CESME Circular Economy Tool for companies

CESME Circular Economy Tool

- Consists of five steps, several tools and templates and one additional step
- Can be tailored to the company's needs and time budget
- The materials package contains
  - A Word document that contains background information, instructions on how to proceed, tools and a Reading Materials section that contains additional information and materials
  - A PowerPoint presentation intended especially for the facilitator, contains templates and materials that support the work (such as company case studies)
  - Empty templates in PowerPoint format that can be used in the company
- Qualitative assessment method

CESME
Interreg Europe

Interreg Europe
European Union | European Regional Development Fund

Why use the CESME Circular Economy Tool?

The purpose of the tool is to help companies to:

- understand value creation in circular economy (including the generated social and environmental value)
- assess the business opportunities enabled by circular economy
- take enthusiastic action in the creation of a new circular economy model.

The tool is primarily intended for a third party (such as a consultant or other facilitator) who will use the tool in collaboration with companies.

The tool has been developed especially with SMEs in mind.

CESME
Interreg Europe

Interreg Europe
European Union | European Regional Development Fund

1. Introduction to circular economy: How does circular economy create value and what business opportunities does it enable?

2. What kind of opportunities does circular economy offer your company? Brainstorming and prioritisation of circular economy business models

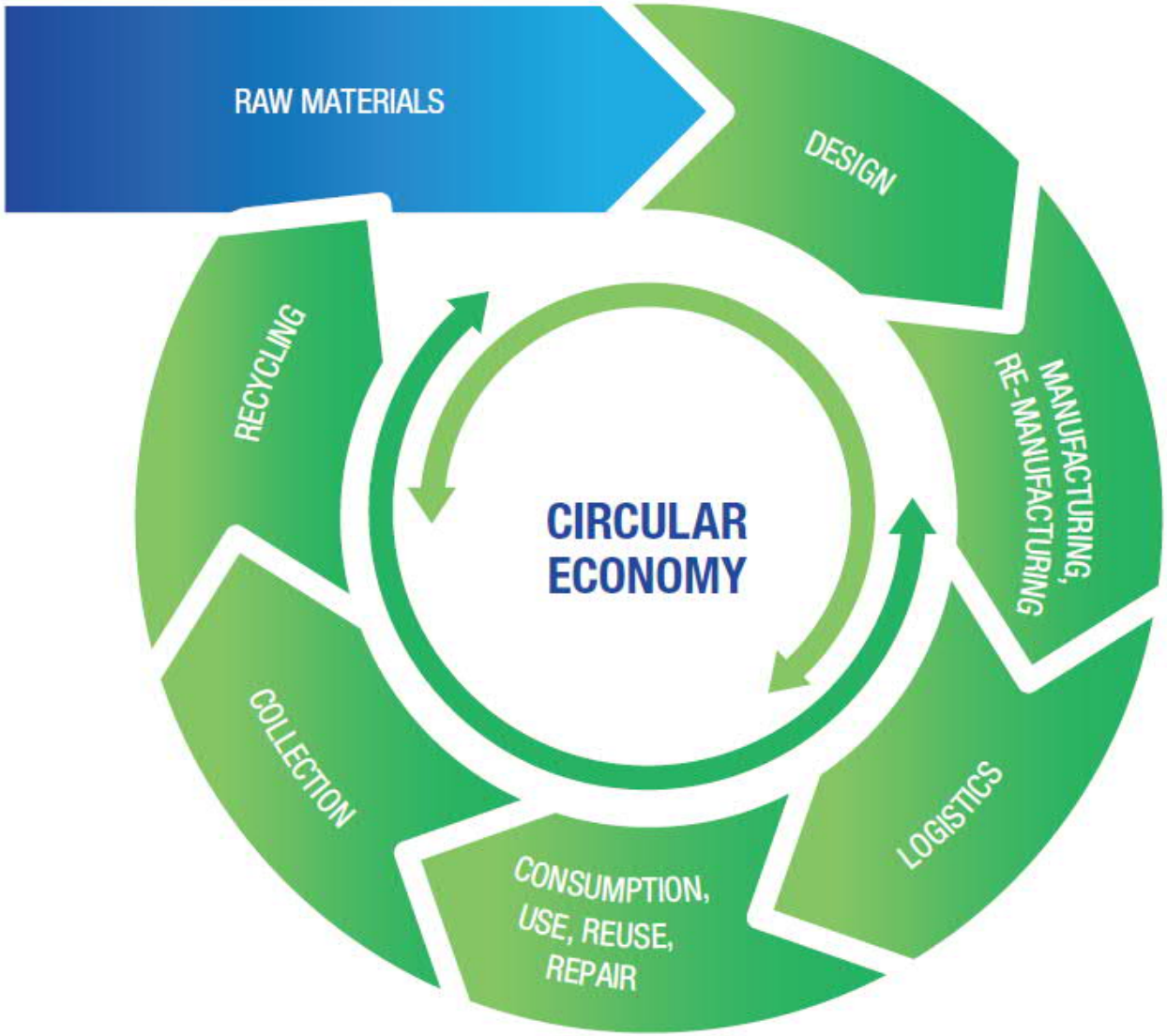
3. What are the primary stakeholders and networks?

4. How to use the value generated to assess the impact to stakeholders, the society and the environment?

5. Summary of the potential and profitability of the idea

6. Planning the continuation independently in the company: Putting an idea to practice – how can the idea be tested in an agile way?

1. Introduction to circular economy: How does circular economy create value and what business opportunities does it enable?


RAW MATERIALS
DESIGN
MANUFACTURING, RE-MANUFACTURING
LOGISTICS
CONSUMPTION, USE, REUSE, REPAIR
COLLECTION
RECYCLING
CIRCULAR ECONOMY

Inefficiency in production chains and life cycles – unused potential!

Underutilisation of capacity	58% of the companies reported that their products are idle over 20% of the time – and over half of these companies report that their products are idle at least 50% of the time.	The time during which the products are available is not utilised efficiently. Underutilisation might occur for example due to seasonal variation of opening times of companies.
Lost value at the end of the life cycle	38% of the companies recycle over 80% of the waste generated in production. 38% of the respondents state that their recycling rate is less than 10%.	A large proportion of production waste is recycled, and production generates little waste in general. There is still room for improvement!
	87% of the companies that have a product return programme report that less than 5% of the products are recycled.	Many companies already recycle a large share of their products – and some none at all.

Why circular economy and sustainability? – 10 benefits for a company

1. Save your company's money, its customers' money and subcontractors' money
2. Better utilisation of the value of the products and resources you manufacture
3. Find new markets and customers
4. Build customer loyalty
5. Satisfy customers' needs and expectations better
6. Improve safety and price stability in the distribution chain
7. Be an interesting employer that attracts commitment
8. Build reputation as a pioneer and as an innovative company
9. Act in compliance with regulations and predict the regulations
10. Offer better value to investors and reduce their risk

Special characteristics of South Ostrobothnia in circular economy

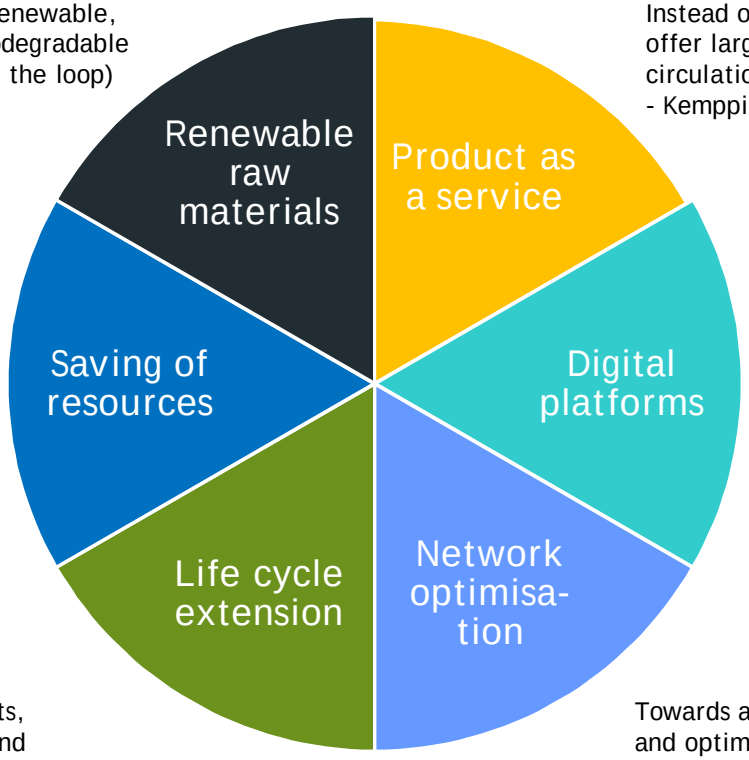
Actions identified in the circular economy action plan:

- Making circular economy known and developing the associated networks and databases
- Development of circular economy competence, education and innovation (of which one of the identified actions was the testing and development of the CESME Circular Economy Tool in South Ostrobothnia)
- Development of selected segment-specific actions
  - Bioenergy segment (such as the needs to develop the utilisation of agricultural and forestry biomasses)
  - Developing the practices of wood product segment (such as new business models and practices and a novel collaboration with companies to help them innovate and become international)
  - Collection of plastic and developing its reuse
  - Collection of textiles and developing their reuse

2. What kind of opportunities does circular economy offer your company? Brainstorming and prioritisation of circular economy business models

Based on the use of renewable, recyclable and/or biodegradable materials (minimising the loop)
- UPM

Instead of ownership, offer the right to use; offer larger entities (slowing down the circulation)
- Kemppi, Xerox



Waste from the previous step is raw material for the next one: industrial symbioses, cradle-to-cradle, closed loop systems (closing the loop)
- ST1, Nike, Globe Hope, Kohiwood, Lankava, Lennol, Altia

Digital platforms that enable resource savings and sharing (slowing down the circulation, minimising the loop, closing the loop)
- AirBnB, Resq-Club, Kiertonet

Updating products, remanufacture and reproductisation, requires modularity (slowing down the circulation)
- Interface, Valtra

Towards a closed loop by traceability and optimisation, IoT plays a central part in this (closing and minimising the loop)
- WalMart, Konecranes

Company case studies – extending the life cycle

- Kutepa Rubber Service Oy
  - Retreading and repair service for all heavy machinery tyres
  - The company can fix almost all kinds of damage – solid rubber tyres can be retreaded up to 10 times

- Emmy.fi
  - A service for selling and buying used clothing
  - For each piece of clothing, Emmy charges a provision and transport costs, and pays the remaining amount to the seller
  - Makes it easier to recycle used clothing → extends the lifespan of clothing → lower environmental impact

Company case studies – extending the life cycle

- The Valtra Reman concept: remanufactured gearboxes and engines
  - A product that corresponds to a new one: like new, quality inspected, latest updates, warranty
  - A significant part of Valtra's business and very profitable
  - A deposit ensures that the used product is returned to Valtra
- Benefits
  - The product life cycle is extended, while energy and materials are saved – in the case of gearboxes, the energy savings are 85% compared to the manufacture of a new product
  - Remanufactured gearboxes are a good and quick alternative to gearbox repairs that can be cumbersome
  - The customer can purchase a gearbox/engine at a lower price and with the same quality guarantee than a new one – the price of a gearbox is approximately 60% lower than that of a new one, the price of an AGCO engine is 20-40% lower
  - Close collaboration between mechanics and product development helps to improve the products
  - The benefits for resellers and maintenance services is an easy-to-schedule and rapid repair

Business case studies – saving of resources

- Lankava
  - Manufactures rag rug yarns from recycled textiles by hand and by industrial cutting
  - The lifespan of textiles increases and the yarns can be used in a diverse range of crafts

- Lennol
  - Lennol products include seat cushions, covers, pillows, mattresses and acoustic panels that contain recycled materials

Company case studies – Digital platforms

- ResQ Club
  - A marketplace for restaurants and cafés for selling food that would otherwise be lost
  - ResQ Club charges a commission fee from the price of the portion and pays the rest of the price to the restaurant
  - Reduces food loss, saves the environment
  - An easy channel for restaurants to make money out of food that would otherwise become lost, reduce waste processing costs and gain visibility
  - The customers can purchase restaurant-class food at a lower price

- Kiertoa Oy
  - Kiertonet.fi is an online auction in which public organisations can sell their unnecessary assets
  - An extended lifespan of public property and thus a smaller carbon footprint
  - This way, property procured by taxes can be utilised efficiently

Company case studies – product as a service

- Vaatelainaamo Tanttu
  - By paying monthly fee, a consumer can borrow a certain amount of clothing per month
  - More variation for the consumer's wardrobe, an outfit for special occasions and a higher utilisation rate of clothes → lower environmental effects
- Martela
  - Offers a comprehensive concept that cover the entire life cycle of an office. This makes the management of office spaces more efficient and helps Martela's customers to act in a sustainable and environmentally friendly way. When the overall scheme is managed and future needs can be predicted well in advance, the operating costs of premises can be reduced.

VAATELAINAAMO TANTTU

Brainstorming about future opportunities and potential

	Present	Future opportunities	Commercial potential
Product as a service	Does the company offer services at the moment? Which products are the services associated with?	Which products could be offered as a service? Could the services offer more extensive solutions for the customers' needs?	What other financial opportunities could the change bring? How could the change be implemented profitably?
Life cycle extension	How is life cycle extension taken into account/enabled? Which products are associated with this and which are not?	Which of the products could be updated or remanufactured in the future? Which products could be made modular?	What would their business potential be?
Network optimisation	Is the order-/delivery network collaborating to close the loop? Are the networks efficient? How are streams monitored?	What kind of co-operation would be possible? Which partners or other actors in the network/ecosystem would be the most potential ones for new collaboration?	What kind of savings could be obtained via optimisation of the network?
Digital platforms	What kind of digital platforms are utilised and how? Are some resources shared via platforms?	What kind of platforms could be utilised and with whom? How will this support other business?	What business potential do the platforms have?
Saving of resources	How efficiently are resources used? What material streams exist and what sidestreams are generated? Are they being utilised? What is the utilisation rate of devices and equipment?	How to utilise resources most effectively? Could resources be shared with other parties? Could resources be saved?	What kind of savings could be attained?
Renewable raw materials	Are we using recycled materials?	Where could be potentially use recycled materials?	Could materials be procured affordably (for example from the sidestream)?

Template 1: Brainstorming about future opportunities and potential

	Present	Future opportunities	Commercial potential
Product as a service			
Life cycle extension			
Network optimisation			
Digital platforms			
Saving of resources			
Renewable raw materials			

Prioritisation of ideas

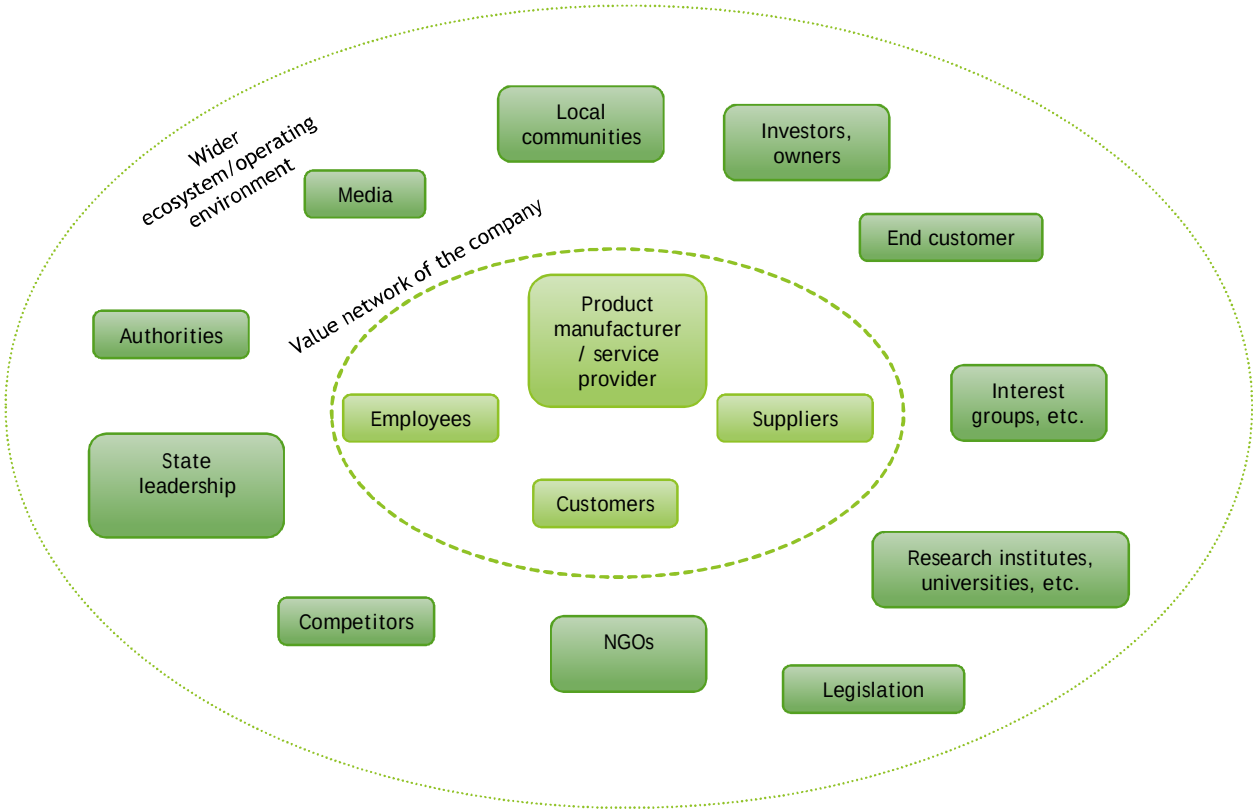
	Business opportunity 1
PLEASE SPECIFY The offering and its value to the customers, environment and society	Describe the idea in more detail: what does it entail, why is it a good idea, what does it solve and how does it differ from other ideas
TO WHOM The market	Who benefits from the idea, who would be ready to pay for it?
HOW Key resources, competencies, partners	How can the idea be implemented in practice?
REVENUE GENERATION MODEL How the idea is monetised in practice	What do we sell, what costs and expenses can be expected and how can the idea be turned into profitable business?
Which business opportunity has the most potential? What benefits would it generate to our business?	

Template 2: Prioritisation of ideas

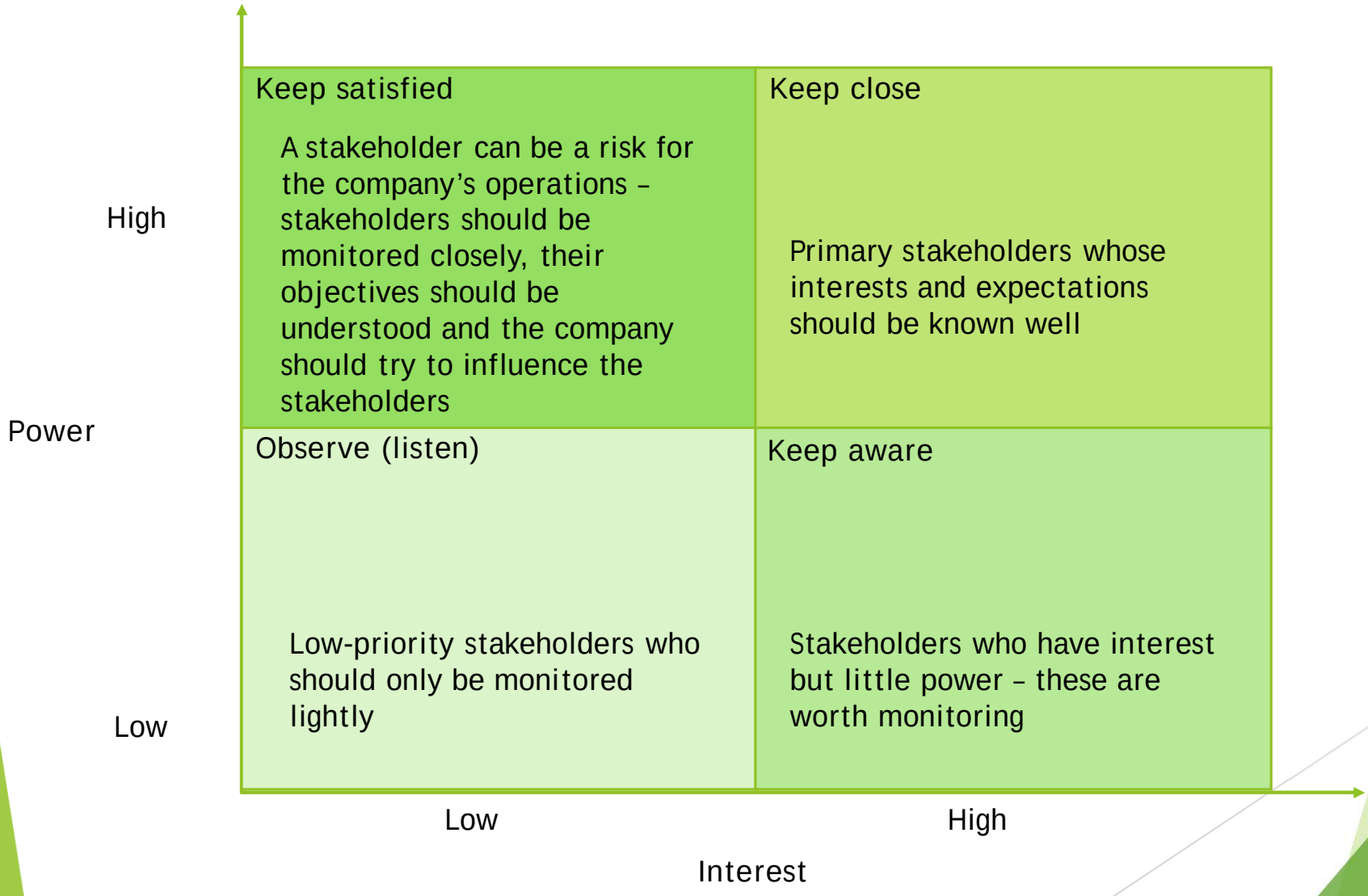
	Business opportunity 1	Business opportunity 2	Business opportunity 3
PLEASE SPECIFY offering and its value to the customers, environment and society			
TO WHOM the market			
HOW key resources, competencies, partners			
REVENUE GENERATION MODEL how the idea is monetised in practice			
Which business opportunity has the most potential? What benefits would it generate to our business?			

3. What are the primary stakeholders and networks?

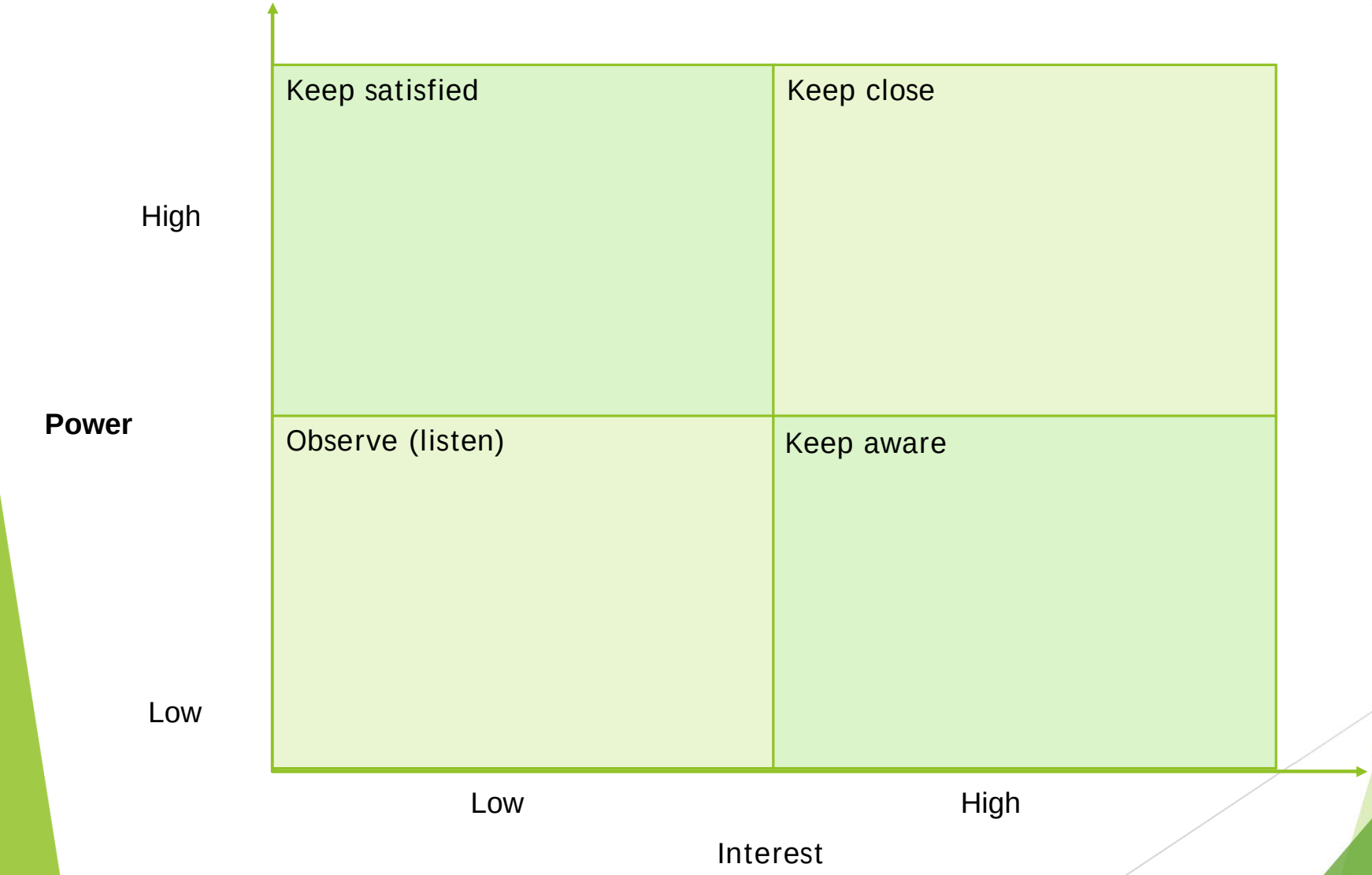
Template 3: Identifying stakeholders and actors



Assessment and prioritisation of stakeholders



Template 4: Assessment and prioritisation of stakeholders



Template 5: Review of values experienced by stakeholders

Key stakeholders/actors ('Keep close')	Value experienced by actor (positive/neutral/negative)	Opportunities, actions

4. How to use the value generated to assess the impact to stakeholders, the society and the environment?

Recognised environmental benefits

Wood stone

- using recycled material reduces the consumption of virgin natural resources and thus reduces the emissions of cement manufacture
- when wood is used in a long-lifespan product, carbon stays bound to the wood for a long time, mitigating climate change
- the lightness of the product reduces emissions from transport

Tool shed "Liiteri"

- sharing tools reduces the manufacture of new tools and thereby the consumption of virgin natural resources and emissions from manufacture
- shared and regularly maintained high-quality products increase the lifespan of tools
- container as a distribution point is energy-efficient and reusable

Pay-per-use washing machine

- the high quality, long lifespan and free maintenance of washing machines reduce the manufacture of new washing machines
- energy-efficient machines help to mitigate climate change
- a digital display that instructs the user helps in the sustainable use of the machine
- decommissioned machines are recycled efficiently

Making invisible value visible – user-centric business models in the developing circular economy (AARRE)
VTT, SYKE, HY - http://www.syke.fi/hankkeet/aarre
Manninen et. al. 2017

Template 6: Existing/target environmental effects

- Minimisation of the use of raw materials, environmentally friendly materials

  Further specifications: _____

- Minimisation of energy consumption (organisation's own and external)

  _____

- Minimisation of water use (organisation's own and external)

  _____

- Replacing non-renewable resources with renewable ones

  _____

- Replacing primary materials with recycled materials

  _____

- Minimisation of the use of hazardous materials

  _____

- Emissions reductions over the life cycle (greenhouse gas emissions and other significant emissions)

  _____

- Product life cycle extension

  _____

- Minimisation of waste generation

  _____

- Degree of recyclability

  _____

- Designing products to be durable and easy to repair

  _____

- Others

  _____

Template 7: Concretisation of goals

Environmental friendliness goal	Metric/metrics	Potential economic benefits	Other direct or indirect benefits
For example, 20% reduction in mixed waste	*Kilograms of mixed waste taken to a landfill*	*Savings in waste disposal costs*	Image benefits

Template 8: Existing/sought after societal/social effects

- Employee satisfaction and wellbeing

  Further specifications:

_____

- Minimisation of work injuries and sickness absences

  _____

- Employee turnover

  _____

- Customer satisfaction

  _____

- Emphasis on training and education

  _____

- Creating new jobs

  _____

- Ensuring equality

  _____

- Participating in the development of the community's wellbeing

  _____

- Others

  _____

Template 9: Existing/sought after societal/social effects

Goal for societal/social impacts	Metric/metrics	Potential economic benefits	Other direct or indirect benefits
For example, reduction of sickness absences by 20%	*Sickness absences*	*Savings in deputies/better work efficiency*	*Increased employee satisfaction*

5. Summary of the potential and profitability of the idea

Assessment of operational change: remanufacturing as an example

Change in a business process	Investments	Other expenses/costs	Savings	Assessment of risks and uncertainties (1 lowest – 5 highest)
Repair operations	More premises and supplies for reception and repair	More employees, potential training	Cost of materials	
Warehousing of parts/returned products	Additional premises	Labour costs		
Companies that perform maintenance offer remanufactured devices	Education	Might cannibalise the sales of new motors		
Logistics		Subcontracting costs		

Template 10: Assessment of operational change

Change in a business process	Investments	Other expenses/costs	Savings	Assessment of risks and uncertainties (1 lowest – 5 highest)

Template 11: Crystallising the idea – main benefits

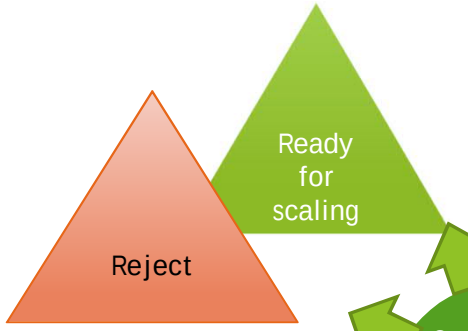
Main benefits of the business idea		
For the company	For society and stakeholders	For the environment
1.	1.	1.
2.	2.	2.
3.	3.	3.

Template 12: Crystallising the idea – main challenges

Main challenges of the business idea		
For the company	For society and stakeholders	For the environment
1.	1.	1.
2.	2.	2.
3.	3.	3.

6. Planning the continuation independently in the company: Putting an idea to practice – how can the idea be tested in an agile way?

Rapid business model experimentation

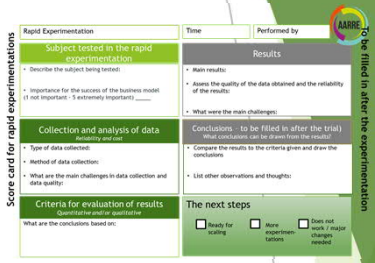


- Reviewing lessons learned
- Decision on how to continue

Conclusions and a decision on the next steps

Planning of a rapid experimen-tation

- Selection of an idea
- Planning and scheduling
- Using a score card



Practical arrange-ments

- Partnerships
- Resources
- Communications
- Roles
- Schedules

Implemen-tation

- Implementation and data collection

Data analysis

- Review and analysis of materials
- Assessment of the implementation of the entire experimentation

Score card for rapid experimentations

Rapid Experimentation	Time	Performed by

Subject tested in the rapid experimentation

- Describe the subject being tested:
- Importance for the success of the business model (1 not important – 5 extremely important) _____

Collection and analysis of data

Reliability and cost

- Type of data collected:
- Method of data collection:
- What are the main challenges in data collection and data quality:

Criteria for evaluation of results

Quantitative and/or qualitative

What are the conclusions based on:

Results

- Main results:
- Assess the quality of the data obtained and the reliability of the results:
- What were the main challenges:

Conclusions – to be filled in after the experimentation

What conclusions can be drawn from the results?

- Compare the results to the criteria given and draw the conclusions
- List other observations and thoughts:

The next steps

☐ Ready for scaling

☐ More experimen-tations

☐ Does not work / major changes needed

To be filled in after the experimentation