Developing a social life cycle impact assessment approach for assessing wood-based products from a regional perspective

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AvniR 2016
Motivation & Objectives

RESPONSEA „REgional SPecific cONtextualised social life cycle Assessment“

Conclusion

Which data to collect from organisations?

How to decide about good or bad social performance?
Bioeconomy takes place in regions and influences their socio-economic conditions.
Objectives

- Evaluate and document the social performance of wood-based products from bioeconomy regions
- Identify social hotspots and opportunities to improve organisations’ social performance

sLCA approach
RESPONSA - REgional SPecific cONtextualised Social life cycle Assessment

Goal & scope
- Definition of...
  - Geographical system boundaries
  - Stakeholder categories
  - Production system

Life cycle inventory
- Indices & Indicators
  - qualitative
  - quantitative
  - absolute
  - relative

Impact assessment
- Data collection
  - Reference (regional sector-specific statistics)
  - Organisation (Questionnaire)
- Assessment
  - Rating function $F(x(i))$
  - $PRP(i) = F = [r = x(i)]$
  - Measured value $x(i)$

Indices
- Interpretation and Optimisation
Geographical system boundaries

Individual federal state

Stakeholder category

One organisation

Bioeconomy region

The exemplary production system

Organisation Biomass Production, j

Organisation Transport, i

Organisation Biomass Conversion, n

Stakeholder category

Workers

Local communities

National society
## Life cycle inventory – Indices & Indicators

<table>
<thead>
<tr>
<th>Index/Sub-index</th>
<th>Indicator</th>
<th>Unit</th>
<th>Equation/Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Health &amp; safety</strong></td>
<td>Occupational accidents</td>
<td>Nr</td>
<td>Number of accidents per year per 1000 employees</td>
</tr>
<tr>
<td></td>
<td>Occupational fatal accidents</td>
<td>Nr</td>
<td>Number of fatal accidents per year</td>
</tr>
<tr>
<td></td>
<td>Sick-leave</td>
<td>Nr</td>
<td>Sick-leave days per year per employee</td>
</tr>
<tr>
<td></td>
<td>Preventive health measures</td>
<td>Cat.</td>
<td>Health measures (e.g. sick-leave analysis, health activities)</td>
</tr>
<tr>
<td><strong>2. Adequate remuneration</strong></td>
<td>Payment according to basic wage</td>
<td>y/n</td>
<td>Payment off basic wage</td>
</tr>
<tr>
<td></td>
<td>Payment above the basic wage</td>
<td>y/n</td>
<td>Payment above the basic wage</td>
</tr>
<tr>
<td></td>
<td>Average remuneration level</td>
<td>€</td>
<td>Average payment per month per full-time employee per total employees</td>
</tr>
<tr>
<td><strong>Financial Participation</strong></td>
<td>Rate of employees with capital participation</td>
<td>%</td>
<td>Percentage of employees with capital participation</td>
</tr>
<tr>
<td></td>
<td>Rate of employees with profit-sharing and bonuses</td>
<td>%</td>
<td>Percentage of employees with profit-sharing and bonuses</td>
</tr>
<tr>
<td><strong>3. Adequate working time</strong></td>
<td>Contractual working hours</td>
<td>h</td>
<td>Average contractual working hours per week per full-time employee</td>
</tr>
<tr>
<td></td>
<td>Compensation for overtime</td>
<td>Cat.</td>
<td>Compensation measures (e.g. exclusively payment, payment and free-time, etc.)</td>
</tr>
<tr>
<td></td>
<td>Employees with monetary compensation for overtime</td>
<td>%</td>
<td>Percentage of employees with paid overtime in the last year</td>
</tr>
<tr>
<td></td>
<td>Access to flexible working time agreements</td>
<td>%</td>
<td>Percentage of employees with access to flexible working agreements</td>
</tr>
<tr>
<td></td>
<td>Rate of part-time employees</td>
<td>%</td>
<td>Number of part-time employees per total employees</td>
</tr>
<tr>
<td><strong>4. Employment</strong></td>
<td>Rate of qualified employees</td>
<td>%</td>
<td>Percentage of employees with professional training per total employees</td>
</tr>
<tr>
<td></td>
<td>Rate of marginally employed employees (max 450€)</td>
<td>%</td>
<td>Percentage of employees earning max. 450€ per total employees</td>
</tr>
<tr>
<td></td>
<td>Rate of fixed-term employees</td>
<td>%</td>
<td>Number of fixed-term employees in relation to total employees</td>
</tr>
<tr>
<td></td>
<td>Rate of employees provided by temporary work agencies</td>
<td>%</td>
<td>Number of employees provided by temporary work agencies per total employees</td>
</tr>
<tr>
<td></td>
<td>Number of new hired employees per year per total employees</td>
<td>%</td>
<td>Number of new hired employees per year per total employees</td>
</tr>
<tr>
<td><strong>5. Knowledge capital</strong></td>
<td>Employees/unity participated in training</td>
<td>%</td>
<td>(Qualified) employees/unity participated in training per total employees</td>
</tr>
<tr>
<td></td>
<td>Support for professional qualification</td>
<td>y/n</td>
<td>Assumption of cost or exemption for training programs</td>
</tr>
<tr>
<td></td>
<td>Rate of vocational trainees</td>
<td>%</td>
<td>Trainees/total employees</td>
</tr>
<tr>
<td></td>
<td>Rate of part-time employees</td>
<td>%</td>
<td>Trainees/trainees employed permanently</td>
</tr>
<tr>
<td><strong>R&amp;D</strong></td>
<td>Rate of employees in R&amp;D</td>
<td>%</td>
<td>Employees working permanently or temporally in the R&amp;D section per total employees</td>
</tr>
<tr>
<td><strong>6. Equal opportunities</strong></td>
<td>Rate of female employees in management positions</td>
<td>%</td>
<td>Percentage of female employees in management positions</td>
</tr>
<tr>
<td></td>
<td>Measures to improve gender equality</td>
<td>Cat.</td>
<td>Measures for family support (e.g. support for child care, support for female employees)</td>
</tr>
<tr>
<td></td>
<td>Rate of female employees</td>
<td>%</td>
<td>Percentage of female employees in relation to total employees</td>
</tr>
<tr>
<td><strong>Integrate older employees</strong></td>
<td>Rate of disabled employees</td>
<td>%</td>
<td>Percentage of disabled employees per total employees</td>
</tr>
<tr>
<td></td>
<td>Rate of foreign employees</td>
<td>%</td>
<td>Percentage of foreign employees per total employees</td>
</tr>
<tr>
<td><strong>7. Participation</strong></td>
<td>Existence of works councils in the organisation</td>
<td>y/n</td>
<td>Existence of works councils in the organisation</td>
</tr>
<tr>
<td>Other measures for participation</td>
<td>y/n</td>
<td>Measures to participate in the organisation</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- Nr: Number, Cat.: Category, %: Percent, y/n: yes and no, h: hours;
- Categories: National society, Local communities, National society;
- With capital participation employees provide financial means for the organization and became shareholders (e.g. GmbH shares, employees shares or cooperative shares) (Bellmann, Möller 2006)
- With profit-sharing or bonuses employees receive in addition to their regular wage an additional profit-based or performance related pay (Bellmann, Möller 2006)

We identified 7 main indices and 16 sub-indices... and 32 qualitative and quantitative indicators.
Each collected indicator value from the organisation is characterised with a corresponding national or regional sector-specific reference.

**Quantitative indicator: Proportion of qualified employees**

- **Forestry**
  - **Production of organic chemicals**
  - **Sales and Distribution**

  PRP – Performance Reference Points
  Score – 10 best performance to 1 worst performance
Qualitative indicator: Existence of sick-leave analysis

Forestry

Production of organic chemicals

Sales and Distribution

Germany
Central Germany

PRP – Performance Reference Points
Score – 10 best performance to 1 worst performance
Conclusion

Which data to collect?

- Site-specific data from the organisation in the region
- Generic data on potential social issues in countries or sectors associated with activities outside the region

How to decide about good or bad social performance?

- Identify the economic sector and federal state for each organisation
- Use regional sector-specific benchmarks or desired values
Merci beaucoup!

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