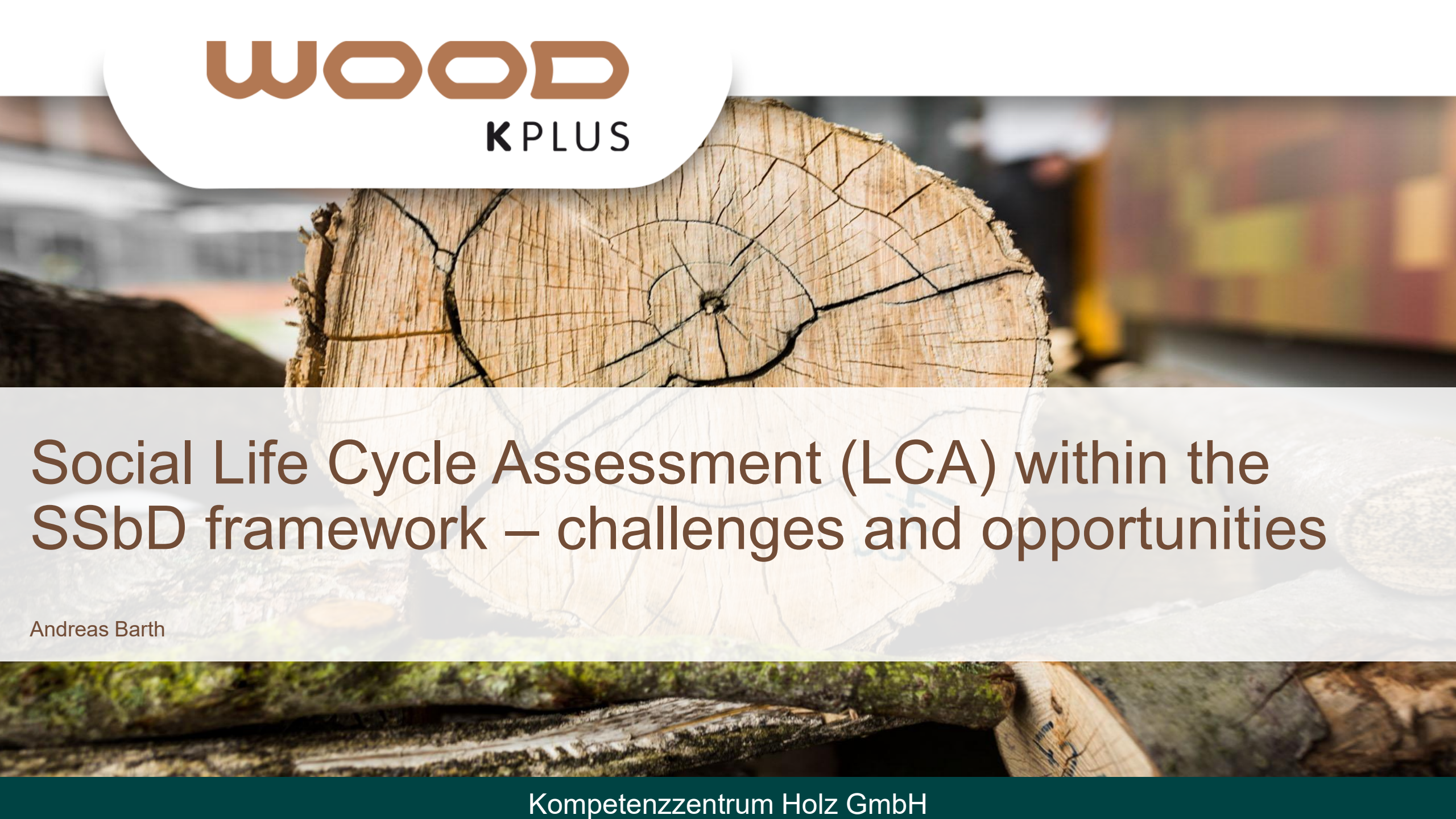




Social Life Cycle Assessment (LCA) within the SSbD framework – challenges and opportunities

Andreas Barth

Social Sustainability and Social Life Cycle Assessment – Why?



- Intergenerational distributive justice
„intergenerational contract“ to secure the basis of life for future generations
- Corporate responsibility for respecting human rights along global value chains
- Goal:
 - ensure health and well-being in all aspects
 - enable a decent life for ALL
 - promote social equity

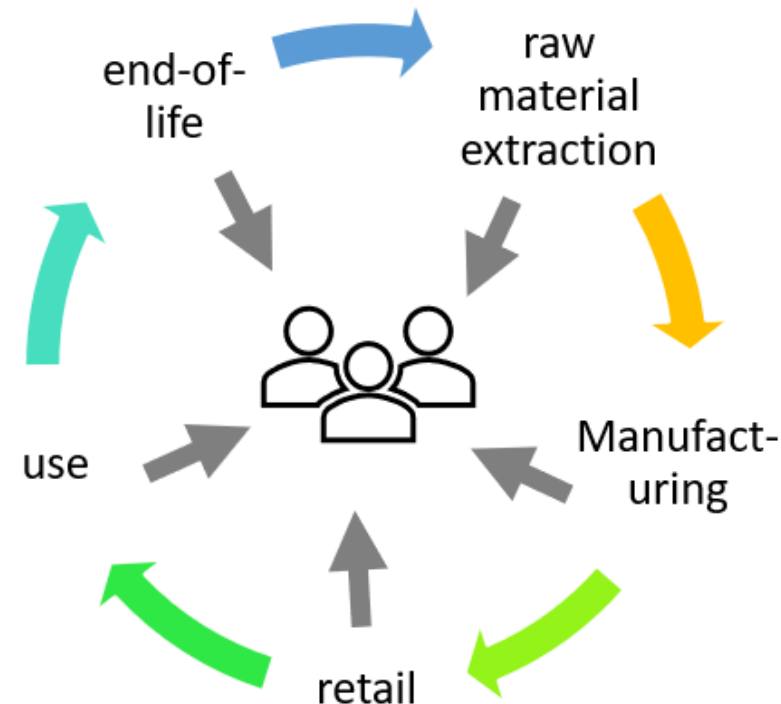
Social Life Cycle Assessment (S-CLA)

S-LCA:

... helps in assessing social impacts of products and services across their life cycle

... provides information on social aspects for decision-making → to improve the social performance of an organization and the well-being of stakeholders

... addresses aspects of products and their potential positive and negative impacts **along their whole life cycle** (UNEP, 2020)



S-LCA stakeholder groups

Subcategory = The subcategories assessed in S-LCA are those that may directly affect stakeholders positively or negatively during the life cycle of a product

Stakeholder Group						
Subcategory	Worker	Local Community	Value Chain Actors	Consumer	Society	Children
	- Freedom of association & collective bargaining - Child labour - Fair salary - Working hours - Forced labour - Equal opportunities/discrimination - Health and safety - Social benefits/social security - Employment relationship - Sexual harassment - Smallholders including farmers	- Access to material resources - Access to immaterial resources - Delocalization and migration - Cultural heritage - Safe and healthy living conditions - Respect of indigenous rights - Community engagement - Local employment - Secure living conditions	- Fair competition - Promoting social responsibility - Supplier relationships - Respect of intellectual property rights - Wealth distribution 	- Health and safety - Feedback mechanism - Consumer privacy - Transparency - End-of-life responsibility ...	- Public commitments to sustainability issues - Contribution to economic development - Prevention and mitigation of armed conflicts - Technology development - Corruption - Ethical treatment of animals - Poverty alleviation	- Education provided in the local community - Health issues for children as consumers - Children concerns regarding marketing practices

(UNEP, 2020)

SSbD and S-LCA

Within the SSbD framework a simplified S-LCA is recommended to uncover potential social risks and opportunities within the supply chain of a chemical or material, and in the evaluation of alternatives



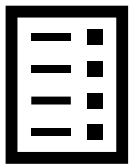
1. Goal and scope:

- Identify steps of the product system and actors (e.g. supplier, distributor)
- Select potential country-sector combinations for the steps with unknown information
- Perform a “materiality assessment” to define which are the material/relevant social topics through the life cycle.
- Define the stakeholder categories, i.e. groups of people affected (positively or negatively) by the product



2. Social inventory:

- Modelling the product system and collecting all the data and information that is needed for conducting the assessment
- Combining quantitative and qualitative data

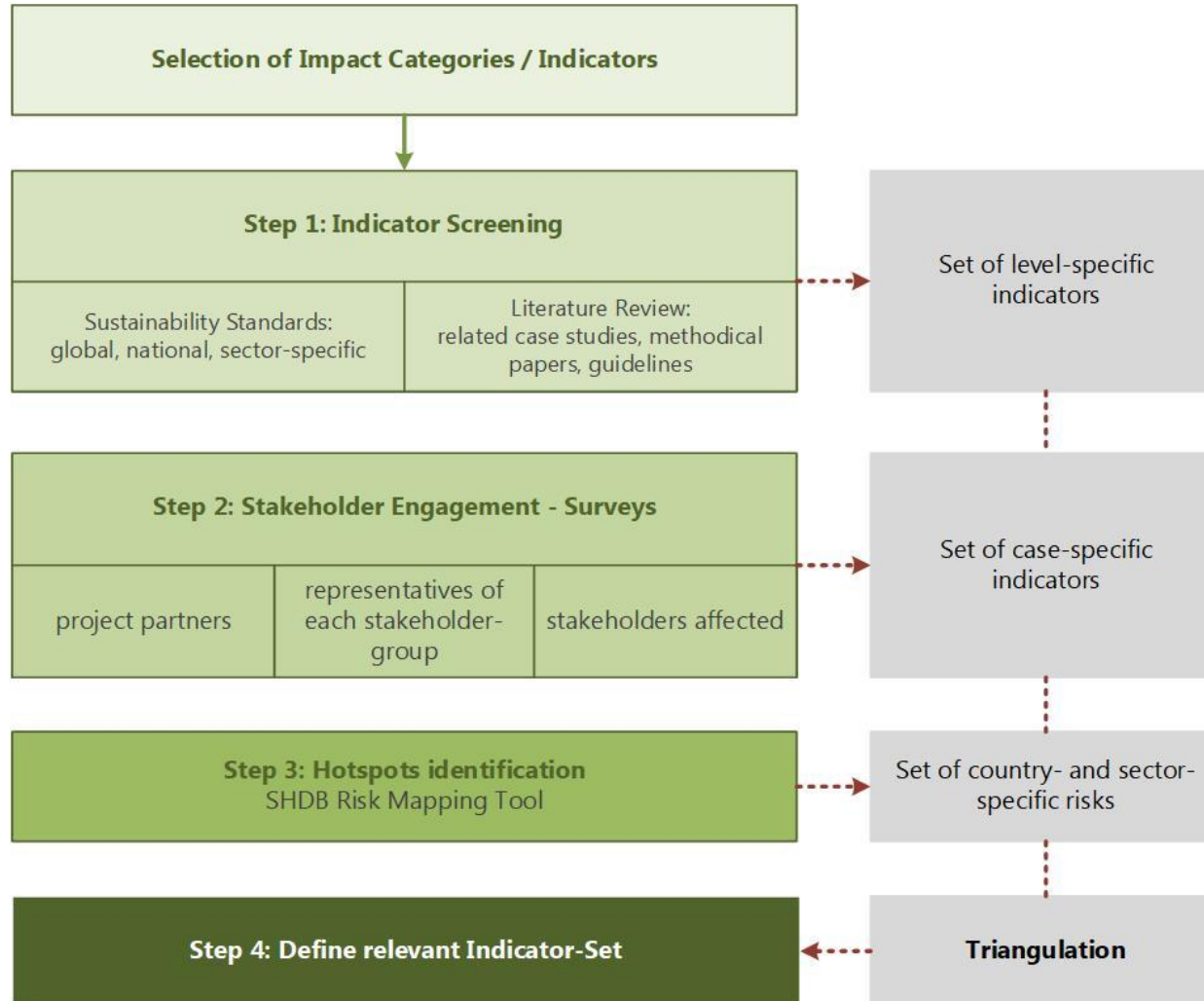


3. Social impact assessment

- Assess the social performances and social risk along the whole life cycle according to the Reference Scale Approach (RSA)
- Compare alternatives considering potential risks and issues of concern for the social sustainability
- Compensation between positive and negative impact within or across different social topics and stakeholder groups should be avoided!

What to measure?

Define relevant indicators:



(Groiss-Fürtner et al., 2021)

Example of reference scale set for the social indicator “Fatal accident at workplace” of the Health and Safety subcategory:

Rate of fatal accidents at workplace		
Unit: # per 100k employees		
Indicator value	Risk level	Points assigned
$0 \leq y < 7.5$	Very low risk	4
$7.5 \leq y < 15$	Low risk	3
$15 \leq y < 25$	Medium risk	2
$25 \leq y < 40$	High risk	1
$40 \leq y$	Very high risk	0

(Caldeira et al., 2023)

List of potential data sources:

Social Aspect	Main Data Sources
Child labour	UNICEF (United Nations Children's Fund), ILOSTAT (International Labour Statistics), World Bank World Development Indicators, Product Social Impact Life Cycle Assessment (PSILCA); Social Hotspot Database (SHDB)
Forced labour	ILO Global Estimates of Modern Slavery, PSILCA, SHDB
Fair salary	WageIndicator Foundation, ILOSTAT, World Bank

The final set of indicators should be tailored to the specific application!

BIO SUSHY– Project description

Sustainable surface protection by glass-like hybrid and biomaterials coatings



48 Months



15 Partners



8 Countries



4.8M EU Contribution

BIO-SUSHY targets to develop three PFAS-free novel coatings, which will be validated in applications in the textile, food, and cosmetic packaging industries.

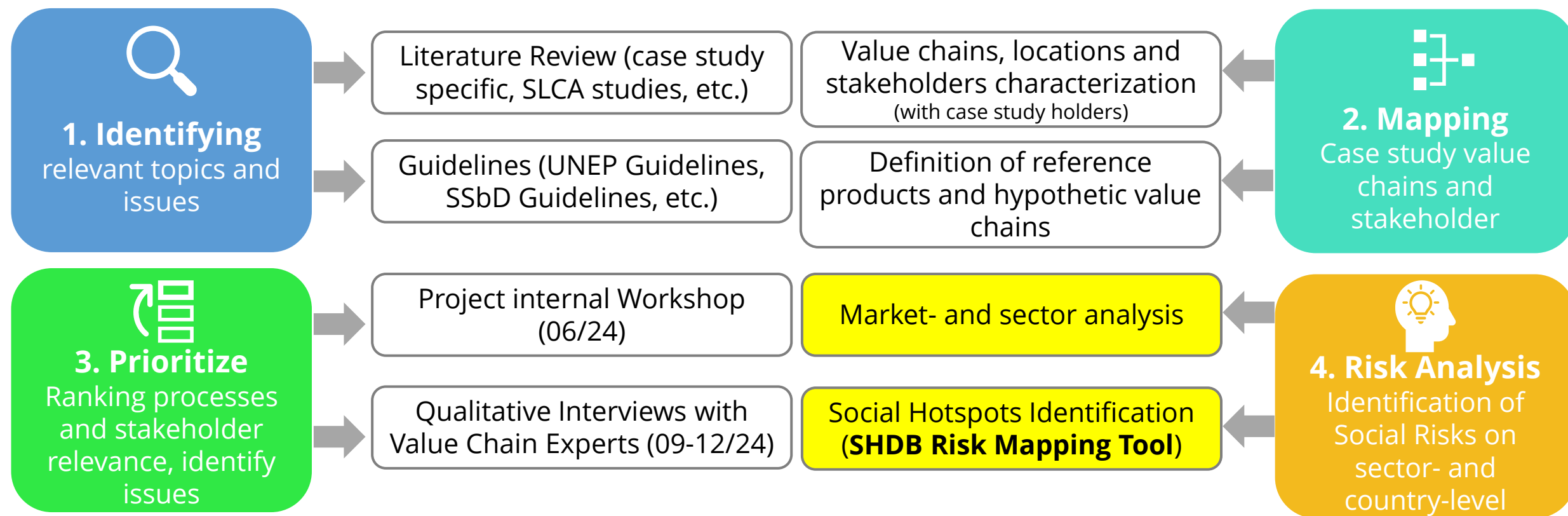
PRACTICAL INSIGHTS: BIO SUSHY- SLCA: Overview of Activities

Step 5. Social and economic impacts throughout the life cycle



Identification and Prioritization of Social Risks and Opportunities (Impact (Sub-)Categories)

Social Risk Mapping on sector- and country-level



CASE STUDY TEXTILE: SSbD Step 5 – SLCA

TASK 4.3 – Qualitative Interviews: First results – interesting statements

“When talking about product quality and product safety, it is indeed a topic that is not only technically but also socially relevant”

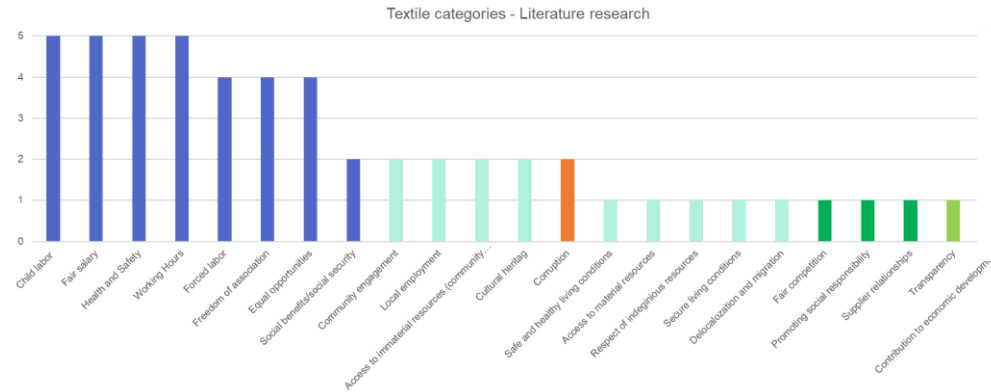
“If the new bio-based coatings do not offer the same properties as the previous fossil-based materials, this would be a major problem”

“Price is what counts for consumers, and that is a decisive factor in our industry”

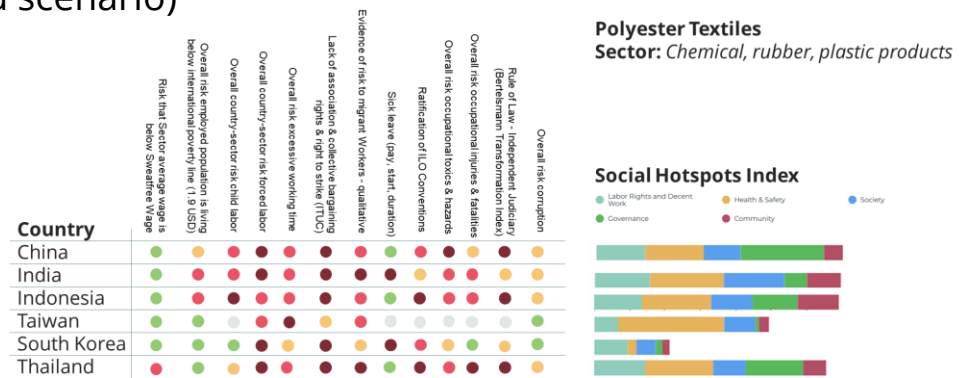
“Another important issue is that raw materials from the region should be used for these coatings”

Some identified topics: CASE STUDY TEXTILE: SSbD Step 5 – SLCA:

Results: Literature Review



Results: Market- and sector risk analysis (current and Europe based scenario)

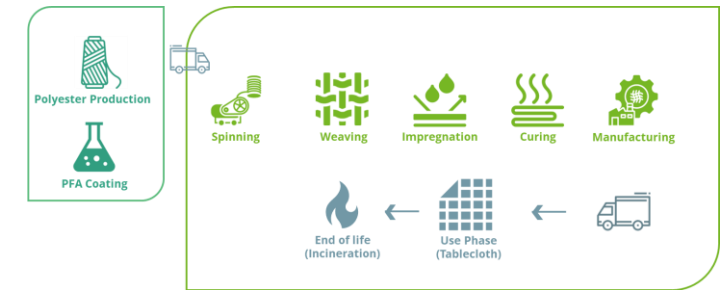


using the Social Hotspot Database (SHDB)

Results: Interviews



Results: Value chain mapping



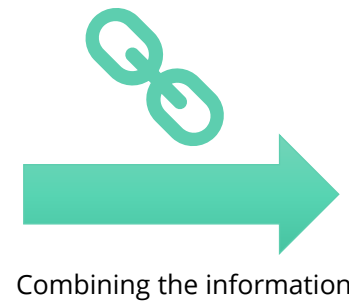
List of potential social topics:

- Brand awareness
- Health & Safety of Textiles
- Innovation in the Textile Industry
- Product Performance
- Product Price

Risks in a global value chain:

- Working Conditions (Exposure to toxic substances; risk of occupational injuries)
- Lack of freedom of association, collective bargaining rights
-

Locating production steps to Europe might contribute to a reduction of potential social issues within the supply chain.



Challenges

Definition of product specific indicators

- From a generic to specific level

Translating indicators into meaningful units

- Measure social topics could be challenging

Data as limiting factor

- Specific social data in supply chains often missing (national data as proxy)
- Open-source databases exist (e.g., ILO), but coverage of certain indicators is limited
- Tools like **PSILCA** and **SHDB** provide risk-based assessments (country/sector level)
- Useful for early-stage (low TRL) assessments and hotspot identification
- BUT: they do not measure actual product/company performance → risk of misinterpretation
- Need for systematic data quality assessment (reliability, completeness, temporal, geographical)

Compliance with regulatory and data availability

- Social indicators from sustainability reporting and due diligence processes: many companies already assess suppliers for compliance (human rights, working conditions, etc.)

Stakeholder engagement & dialogue

- Fosters dialogue with workers, communities, NGOs, and suppliers, creating a more inclusive perspective
- Increases trust and collaboration across the value chain

Alignment with the Sustainable Development Goals (SDGs)

- S-LCA directly supports SDG 12 (Responsible Consumption and Production) and 8 (Decent Work and Economic Growth)

Holistic sustainability perspective

- Considering social aspects alongside environmental and economic ones enables true life cycle sustainability assessment (LCSA)
- Prevents “green products” from having hidden social costs

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