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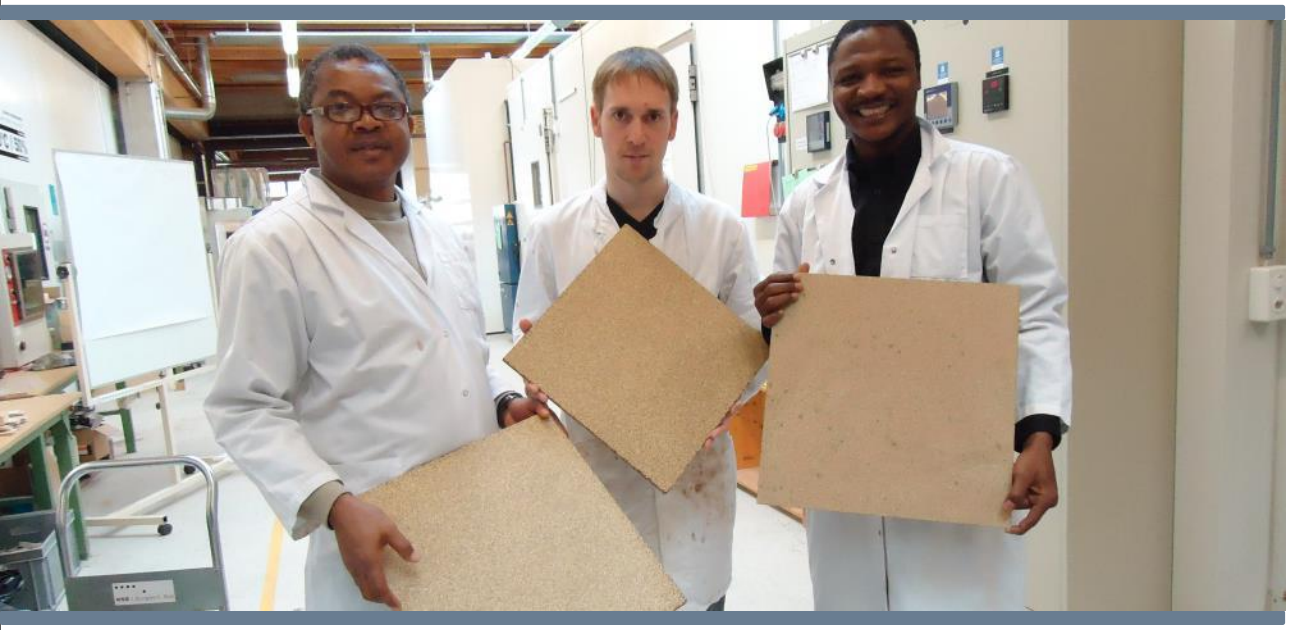

Sustainability indicators set for agricultural residues based panels in developing countries

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1. Starting idea

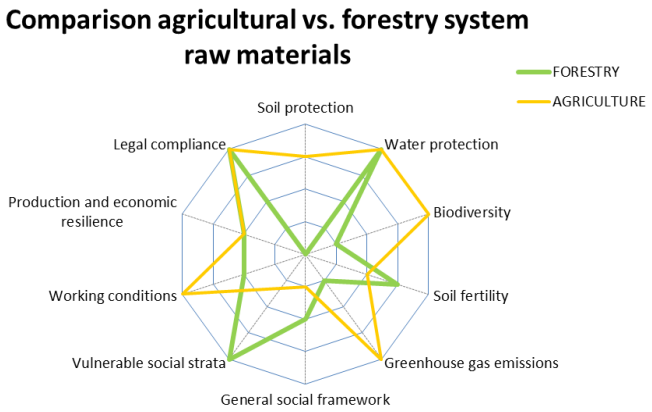
- Situation
  - Suistainable **ressource** management belongs to the **political priority** of transition and developping countries.
  - Agricultural residues are **available** for the production of **suistainable** and **affordable** building Materials
  - No **suistainability assessement system** for this new type of material so no **credibility** and no **motivation** for investments

2. Experiences BFH/Nigeria Project:

- Technological chances
- Conventional building material import
- End of Life?
- Suistainability of agricultural / forestry processes?
- Chance for local added value and TT

3. Goals of the project

- Developing a tool for suistainability assessement of agriculture/forestry residues based panels in the specific context of developping countries.
  - Describe the life cycle of the products
  - Select a set of indicator based on existing methodology and experiences collected in the several projects
  - Develop parameters
  - Integrate informations in an assessement tool



4. Methodology

- Collaboration between agriculture system sustainablity specialists, wood technologists and cooperation and development specialists.

Technical informations

Local informations

Existing Sustainability assessement systems:
- SAFA Guidelines
- RISE
- LEED, EPD/PCR, DNGB, BREEAM, SNBS…

Brainstorming/ Mindmapping

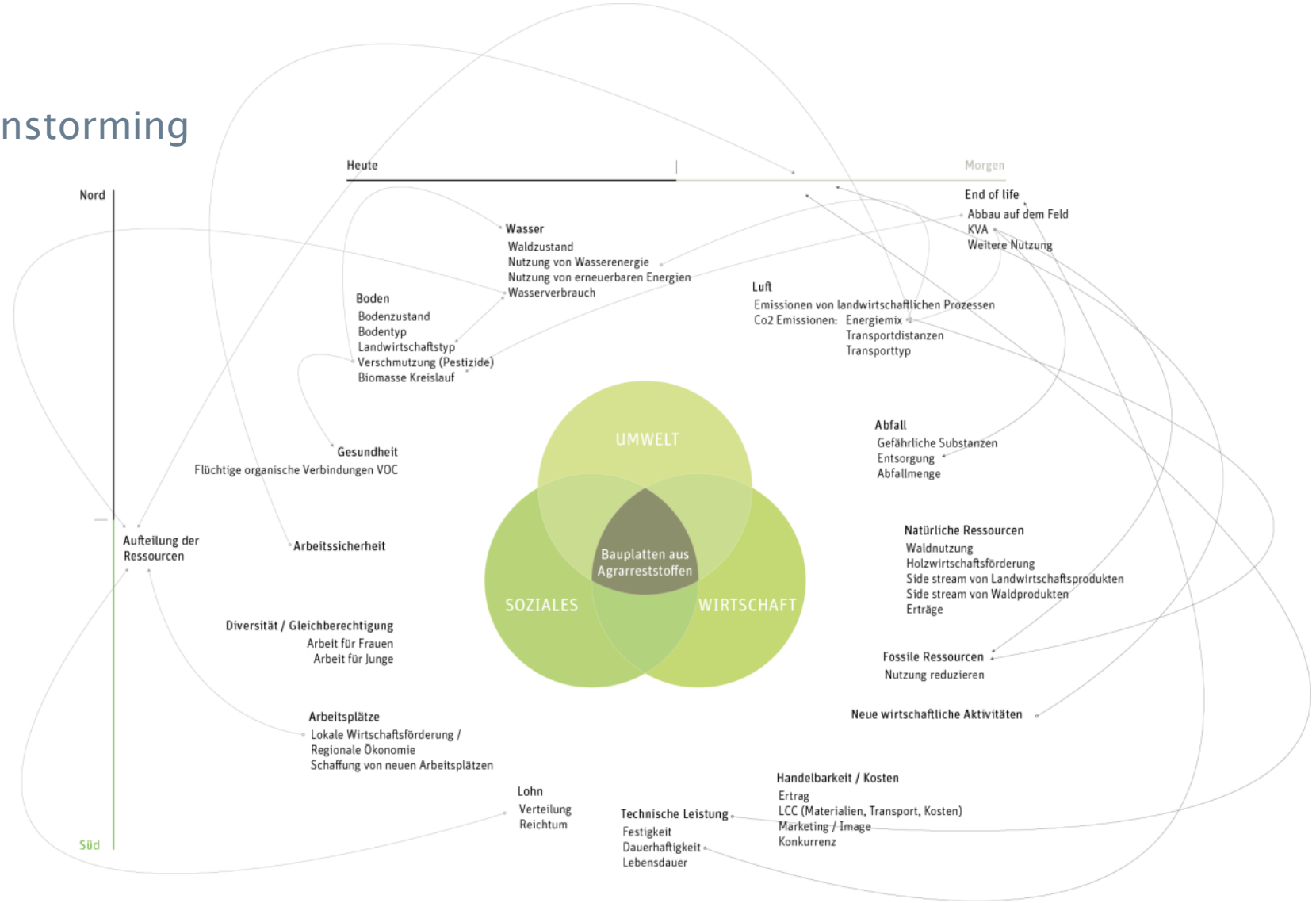
LCA + LCC

Indicators and parameters

Tool

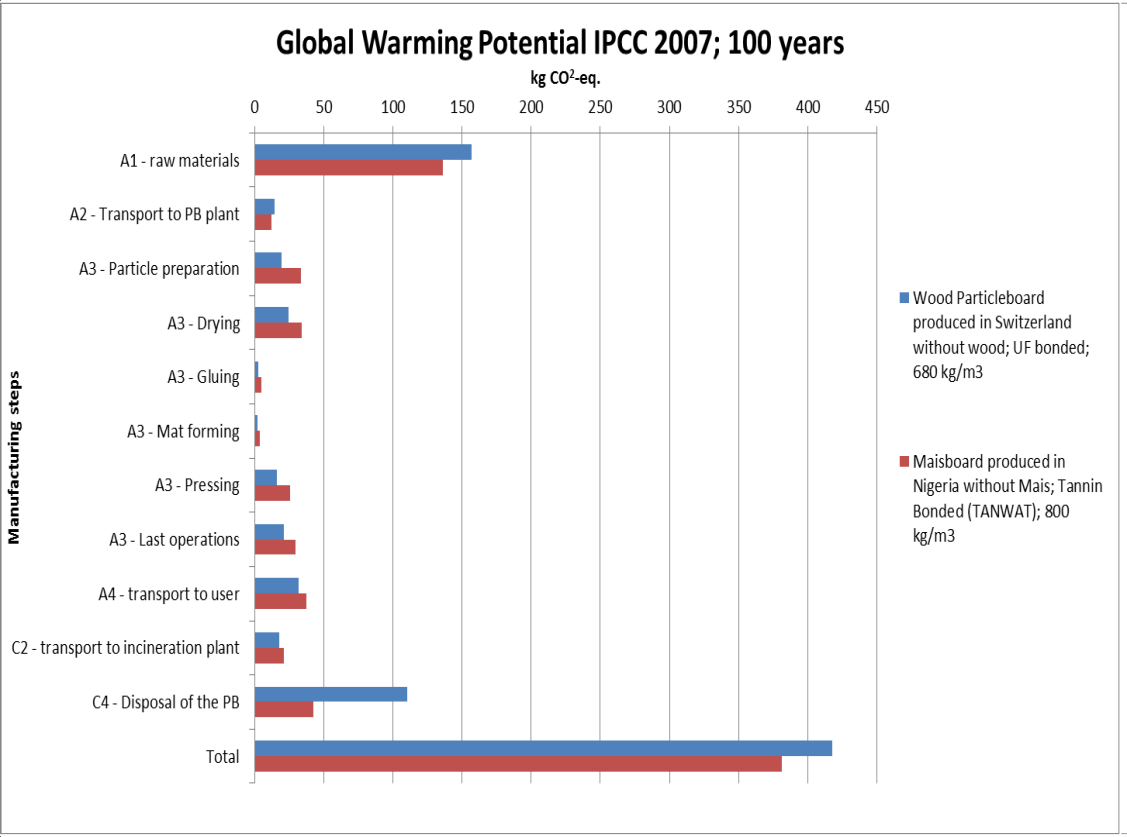
5. Results

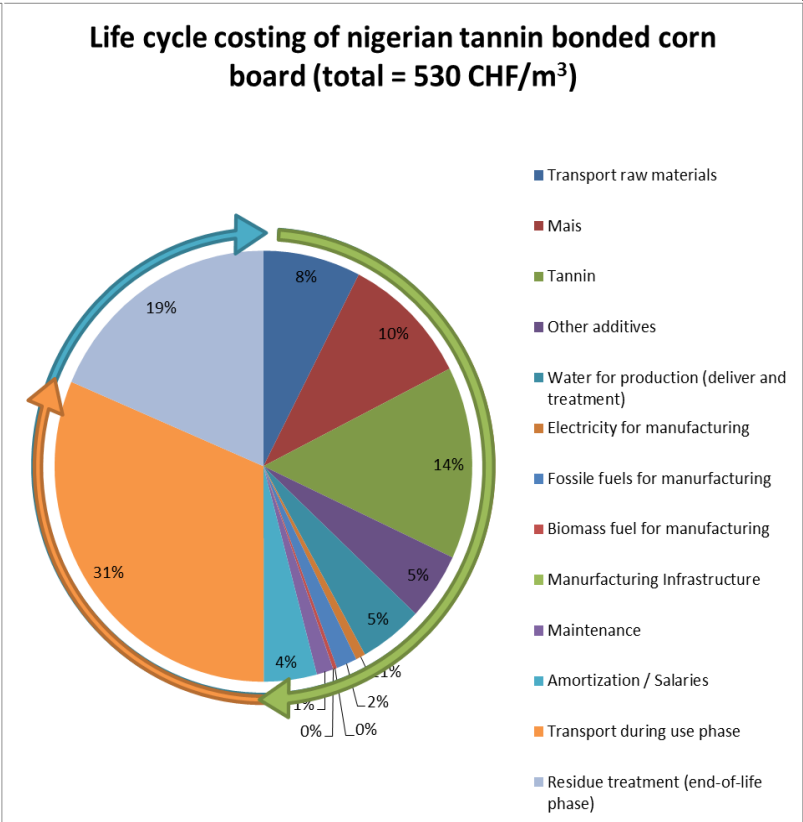
Brainstorming



5. Results

LCA / LCC





5. Results

Indicators, parameters and evaluation

Life Stage	System	Domain	Indicator (example)	Parameter (example)
Raw material extration (24 indicator; 37 parameters)	Forest	Environment	Biodiversity	CITES Species
		Economy	Biomass production	Seeding mortality
		Society	Indigenous people	Consultation of indigenous people
	Agriculture	Environment	Greenhouse gas Emissions	CH_4 Emissions of cattle and manure storage
		Economy	Logistics	Storage capacity
		Society	Social inequalities	Connectivity to urban market
Production, use and end of life (5 indicators, 15 parameters)		Environment	Production	Part of renewable energy in heat production
		Economy	Demand	Highest market price
		Society	Accident prevention	Number of accident

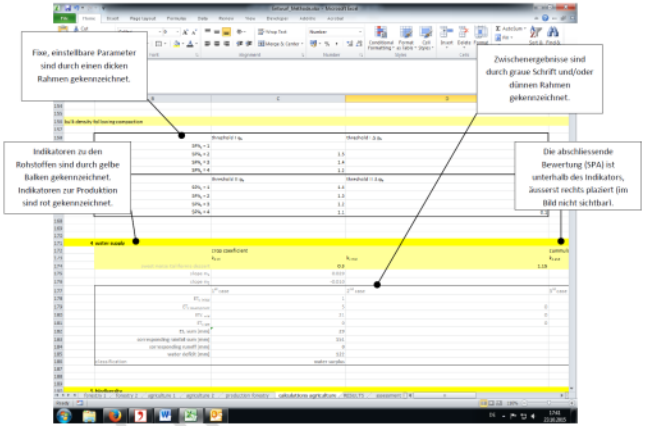
5. Results

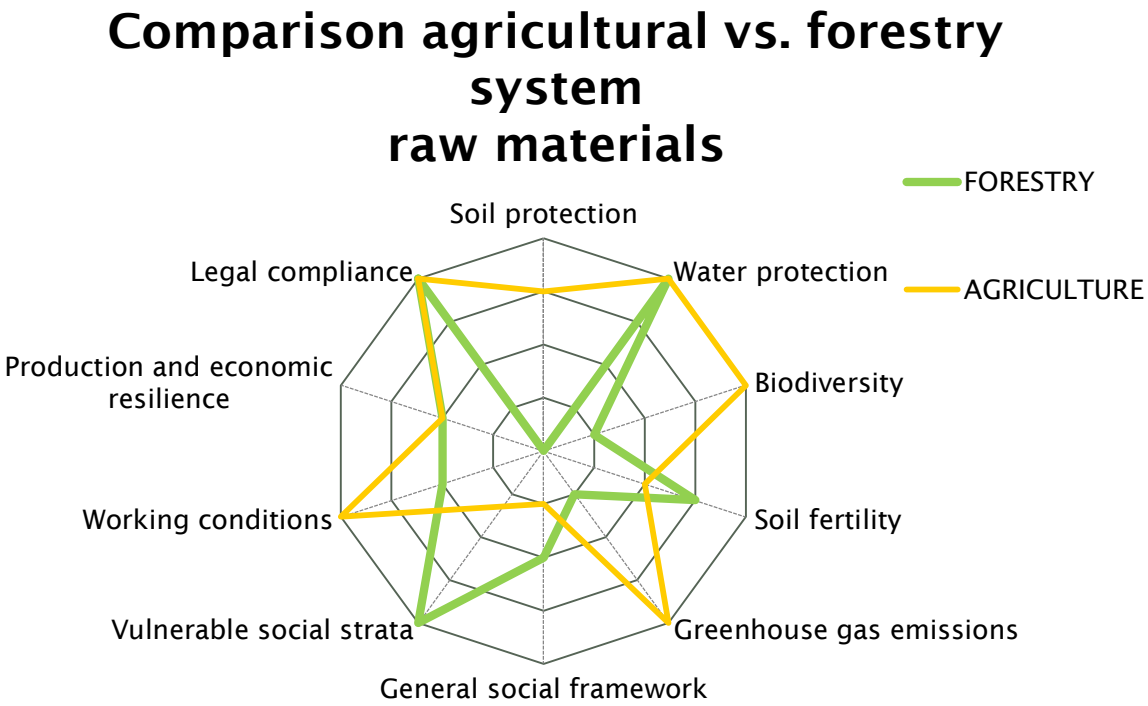
Indicators, parameters and evaluation

Pt	Evaluation	Example: System: forest Domain: society Indicator: migrants Parameter: fate of migrants
1	insufficient sustainability practice	unknown fate
2	moderate sustainability practice	financial compensation OR employment in plantations
3	good sustainability practice	relocation to compensatory areas
4	best sustainability practice	perpetuation of subsistence agriculture

5. Results

Tool integration (still in development)





6. Conclusions

- Set of indicators integrated in a relatively easy-to-use XLSX Tool
- Indicators are as generic as possible; no weightening system
- Help to forecast the potential of a new product on the local market

- Still some work to do
  - Review with industry, NGO, local involved partners
  - Design of the outputs (easy understanding of results)
  - Proof with different types of products
  - Possible integration of new indicators and parameters as well as updates