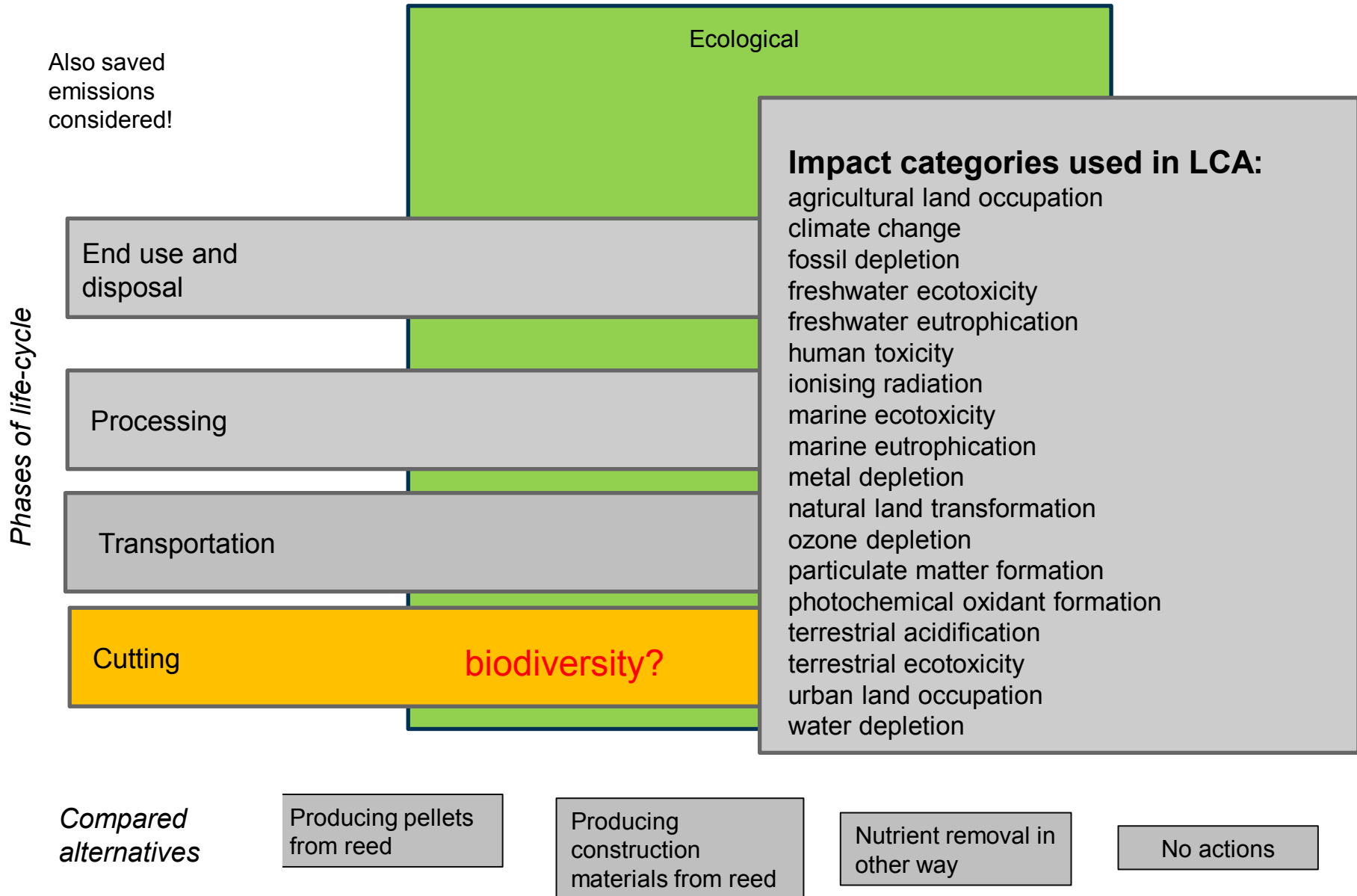


# Economic sustainability of using common reed

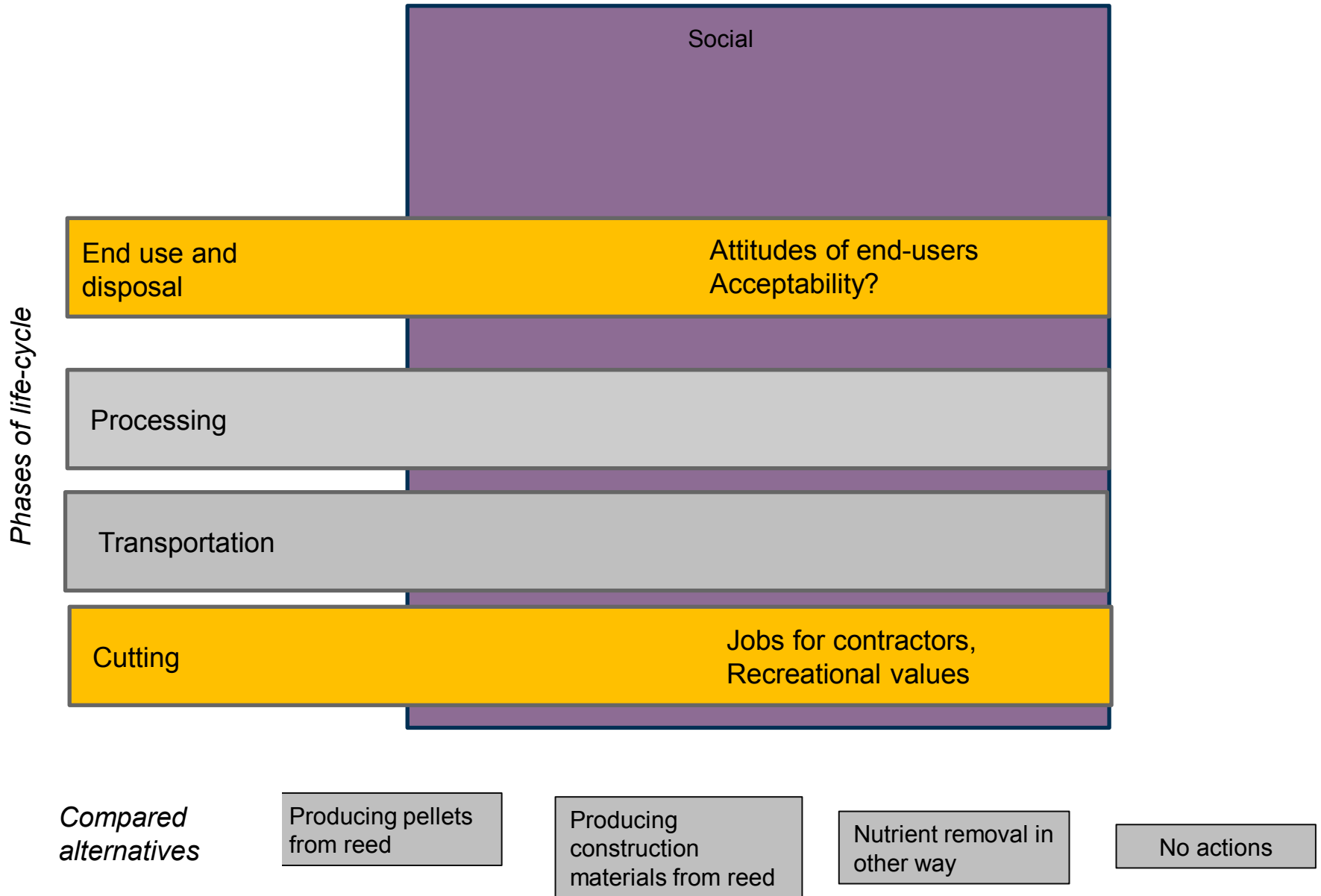




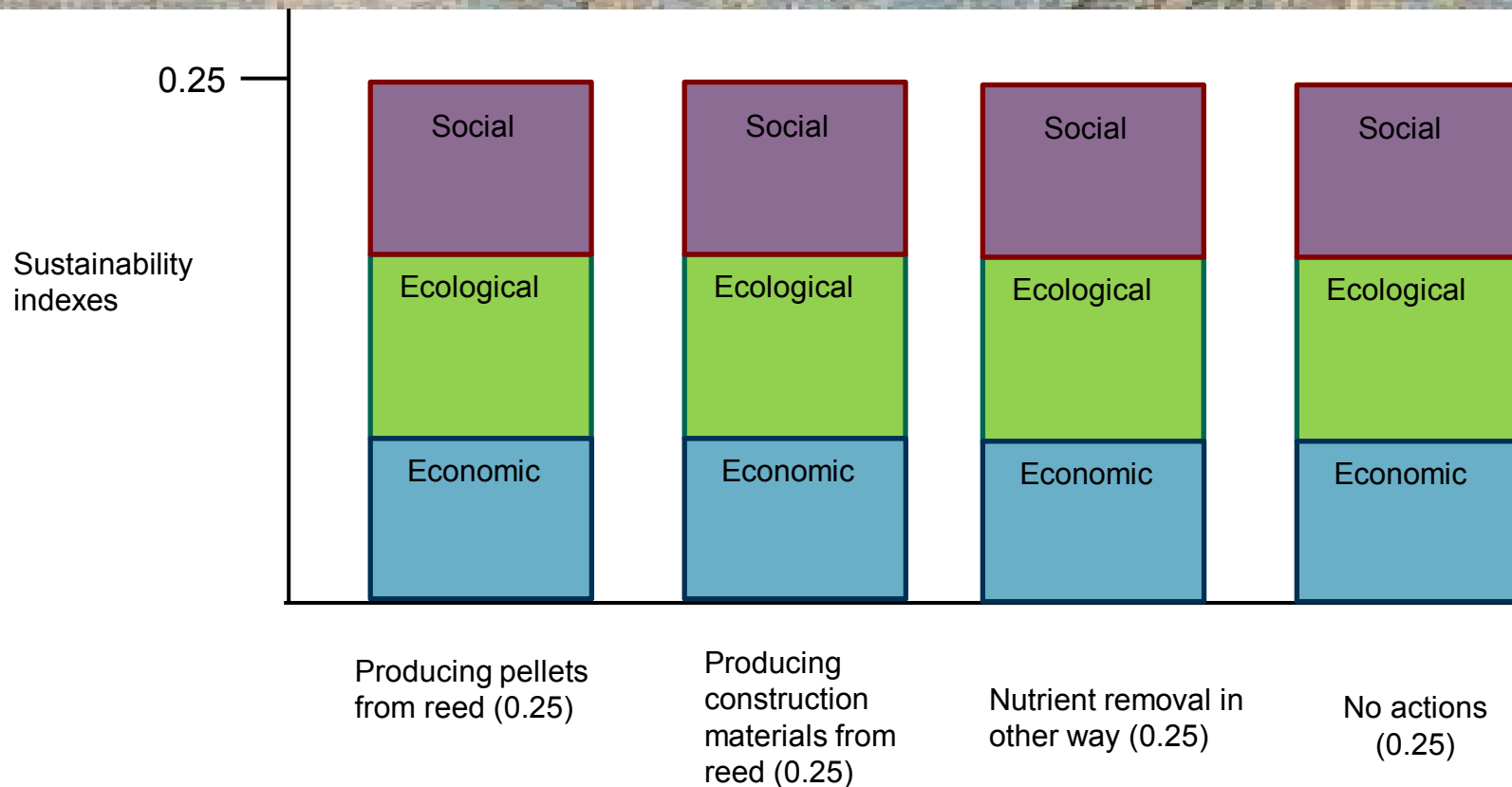
# Ecological sustainability (=Life cycle assessment) of using common reed



# Social sustainability of using common reed



# Results of sustainability assessments (empirical results missing)



# Discussion on methodological and empirical challenges

- **Who should complete weighting**
- **Which MCA-method should be used**
- **Data availability**
- **How to compare environmental impacts to social and economic aspects**
- **Acceptability of the results**