

June 29th, Milan

A ROADMAP FOR BUILDING CIRCULAR VALUE CHAINS

SPEAKER:

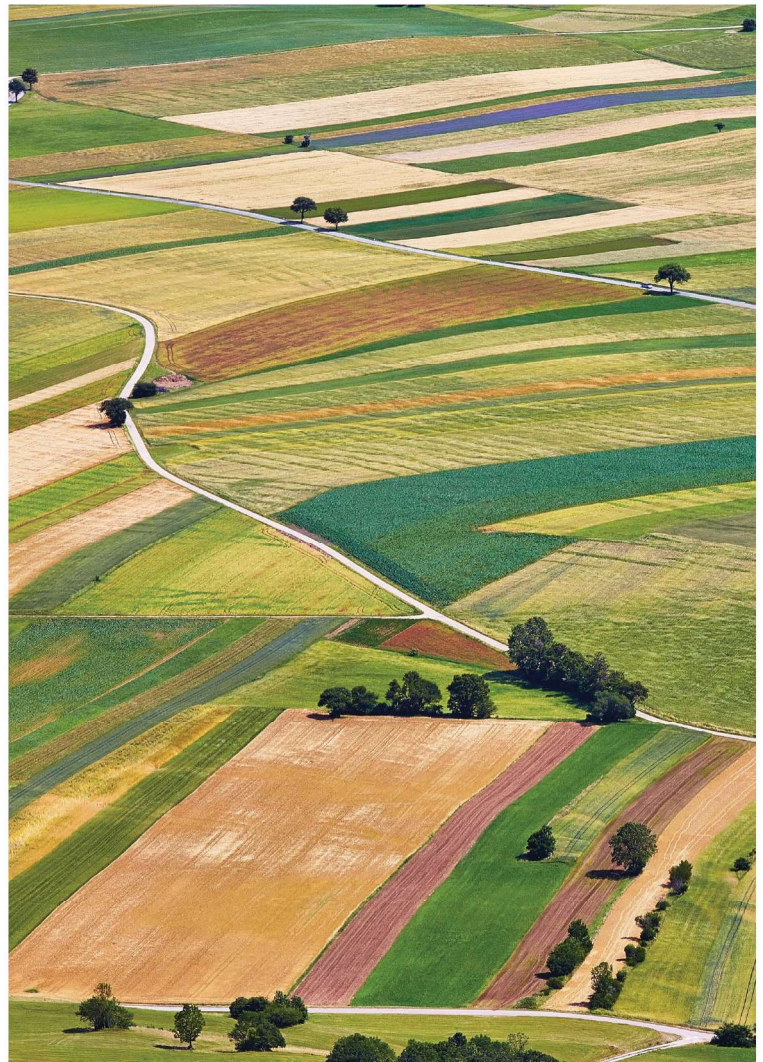
GERARD ROEMERS

Senior Consultant
METABOLIC



OUTLINE

- About Metabolic
- Systems Thinking & Circular Economy
- Walk-Through of the Roadmap
 - Value chains and stakeholder mapping
 - Collecting detailed data
 - Data analysis and visualisation
 - Defining interventions and roadmap
 - Exploring cross-regional synergies
- Recommendations & next steps after today's session;



ABOUT METABOLIC

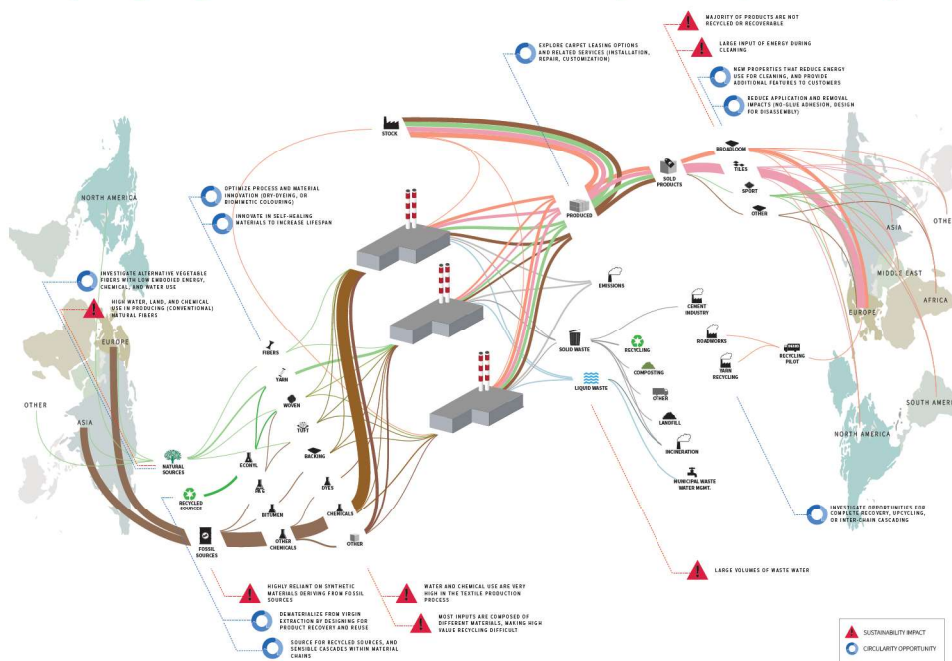
Metabolic is a consulting and venture building firm that uses systems thinking to tackle global sustainability challenges.

We provide strategies & tools, crunch data, create new technologies, build pilots, and scale up innovations.

We have an interdisciplinary team of around 25 people and offices in Amsterdam and Aruba.

SYSTEMS THINKING

Analysing regions and value chain as systems provides powerful insights



A system is:
"An interconnected set of elements that is coherently organised in a way that achieves something (function or purpose)."

Donella Meadows

Leaping into the circular economy is an important chance for EU regions



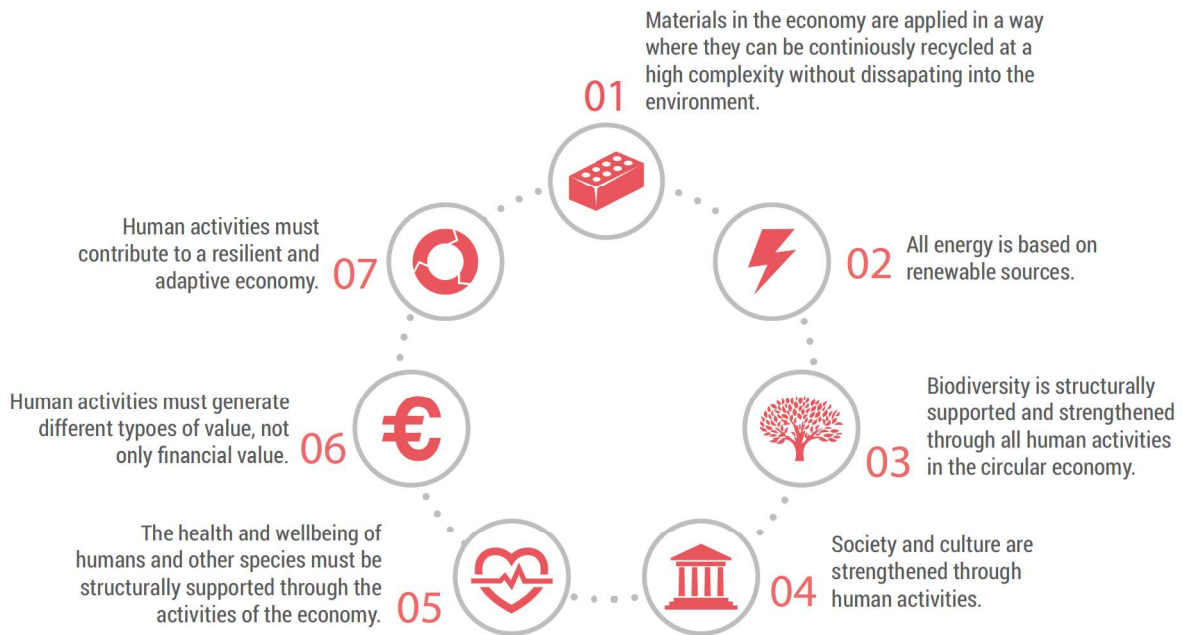
The linear economy in the mobility, food, and built environment sectors cost Europe **€7.2 trillion** every year.

*Circular economy will generate an added value of €7.3 billion euros and **54,000 jobs in Netherlands.***

Past examples confirm the potential value of SCREEN

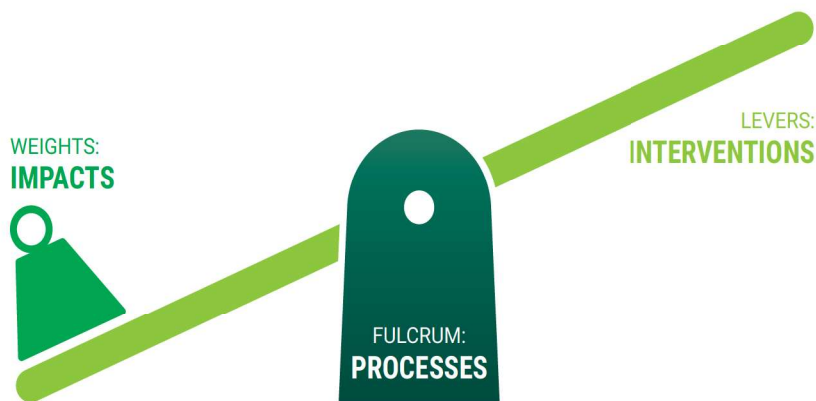
CIRCULAR ECONOMY

Is about more than material flows alone



SYSTEMS THINKING

Finding leverage to create circular value chains



01 WEIGHTS:	02 FULCRUMS:
What targeted outcomes, or impacts, of the system need to be changed most urgently?	Where in the system are processes which need to be shifted/interrupted to make these changes happen?
Step 1: Identify the largest problems or impacts, which are most relevant within the context of the situation.	Step 2: Map out the system and identify key processes based on their contribution to the problems
03 LEVERS:	
How do you shift or interrupt the processes effectively without leading to negative consequences in other parts of the system?	
Step 3: Design interventions and evaluate the feasibility and desirability of these interventions within the context of the entire system.	

THE ROADMAP AT A GLANCE

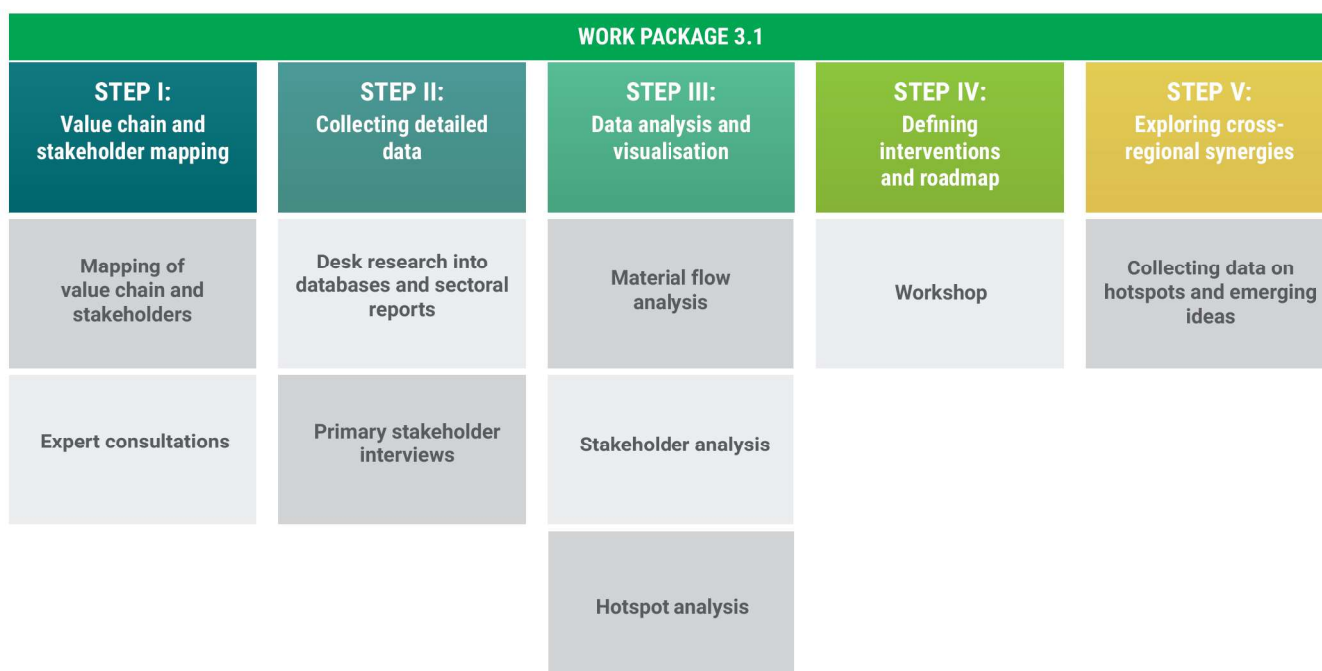
The documents provides a mindset, a guideline and a toolbox;

Goal: to further specify emerging idea's (wp 2.3.) and enable intra-regional collaboration (wp 3.1)



GUIDELINE

Finding regional and cross-regional synergies in your value chain in 5 steps

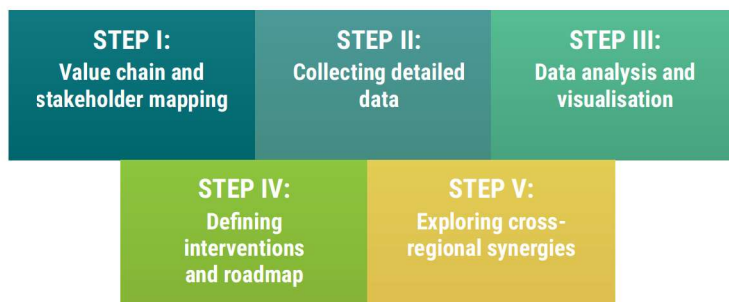


USING THE GUIDELINE

Use the guideline so that it fits your needs best

Complete systemic analysis

- Systemic approach and data-driven prioritization of interventions within the value chain
- Allows the build up of a stakeholders network in the region;



Value chain based approach ('light')

- 'Lean and mean' approach aimed at validation and testing feasibility of a circular innovations in a specific value chain;
- Ideally work in coalitions from the start;
- Inputs for cross-regional collaboration;



STEP 1: MAPPING

First overview of the value chain and stakeholders

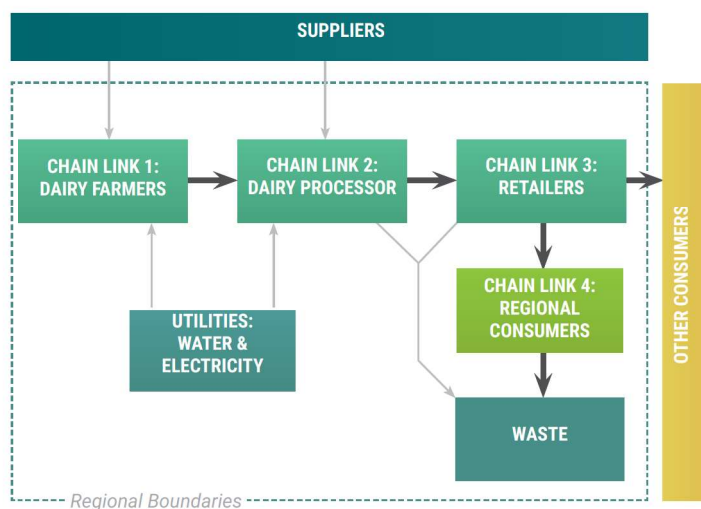
1.1. Map value chain & stakeholders

Get an initial overview of the value chain and stakeholders that can serve as a starting point for exploring value chains more in depth.

1.2. Consult experts

Use first interviews with experts to get:

1. Insights about the structure of the value chain
2. Feedback on your own research
3. Contacts with key stakeholders in the value chain
4. Identify key trends and opportunities



Example of value chain map

STEP 2: DATA COLLECTION

Gathering all the necessary data

2.1. Desk research

Find data for the overall flows in the value chain using available statistics, databases, and reports.

2.2. Stakeholder interviews

Gather ideas around circular innovations, value chain insights and company-specific data with the stakeholder interviews.

STEP 2: DATA COLLECTION

Spreadsheet for data collection

Search the menus (Alt+)															
Explanation															
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Explanation	Input source	Input	Reference	Total input	Output									
2	A few points are important to keep in mind when completing this protocol: - The more detailed the data the better ideally, all light green boxes are filled in for each input and output. Only if detailed data doesn't appear to be available, it is good to fill in only the dark green boxes. - To compare the data, work with common units (tonnes, m3 and MJ) as much as possible. - The column 'data source' is intended to indicate the sources / references, in case data must be checked later. - The vertical gray line halfway the sheet indicates the boundary between inputs (left) and outputs (right). Each type of input results in a certain output: emissions, waste, reuse, recycled, composted, energy production, landfilled, etc.	Energy	Energy use (in MJ)	Data source	Total energy (MJ)	Emissions (CO2eq kg)	Data source	Emissions (NOx kg)	Data source	Emissions (SOx kg)	Data source	Emissions (PM kg)	Data source	Emissions (VOCs kg)	Data source
3		Electricity (total)	0												
4		Wind													
5		Solar-energy													
6		Coal													
7		Oil													
8		Biomass													
9		Waste combustion													
10		Other energy sources			0										
11		Gas (total)	0												
12		Gas													
13		Biogas													
14		Fuels (total)	0												
15		Diesel													
16		Biodiesel													
17		Petrol													
18		Other fuels													
19	Water	Water	Water use (in m3)	Data source	Total water (m3)	Waste water (m3)	Data source	Waste water treatment (m3)	Data source	Waste water discharge (m3)	Data source				
20		Fresh water													
21		Rain water			0										
22	Other water sources (e.g. greywater)	Other water sources (e.g. greywater)													
23															
24															
25	Materials	Materials	Material use (in ton)	Data source	Total materials (ton)	Waste (ton)	Data source	Reuse (ton)	Recycled/composted (ton)	Combusted (with energy production) (ton)	Combusted (without energy production) (ton)	Landfilled (ton)	Data source		
26		Agricultural Products (total)	0			0		0	0	0	0	0			
27		Food crops													
28	Animal Husbandry and fishery products	Fodder crops													
29		Animal Husbandry													
30		Fishery products													

Screenshot of [spreadsheet](#)

STEP 3: ANALYSIS

Extracting valuable insight from the data

3.1. Material flow analysis

Creates a **clear understanding** of the resource flows throughout the value chain.

3.2. Stakeholder visualisation

Provides a **socioeconomic layer** to the material flow analysis.

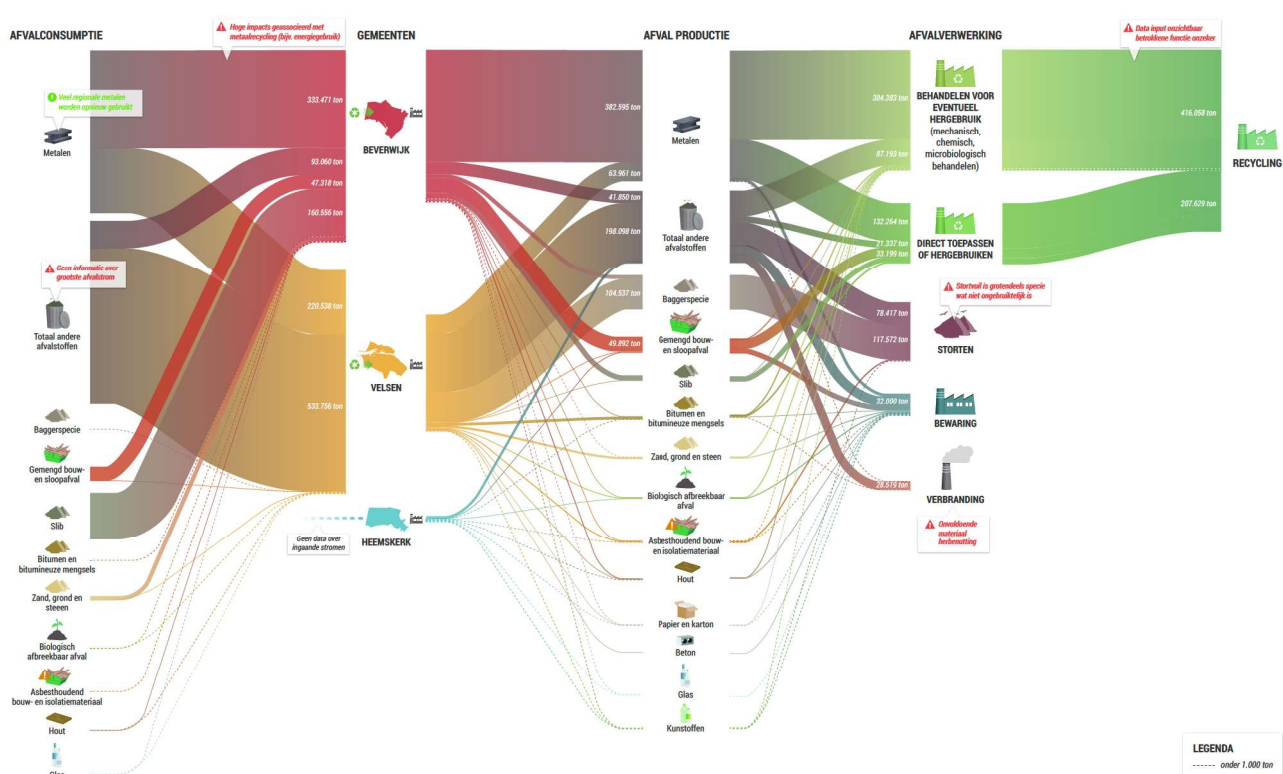
3.3. Hotspot analysis

Identifies 'hotspots' in the value chain where **change is needed most urgently**.



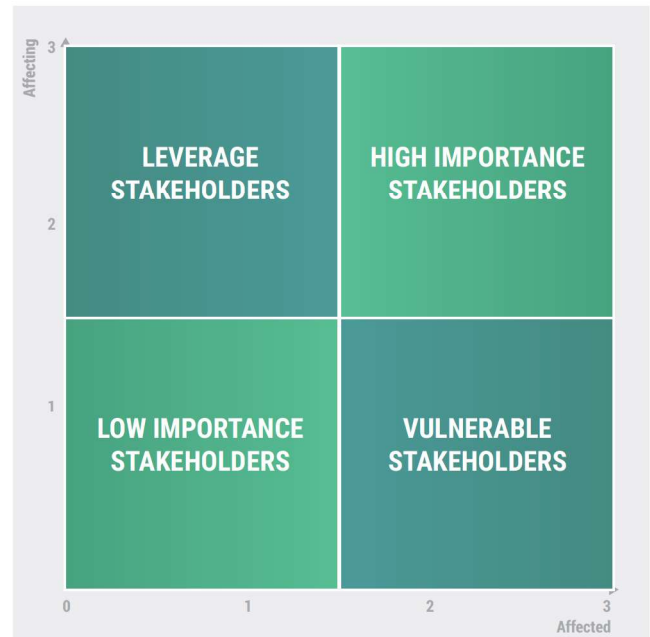
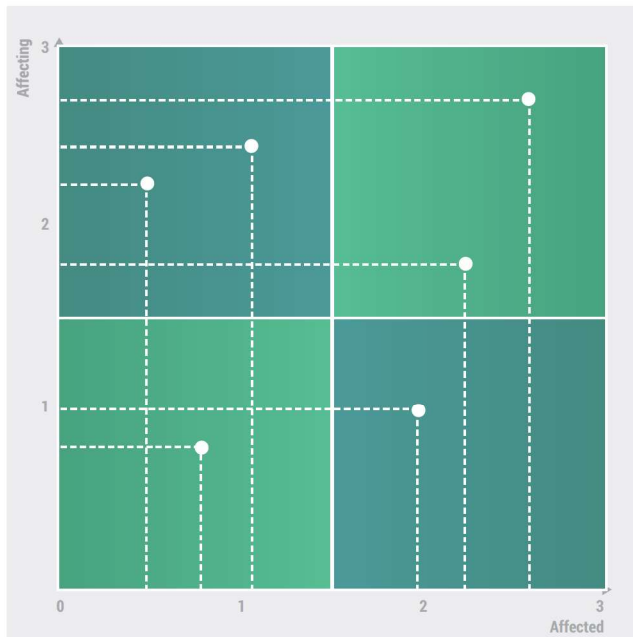
STEP 3: ANALYSIS

Example of visualisation of material flows:



STEP 3: ANALYSIS

Example of visualisation: stakeholder analysis



STEP 3: ANALYSIS

Hotspots: places where change is needed within the value chain

Ecological impacts

E.g. use of primary resources, greenhouse gas emissions.

Social impacts and wellbeing

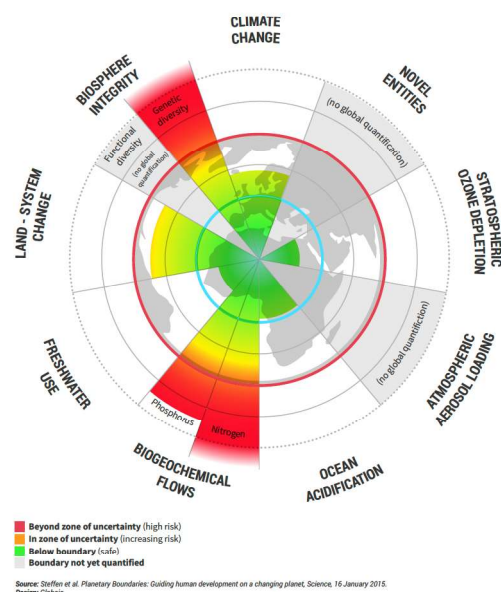
E.g. poor labour conditions throughout the value chain, toxic materials;

Economic impacts

E.g. added value, jobs for the regional economy;

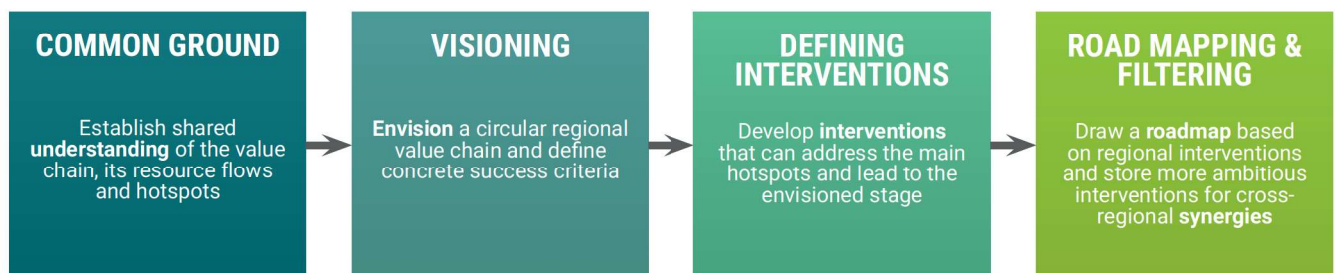
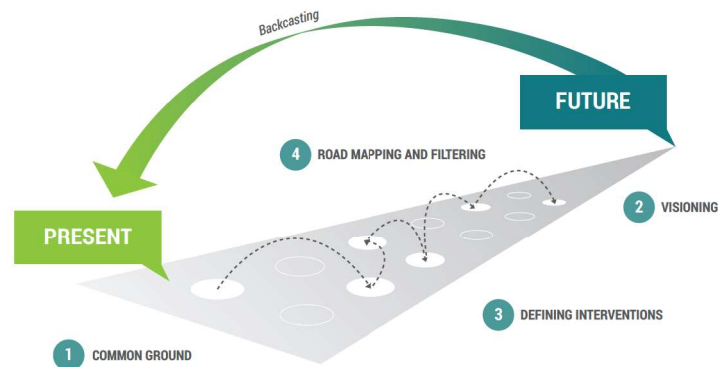
PLANETARY BOUNDARIES

A safe operating space for humanity



STEP 4: LOCAL WORKSHOP

Building on analysis to define common vision and interventions

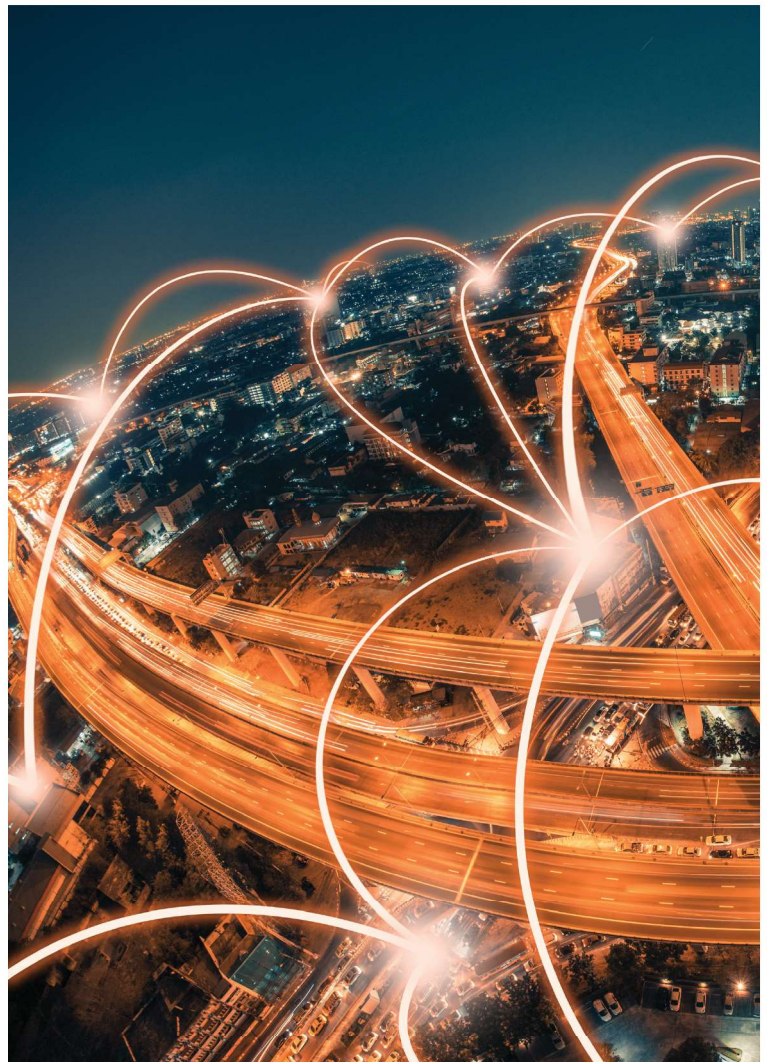


STEP 5: SYNERGIES

Investigating opportunities further to assess potential synergies

5.1. Collecting data on hotspots and emerging ideas

- Collect and document the best **emerging ideas** and the most important **hotspots**
- Gather more data for **assessment criteria**
- Metabolic will **connect the dots** and develop potential synergies based on your data



STEP 5: SYNERGIES

Spreadsheet for gathering data on emerging ideas and hotspots

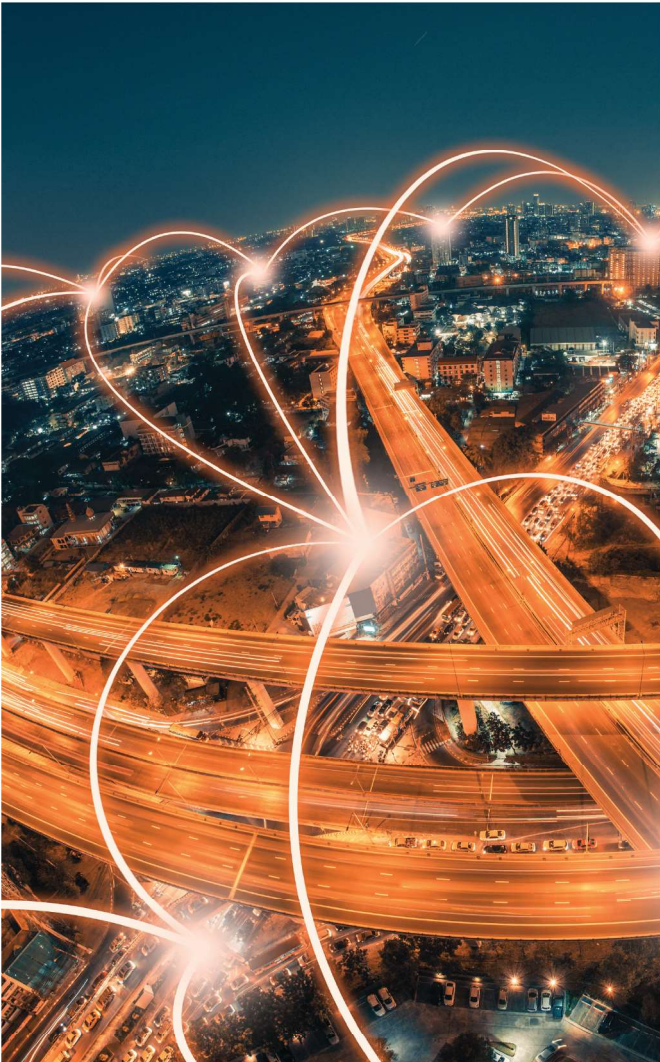
Name of the companies involved in cooperation												
Emerging Ideas FORM												
Fill the blue cells using the content in the drop-down list. Fill the green cells with a brief description or name, according to the information reported.												
Region												
Metabolic Network used: Metabolic Network of Grand Parkway 2.2												
Proposer / Organization	Abstract	Potential partnership	Theme	Target Sector / NACE Category	Target Sector / NACE Category	Target Sector / NACE Category	Target Sector / NACE Category	Value Chain position	Target product/ material	Expected social impact	Expected economic impact	Expected environmental impact
Name of the companies involved or responsible	Name of the companies involved or responsible	Name	Indicate the theme that the emerging idea fits in	Choose one or more from the drop-down list and if it's not in the list choose do other and provide a name in the Description cell	Choose one or more from the drop-down list and if it's not in the list choose do other and provide a name in the Description cell	Choose one or more from the drop-down list and if it's not in the list choose do other and provide a name in the Description cell	Choose one or more from the drop-down list and if it's not in the list choose do other and provide a name in the Description cell	Please indicate the value chain position of the targeted link in the value chain	Indicate the product or material that is targeted by the emerging idea	Indicate the expected social impact of the emerging idea	Indicate the expected economic impact of the emerging idea	Indicate the expected environmental impact of the emerging idea
Name	Name	Name	Drop-Down List	Drop-Down List	Drop-Down List	Drop-Down List	Drop-Down List	Drop-Down List				
			Description:	Description:	Description:	Description:	Description:					
			Manufacturing & de-manufacturing									
Proposer / Organization	Abstract	Potential partnership	Theme	Target Sector / NACE Category	Target Sector / NACE Category	Target Sector / NACE Category	Target Sector / NACE Category	Value Chain position	Target product/ material	Expected social impact	Expected economic impact	Expected environmental impact
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Name	Name	Name	Drop-Down List	Drop-Down List	Drop-Down List	Drop-Down List	Drop-Down List	Drop-Down List				
			Description:	Description:	Description:	Description:	Description:					
			Manufacturing & de-manufacturing									

Screenshot of [spreadsheet](#)

STEP 5: SYNERGIES

Realizing collaborations between regions

1. Provided data sheets are filled in completely Metabolic and Friesland can take a 'brokers role' and actively look for synergies between all SCREEN partners;
2. HOWEVER: there is no blue print for collaboration: continuous engagement and conversations between partners are key, and should ideally tak place druing the coming months;



RECOMMENDATIONS

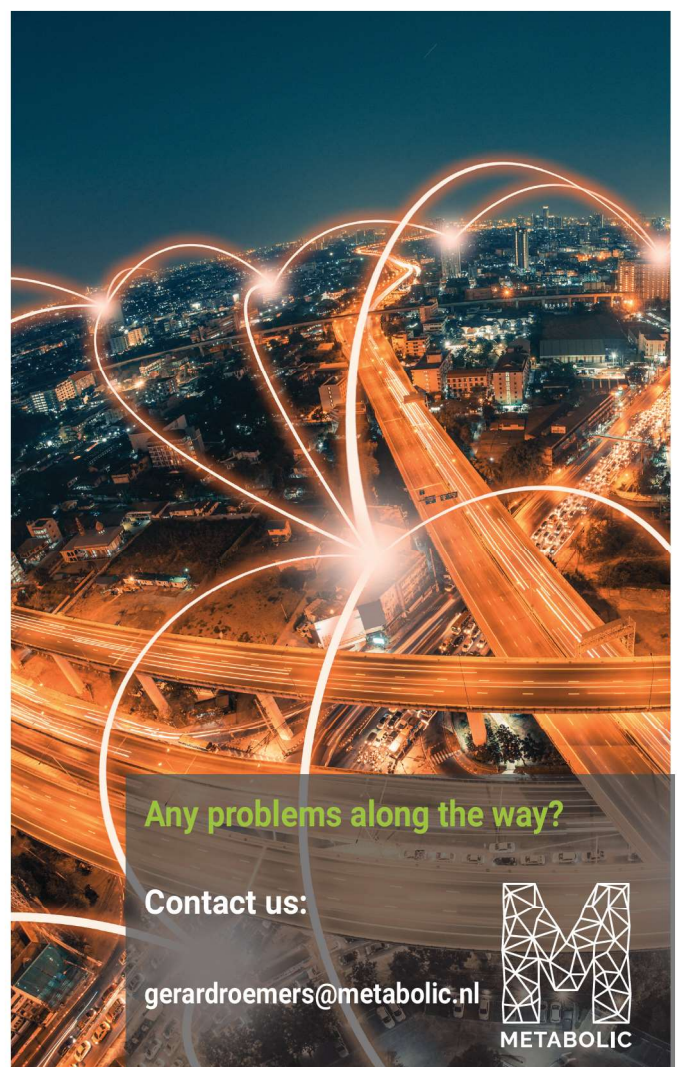
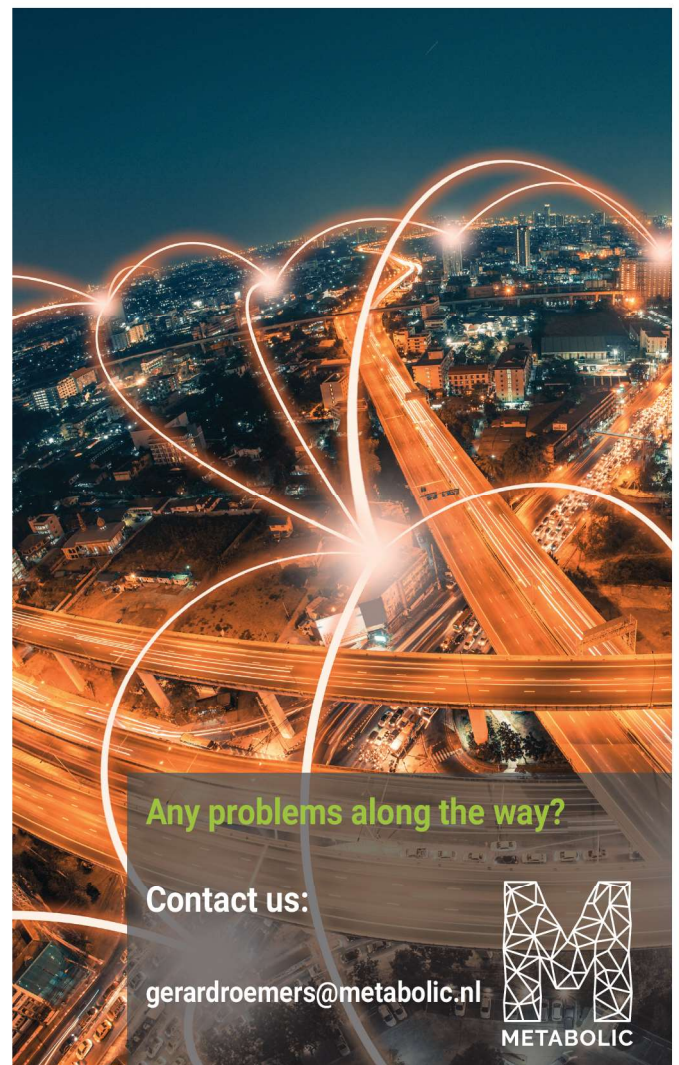
Make it a thorough, inclusive and impactful process

1. Choose the approach that is most fitting for your region; feel out what gives energy and momentum to your local partners and and to SCREEN partners;
2. Be very specific when scoping the value chain or emerging idea you wish to analyze! Especially if you choose together with other SCREEN partners;
3. Make sure to include and inspire local stakeholders, creating ownership of the transition;
4. Create regional anchors that can continue to drive progress autonomously;

AFTER TODAY

Next steps we suggest towards the Fall

1. Define two or three concrete value chains for each theme, that cover the interests of more than two regions;
2. Create a SCREEN workgroup and coordinator around these value chains;
3. Map and analyze your own value chain, including primary stakeholders;
4. Share results amongst your work group;
5. Organize a local workshop;
6. Wherever valuable: organize additional research;
7. Share results in the workgroup: what is the added value of crossregional collaboration?
8. Share collective results with the complete SCREEN network;
9. Implementation and funding



GRAZIE!



QUESTIONS?

1. What aspects of the roadmap are new and useful for you?
2. What steps may be more difficult to execute, or less relevant for you?
3. Does this provide a clear set of next steps for the coming months (July - September/October)?

