
Sustainable Entrepreneurship teaching tools in practice

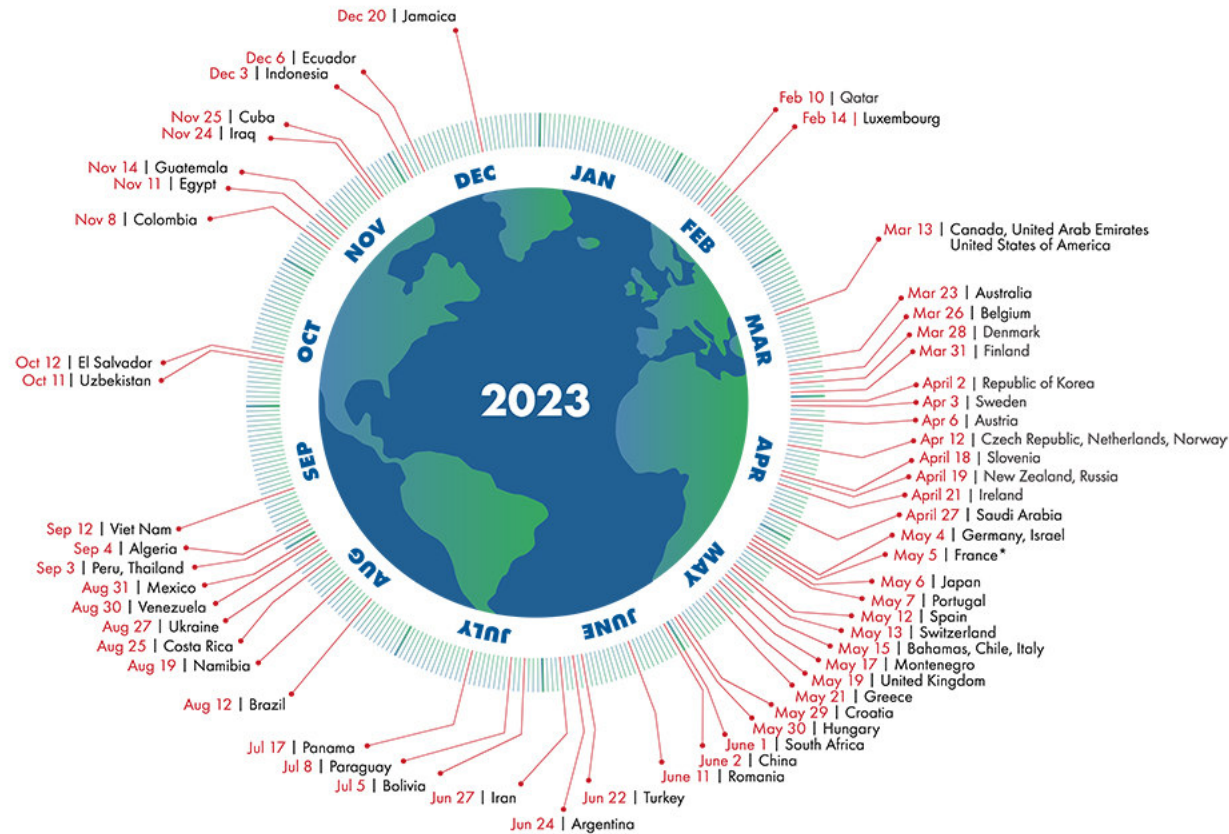
-Sharing thoughts from Aachen, Gemany-

Prof. Dr. Constanze Chwallek & Lara Nawrath

We have to take Action

Country Overshoot Days 2023

When would Earth Overshoot Day land if the world's population lived like...



For a full list of countries, visit overshootday.org/country-overshoot-days.
*French Overshoot Day based on nowcasted data. See overshootday.org/france.

Source: National Footprint and Biocapacity Accounts, 2022 Edition
data.footprintnetwork.org



Different Approachs and Mindsets

Public Sector

Manager of well-established Companies

Re-election oriented

Gailmard et al. (2012): ...neglect investing in the future

High Bureaucracy

O'Toole Jr., (2011): ...lack of innovation and slow progress

Risk Aversion

Gailmard et al. (2012): ...avoiding failure

Lack of Competition

Moynihan (2013): ...lack of incentive for improvement

Entrepreneurs

Market Opportunities

Wiklund (1998) : ..taking advantage of opportunity

Out of the Box Thinking

Stevenson et al. (1990) ...without regard to the resources they currently control

Facing Risk

Zimmerer et al. (2005): ..face of risk and uncertainty

Innovation (Disruption)

Schumpeter 1934: .."creative destruction"

Entrepreneurship is very well suited to meet the major Challenges



BUT: How can we turn Entrepreneurship to Sustainable Entrepreneurship in our Teaching?

Two Approaches:



How can the topic of **Sustainability** be taken into Account when developing Business Models? (Constanze)



How can **Sustainability** be the Core of new Business Ideas? (Lara)

BMC & Sustainable Business Models

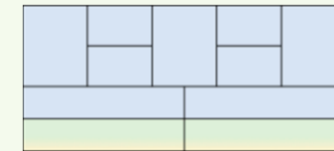


How can the topic of Sustainability be taken into Account when Developing Business Models?

Overview of 3 selected approaches

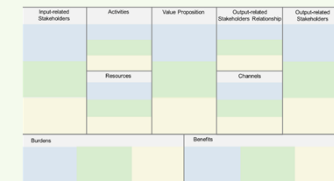
1

Extended model of the Business Model Canvas with social and ecological Costs and Gains
Osterwalder & Pigneur (2011)



2

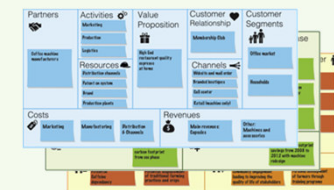
Business Model Canvas for Sustainability
Cardeal et al. (2020)



3

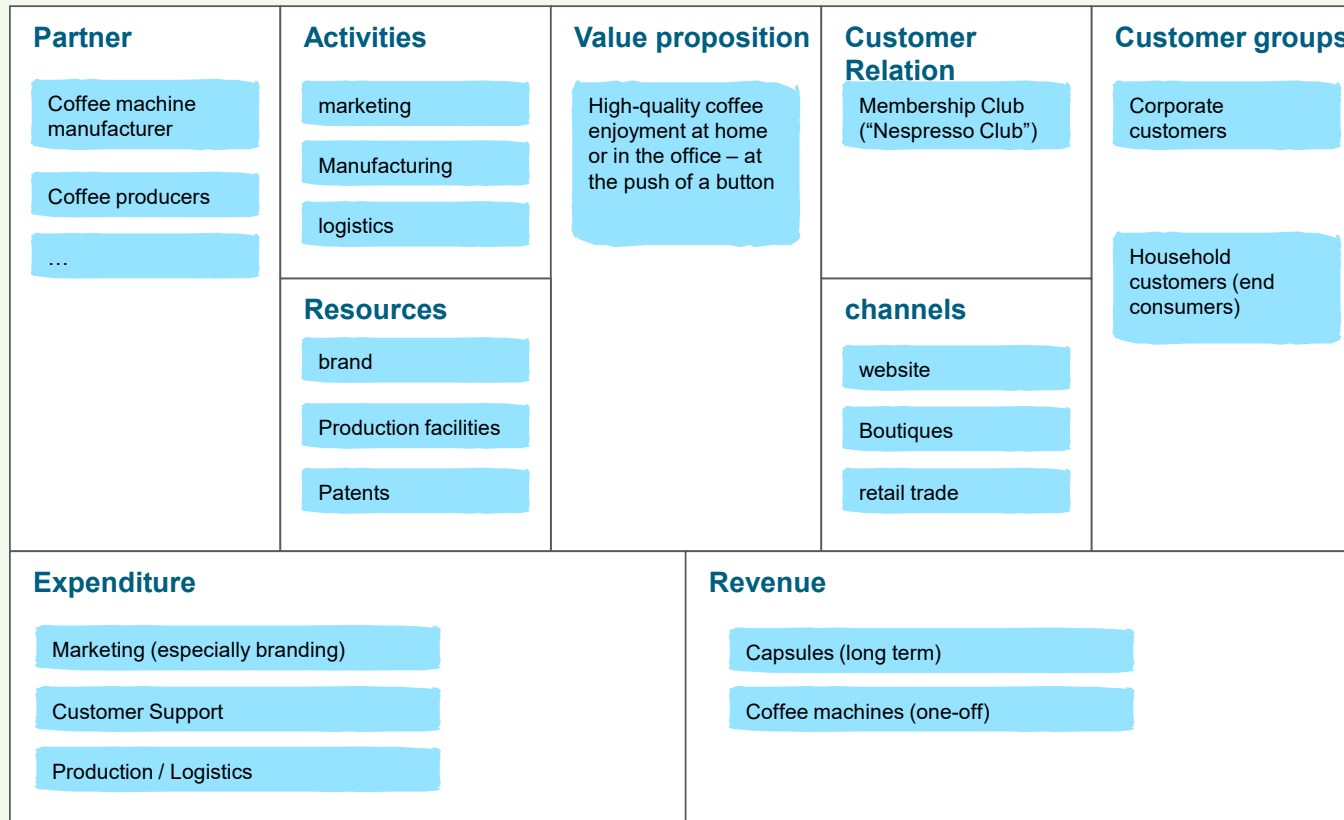
3-layer Business Model Canvas with Consideration of ecological and social Impacts
Joyce & Paquin (2016)

More information on the following pages



- Continuation-

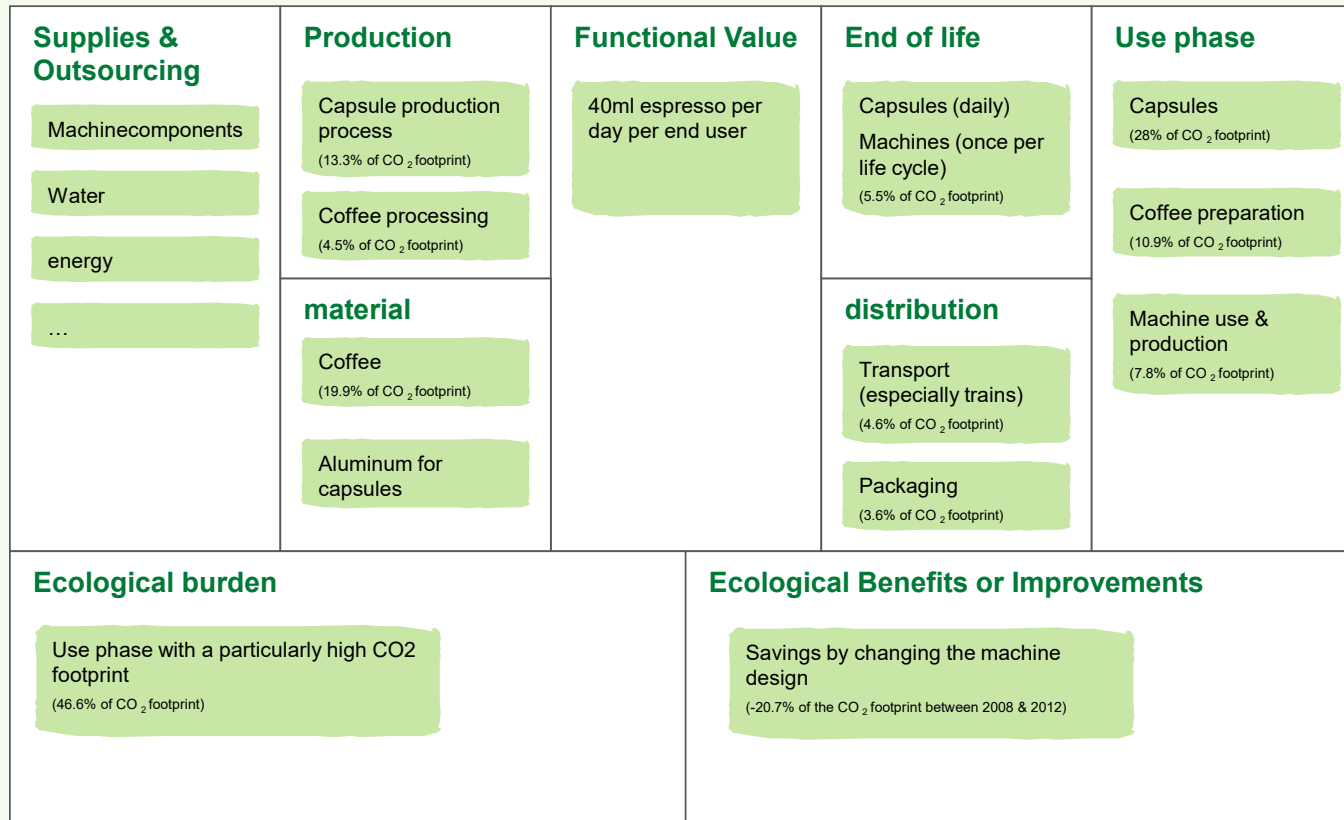
Economic Life Cycle Business Model Canvas



Source: Joyce, A., Paquin, R. (2016). The triple layered business model canvas: A tool to design more sustainable business models. Journal of Cleaner Production, Vol. 135 1474-1486

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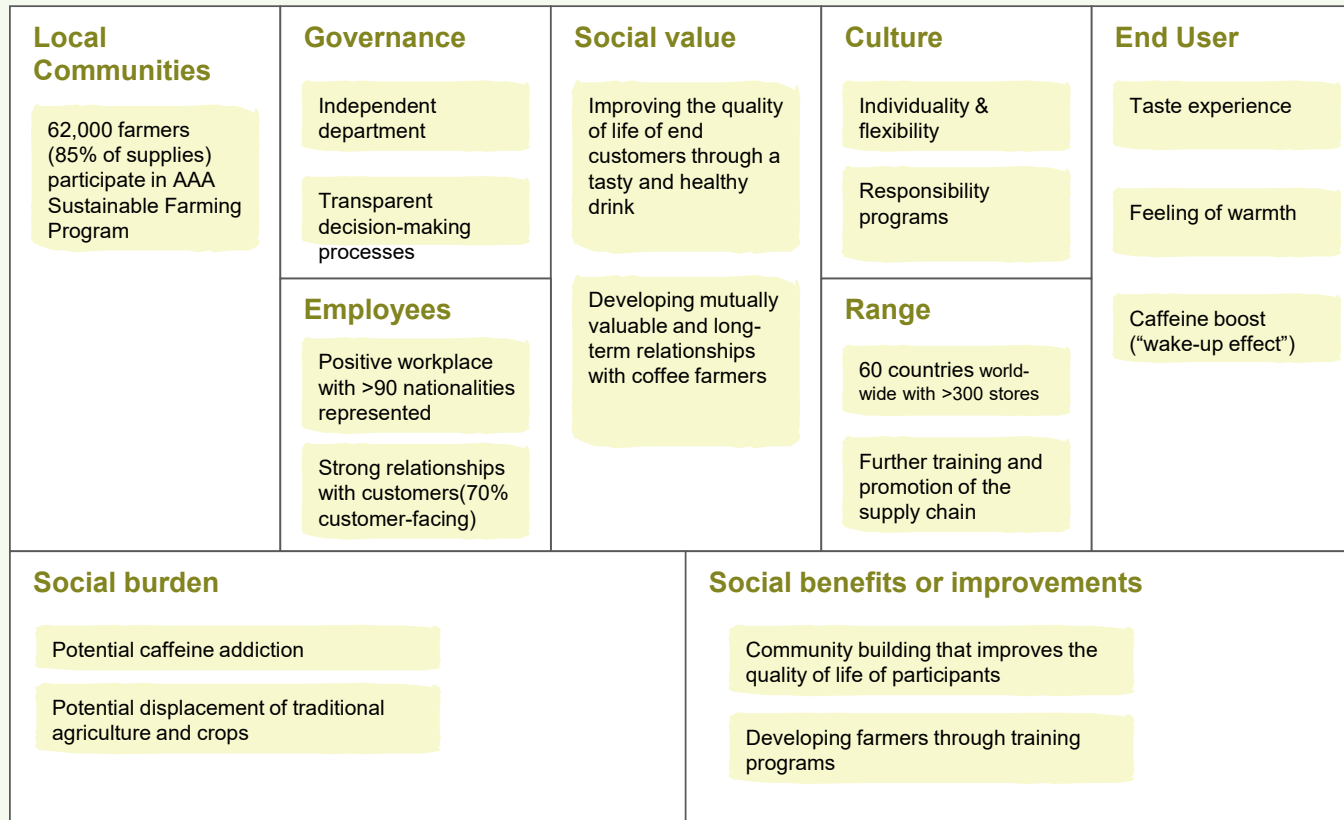
Ecological Life Cycle Business Model Canvas



Source: Joyce, A., Paquin, R. (2016). The triple layered business model canvas: A tool to design more sustainable business models. Journal of Cleaner Production, Vol. 135 1474-1486

-Continuation-

Social Stakeholders Business Model Canvas



Source: Joyce, A., Paquin, R. (2016). The triple layered business model canvas: A tool to design more sustainable business models. Journal of Cleaner Production, Vol. 135 1474-1486

Two Approaches:



How can the topic of **Sustainability** be taken into account when developing Business Models?



How can **Sustainability** be the Core of new Business Ideas?

Summer School „Sustainable Entrepreneurship“

- ▶ Target group: international students from any university
- ▶ Duration: one week during lecture-free period in summer
- ▶ Goal: students should learn about the topic of sustainable entrepreneurship and how to build a sustainable startup
- ▶ Teamwork: participants work in teams that are as interdisciplinary as possible

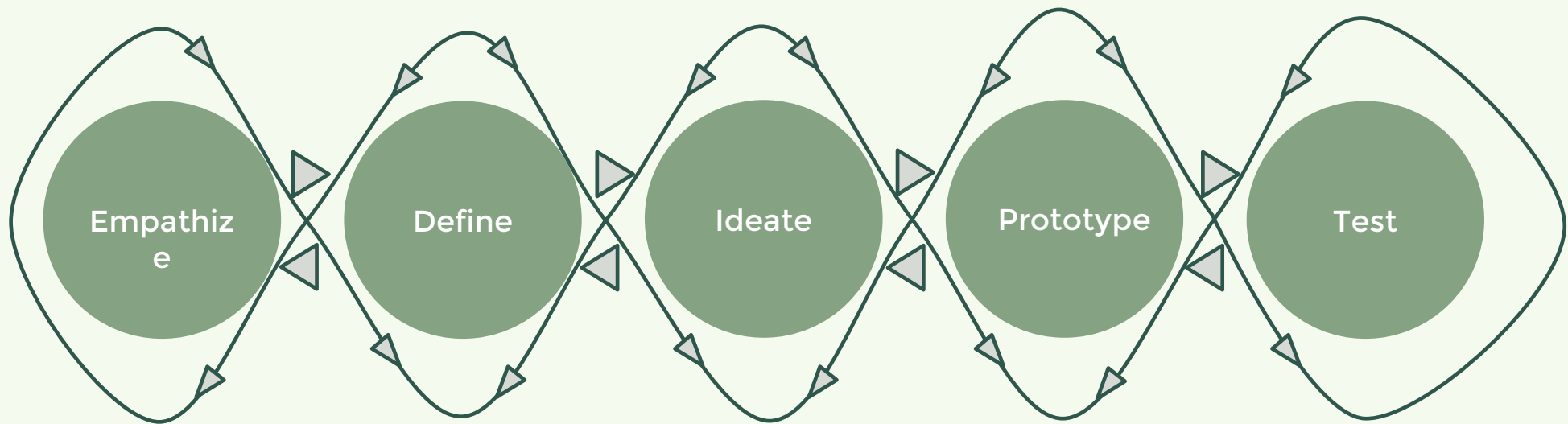
Summer School „Sustainable Entrepreneurship“ - Timetable

	Monday	Tuesday	Wednesday	Thursday	Friday	
9-10		Design Thinking & Ideation Workshop	Exchange of Results	3D Printing and Lasercutter Workshop	Exchange of Results	
10-11	Welcome		Pitch Training		Working Phase	Working Phase
11-12	Get to know each other					
12-13	Lunch	Lunch	Lunch	Lunch	Lunch	
13-14	Introduction Sustainable	Interview Guide	Exchange with Experts	Working Phase	Finalization	
14-15	Entrepreneurship	City Rally & Interviews	Working Phase			
15-16	Problem to					
16-17	Solution Workshop				Pitches	
Evening Programme	City Tour Aachen Sustainable Entrepreneurship			BBQ		

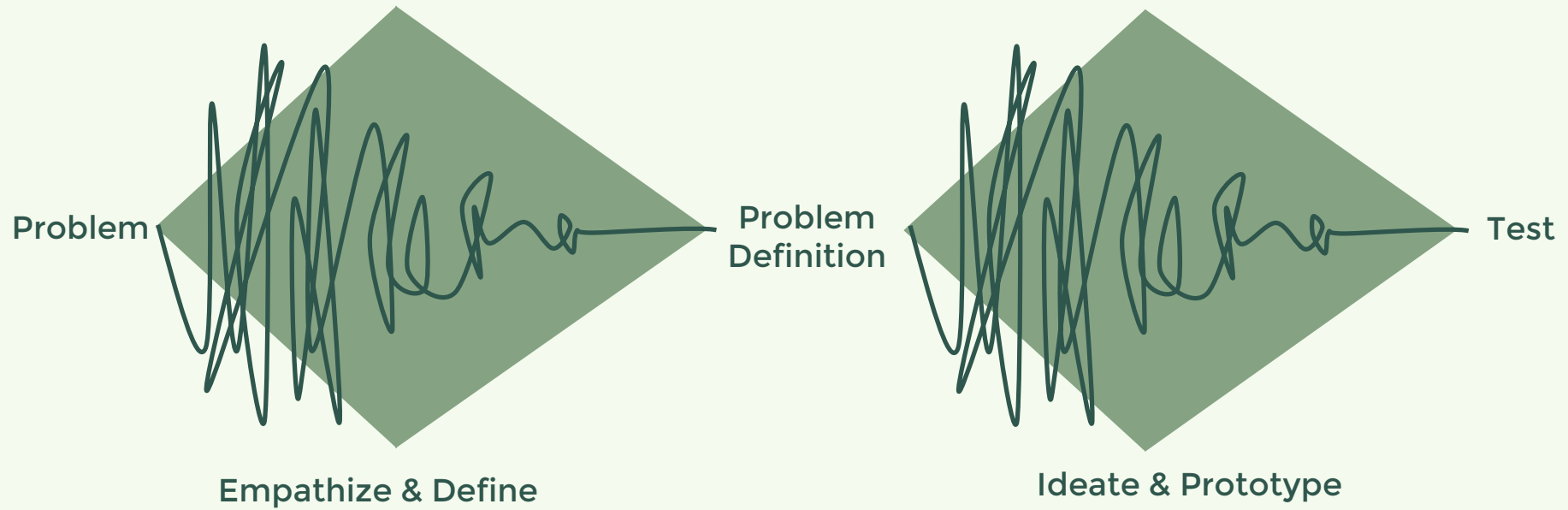
Summer School „Sustainable Entrepreneurship“ – Design Thinking method

- ▶ Method to create innovative business ideas on your solution concept
- ▶ A problem is nothing bad, it's a chance
- ▶ Focusses on creative openness, thinking out of the box and user-centered thinking
- ▶ Agile process with fixed steps and helpful models and methods

Summer School „Sustainable Entrepreneurship“ – Design Thinking method



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Summer School „Sustainable Entrepreneurship“ – Feedback and Learnings



What did you like the best?

- collaborative atmosphere where we all were able to exchange ideas
- Practical application and workshops
- The processes to understand the problem and diving deep into
- great experience of hands-on learning



What was your key learning?

- Developing concrete ideas from broad themes
- Thinking better and deeper and from different perspectives
- Building a business/start up for beginners in the simplest way as possible
- Entrepreneurship is as much about the idea as it is about the people implementing the idea

Summer School „Sustainable Entrepreneurship“ – Impressions



4.1. Mapping Business Model Alternatives

The changes in the company's business model are mapped using the BMCS illustrated in Figure 3, focusing on exploring the opportunities offered by additive manufacturing. The adoption of additive manufacturing drives changes in the value activities and consequently in the value proposition.

Input-related Stakeholders	Activities	Value Proposition	Output-related Stakeholders Relationship	Output-related Stakeholders		
<ul style="list-style-type: none"> Material suppliers Spare parts suppliers 	<ul style="list-style-type: none"> Design for AM AM of spare parts AM of spare parts (energy) Governance 	<ul style="list-style-type: none"> Potential reduction of parts weight Design freedom Lead time reduction 	<ul style="list-style-type: none"> Feedback in AM parts engineering 	<ul style="list-style-type: none"> Companies requiring maintenance for aircraft with AM parts 		
<ul style="list-style-type: none"> AM Equipment manufacturer Energy supplier 	<p>Resources</p> <ul style="list-style-type: none"> AM equipment AM know-how Raw material 	<ul style="list-style-type: none"> Deliver products that reduce environmental impact of use phase of planes 	<p>Channels</p>	<ul style="list-style-type: none"> People affected by greener planes 		
<ul style="list-style-type: none"> Society in general Local community particularly 	<ul style="list-style-type: none"> Raw material Qualified labour 	<ul style="list-style-type: none"> People skills enhancement Increase qualification level of labour force 		<ul style="list-style-type: none"> Society affected by greener planes 		
<p>Burdens</p> <ul style="list-style-type: none"> New equipment Need for specialized labor Higher raw material cost/kg 		<ul style="list-style-type: none"> New raw materials (metal powders) Energy consumption Local emissions (production) 	<ul style="list-style-type: none"> Reduction of employment in supplier and distribution Employees health 	<p>Benefits</p> <ul style="list-style-type: none"> Lower material weight per part Increase of parts value 	<ul style="list-style-type: none"> Less material waste in production Less fuel consumption in use 	<ul style="list-style-type: none"> Promotes local employment Increases qualified labour Company resilience

Figure 3. Business Model Canvas for Sustainability applied to an aircraft maintenance company (blue—economic aspects; green—environmental aspects; yellow—social aspects).

The blue color in the BMCS is used to map the traditional economic aspects of the business model. The value proposition of this business model is to offer the production of optimized and...

Entrepreneurship is very well suited to meet the major challenges

- ▶ Market Opportunities: Consumers are increasingly **demanding sustainability** and are willing to pay a premium for appropriate products and services.
- ▶ Less bureaucracy: Entrepreneurs do not need **to navigate complex political** systems and win elections. They can be more pragmatic and adaptable.
- ▶ Scaling possibilities: Entrepreneurs can scale their business **via market returns and Investors**. Market allocation principles at Customer- and Investor side)
- ▶ Driver for Disruption: push **promising new technologies** that are fostering sustainability.

BUT: how can we turn Entrepreneurship to sustainable Entrepreneurship in our teaching?