Business case (combined market issues)

<table>
<thead>
<tr>
<th>ECONOMIC FACTORS</th>
<th>VALUE CREATION</th>
<th>PRICE INFLUENCERS AND MARKERS</th>
<th>REGULATION</th>
<th>OUTCOME</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEMAND (E.G. PUBLIC PROCUREMENT)</td>
<td>USER DEMAND (PROCUREMENT) (NEG. BRANDING)</td>
<td>COMPETITION (STOCK NEW MATERIALS)</td>
<td>VAT (+/-)</td>
<td>NON-LOW CLIMATE ENVIRONMENTAL ISSUES</td>
</tr>
<tr>
<td>ACTIVATION OF NATURAL RESOURCES</td>
<td>LIMITED VOLUME FOR PROCUREMENT</td>
<td>ACCESS, VOLUME, LOCATION, PROVIDERS</td>
<td>LIMITATION</td>
<td>ENVIRONMENTAL ISSUES</td>
</tr>
<tr>
<td>ACCES AND DISTRIBUTION</td>
<td>NEW / EXIST. STAKEHOLDERS (STORAGE/ISTOCK)</td>
<td>P&amp;D COST, STORING COMPETITION (OH &amp; SUBSTITUTES)</td>
<td>ACCESS, TRANSPARENCY (DECLARATION)</td>
<td>ENVIRONMENTAL ISSUES</td>
</tr>
<tr>
<td>TRANSFORMATION FINAL PRODUCT</td>
<td>OPTIMIZING/ INDUSTRIALIZATION</td>
<td>PROCESSES, DISCOUNTS</td>
<td>PROCESSES, DESIGNED FOR MAINTENANCE</td>
<td>ENVIRONMENTAL ISSUES</td>
</tr>
<tr>
<td>SECOND LIFE START (Savings)</td>
<td>TRANSFORMATION OF A NEW PRODUCT</td>
<td>RESIDUAL VALUE</td>
<td>PROCESSES, DESIGNED FOR DISASSEMBLY</td>
<td>ENVIRONMENTAL ISSUES</td>
</tr>
<tr>
<td>SAVING RAW MATERIALS/ Fossil Fuels</td>
<td>PUBL/PRIVATE &quot;INSURANCE&quot;</td>
<td>PROCESSES, MARKET/SALES OPPORTUNITIES</td>
<td>COMPETITION WITH NEW MATERIALS</td>
<td>ENVIRONMENTAL ISSUES</td>
</tr>
<tr>
<td>END OF VALUE</td>
<td></td>
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</tbody>
</table>

General information
Rethink and reduce

Definition: Re-thinking solutions to be mindful and reduce of resource use and waste production.

Focus: Which structures and resources / materials can be saved, and which can be continually / new resources / materials

Quality and volume

Tools: Resource and environmental mapping (LOUS, LCA etc.), market analyses (market value) and price benchmarking (new products)
Recover

**Definition:** Recover embedded energy from non-recyclable waste material where feasible - through waste-to-energy processes such as combustion and gasification.

**Focus:** Value assessment – compared to substitutable energy sources
Decreasing carbon/GHG emissions

**Tools:** Market dialogue, heat planning
Reuse, repair, refurbish, recycle

**Definition:** Different methods / levels of transformation into new use

**Focus:** Sorting (saving value), manufacturing (increasing value), storing / distribution (minimizing costs)
Substitution of natural resources and less pollution (Market push/pull)

**Tools:** Logistic, storing, value chain alignment and / or partnerships, manufacturing processes
Societal benefits

Definition: Off-market benefits (including capitalizing of non-economic values and benefit)

Focus: Local innovation, (local) job creation, encouraging market changes (pull-strategy), increasing local tax pool

Tools: Market dialogue, conscious collaboration strategy on e.g., temporary (non-profit) storage
Material meets market

**Definition:** Material value on free market (often compared with similar (new) material)

**Focus:** Market competition – how much will the customer pay extra? Market pull (access to quality and volume)

**Risk management**

**Tools:** Market analyses, storytelling
Templates

Supplier business case analysis

<table>
<thead>
<tr>
<th>Material/product (CDW/soil)</th>
<th>Crushed concrete as new aggregate material (Example)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pricing elements</td>
<td>Available capacity (assess) Ton / M³ Definition</td>
</tr>
<tr>
<td>Secondary material / product (CDW/soil) – entry price (€)</td>
<td>The entry price can be negative or positive, if a building owner does not want to capitalize the value of CDW after demolition, the entry price can be zero or be valued as a revenue for e.g., the demolition company.</td>
</tr>
<tr>
<td>Handling, transformation, and marketing costs (€)</td>
<td>Includes e.g., handling on site, transportation, transformation into high-valued recycled aggregates (labor costs), storing and marketing / sale.</td>
</tr>
<tr>
<td>Certification costs (€)</td>
<td>Includes e.g., testing and certification regarding to CEN/ETA (Building Products Regulation EPC Environmental Product Declaration)</td>
</tr>
<tr>
<td>Investments (€)</td>
<td>Includes initial investments in equipment, buildings, and land. If CDW/soil are stored by e.g., a client, the investment cost will be lower in the specific (project based) business case.</td>
</tr>
<tr>
<td>Return of investment (€)</td>
<td>Typically estimated business income e.g., for re-investment</td>
</tr>
<tr>
<td>Secondary (CDW/soil) – exit (market) price (€)</td>
<td></td>
</tr>
<tr>
<td>New material / product (€)</td>
<td>Comparable market prices – it might affect the market price in terms of competition</td>
</tr>
</tbody>
</table>

Client/procurer business case analysis

<table>
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<tr>
<th>Material/product (LLW/soil)</th>
<th>Crushed concrete as new aggregate material (Example)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs, revenues, and capitalized benefits</td>
<td>Accessible capacity (assess) Ton / M³</td>
</tr>
<tr>
<td>Needed (additional) capacity (Ton / M³</td>
<td>Definitions</td>
</tr>
<tr>
<td>Economic impact (€)</td>
<td>Charges, local income taxes from new jobs, local corporate and sales taxes (perhaps capitalized branding)</td>
</tr>
<tr>
<td>Environmental impact (€ or capitalized non-economic benefits)</td>
<td>Includes capitalized benefits as saved virgin resources, saved CO₂ emissions (tCO₂), saves energy, charges (public benefit) etc.</td>
</tr>
<tr>
<td>Social impact (€ or capitalized non-economic benefits)</td>
<td>Includes e.g., saved cost by socio-economic activities</td>
</tr>
<tr>
<td>Other impacts or benefits (€)</td>
<td>E.g., valued reuse or recycling of own CDW and / or soil, temporary storing</td>
</tr>
<tr>
<td>Calculated risk cost (€)</td>
<td>E.g., legal consultancy, insurance</td>
</tr>
<tr>
<td>Offered market price (€)</td>
<td>Includes all capacity, transformation, marketing costs plus sales taxes</td>
</tr>
<tr>
<td>Offered market price for new material (€)</td>
<td>For comparison</td>
</tr>
</tbody>
</table>

¹ When the capacity of CDW/soil is too small for the whole enterprise / project, and it is necessary to add with new (conventional) materials / products, based on virgin resources.
Questions

- Is the model understandable and does the model reflect the main business case issues?
- Do you have access to similar simple model who has been used and has succeeded?
- Do you see some weaknesses in the model which we should be aware of in the further test process?

Thank you for listening and for your feedback!
Value creation (market drivers)
Price markers (supply chain)

**General information**

- **Demands (e.g., public procurement)**
- **Activation of natural resources**
- **Access and distribution**
- **Transformation of final product**
- **Second life (start saving)**
- **Transformation of a new product**
- **Savings way materials/ FOSSIL FUELS**
- **End of value**

**Principle 1:** Pressure and enhance natural capital

- **Circular design**
- **Mining materials manufacturing**
- **Building materials**
- **Construction**
- **Servicing life**
- **Demolition and collection**
- **Energy recovery**
- **Landfill**

**Principle 2:** Optimize resource yields

- **Reusing/ refurbishing/ recycling**
- **Revalue/ redistribute**
- **Maintain/ repair**

**Principle 3:** Foster system effectiveness

**Free market**

- **Competition (prices, (new) materials**
- **Access, volume, location, providers**
- **PM/ cost/ storing/ competition (CH + Substitutes)**

**Regulation**

- **Target for fractions/ materials**
- **Limitation (e.g., raw materials)**
- **Environmental issues**
- **Process designed for maintenance?**
- **Process designed for disassembly?**
- **Processes, designing opportunities, risks**
- **Processes, new materials, opportunities, risks**
- **Compensation with new materials**
- **Screening (material passport): processes, etc.**
- **Building code regulation**
- **Waste taxes**

**Losses to be minimized**
Price influencers (customers etc.)