COMMUNITY TALKS

GOING GREEN TRAININGS

Understanding the tools for systemic change

Green Kaizen & Waste Flow Mapping

14 November 2024 • 10:30-11:30 • Online

REGIO GREEN TEX

Webinar Procedures

The webinar is recorded and will be shared - in parts or entirely – with all consortium partners. By staying connected you agree to this. If you would not like to appear on the recording, please keep your camera and microphone off at all times.

Mute your microphone

Disconnect video

Type questions in the chat

Raise your hand when you wish to speak

When you are invited to speak, unmute mic and show video (if possible)

REGIO GREEN TEX

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Agenda

Introduction
Charlotte Denis, Textile ETP

Sustainable production through Green Lean tools
Sasha Shahbazi, SuPr

Q&A

Conclusion
Charlotte Denis, Textile ETP

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COMMUNITY TALKS

GOING GREEN TRAININGS

Online animation activities play a pivotal role in sustaining the engagement of SMEs within the digital ecosystem. To stimulate interaction, the RegioGreenTex Community Talks **promote the latest progresses and results of the project, and well as encouraging dialogue and knowledge sharing in the textile sector.**

The 'Going Green Trainings', a component of the RegioGreenTex Community Talks, offer advisory green support to SMEs in the textile sector, carefully tailored to address sustainability concerns. Led by experts from RISE, these webinars provide practical training across six distinct areas of sustainability.

The Going Green Trainings are part of WP4 (T4.2 Green advice/advisory support to SMEs) and are managed by RISE, with support from OVAM, Euramaterials, Citeve, Eurofins, Ateval, AEI Textils, CS-Pointex, NTT, EURATEX, and Textile ETP.

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Sustainable production through Green Lean tools

Sasha Shahbazi, SuPr

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Sustainable production through Green Lean tools

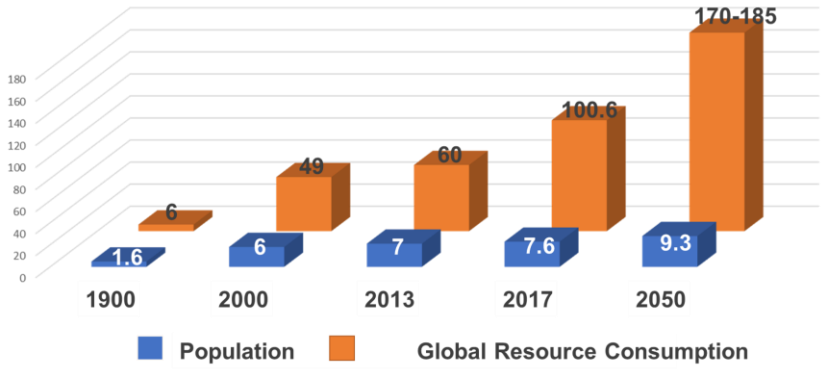
Martin Kurdve, Sasha Shahbazi

14 nov 2024

Agenda

- Lean and Green (10min)
- Green Kaizen (20min)
- Waste flow mapping (15min)
- Questions and reflection (15min)

Economy and development



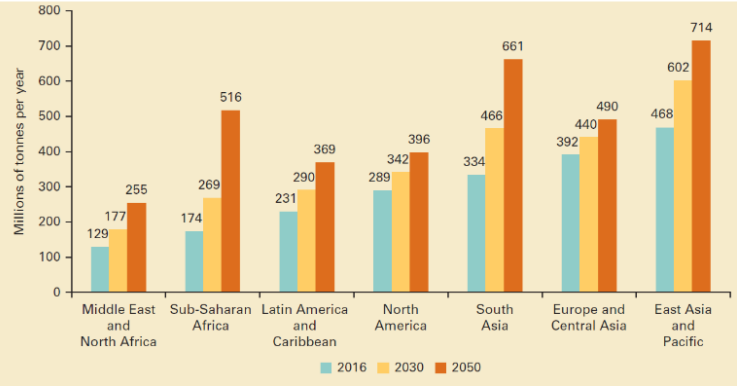
IEA - the International Energy Agency, 2012. World energy outlook 2012
European Commission 2011a. A resource-efficient Europe – Flagship initiative under the Europe 2020 Strategy (EN). EUROPEAN COMMISSION. Brussels.
The Circularity Gap Reporting Initiative: https://www.circularity-gap.world

Production efficiency

Resource consumption & waste generation

Emissions and Environmental impact

Projected waste generation, by region (millions of tonnes/year)



LEAN & GREEN

The 7 wastes + 1 waste

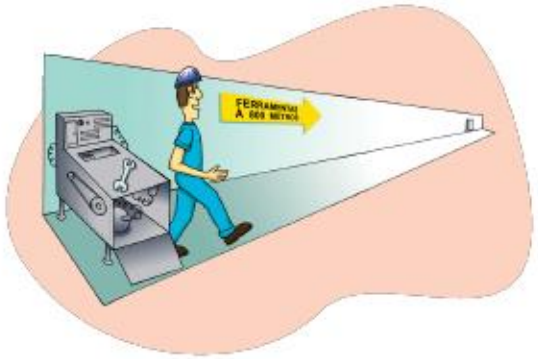
Inventory

Overproduction

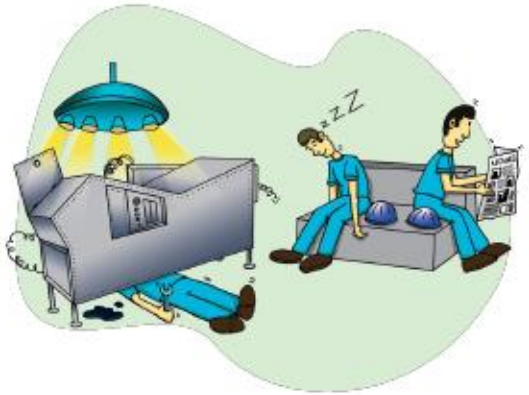
Transport

Defects and Rework

Unnecessary Processes



Movements

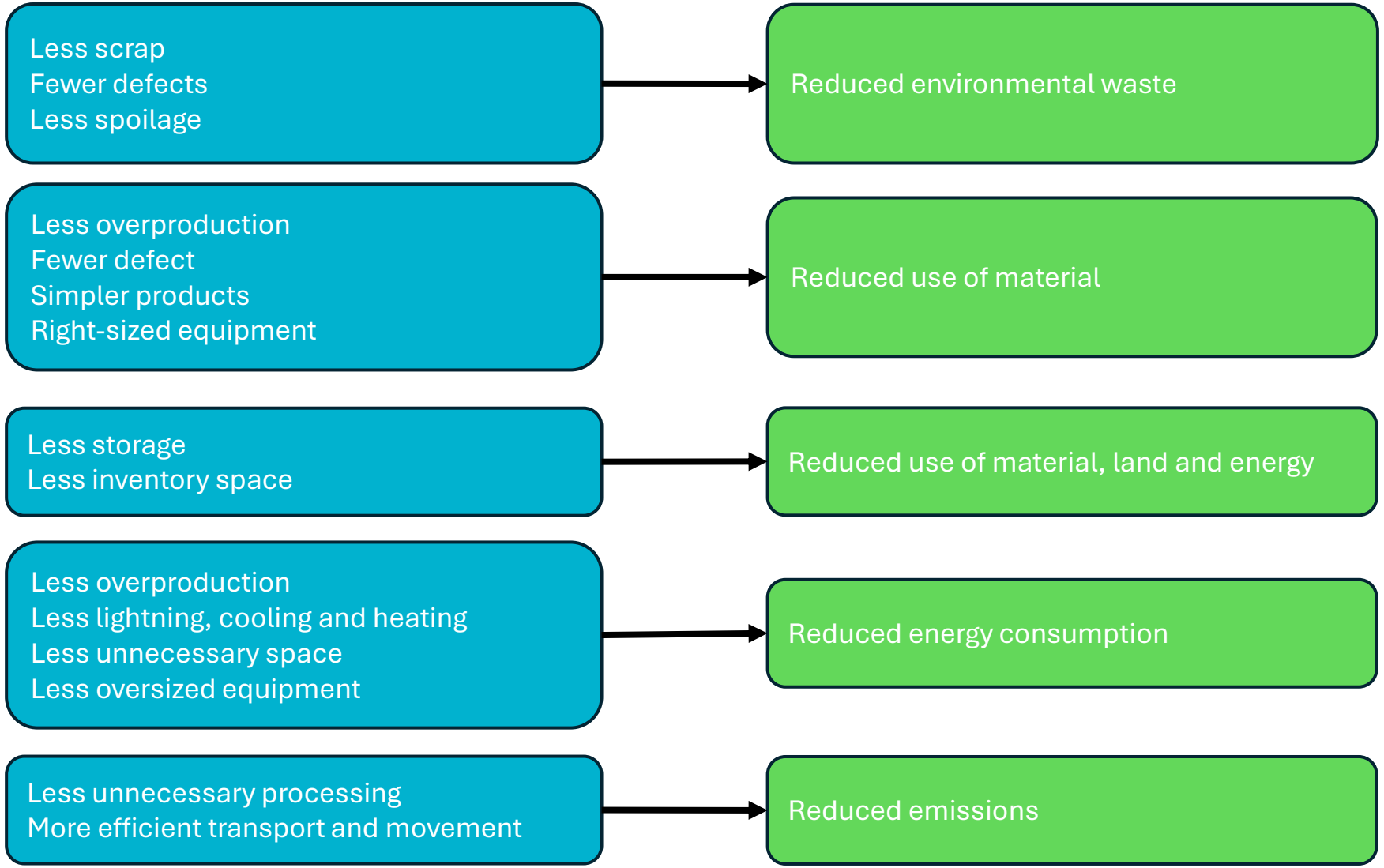


Wait

+ Not used employee creativity

LEAN & GREEN

Common objectives:
Minimizing resource consumption and waste generation while maximizing efficiency and effectiveness

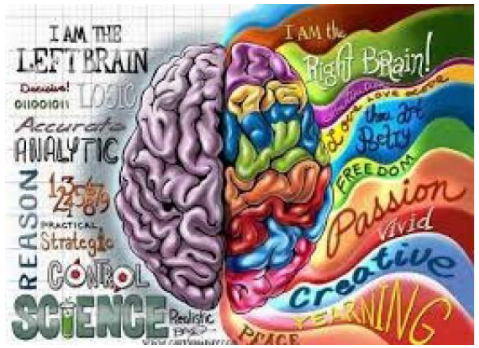


Lean and Green's essences!

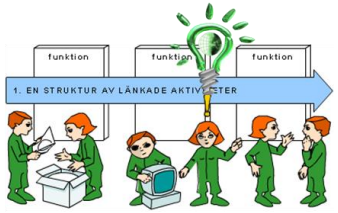
Answers the challenge of maximizing natural resource efficiency in a production system

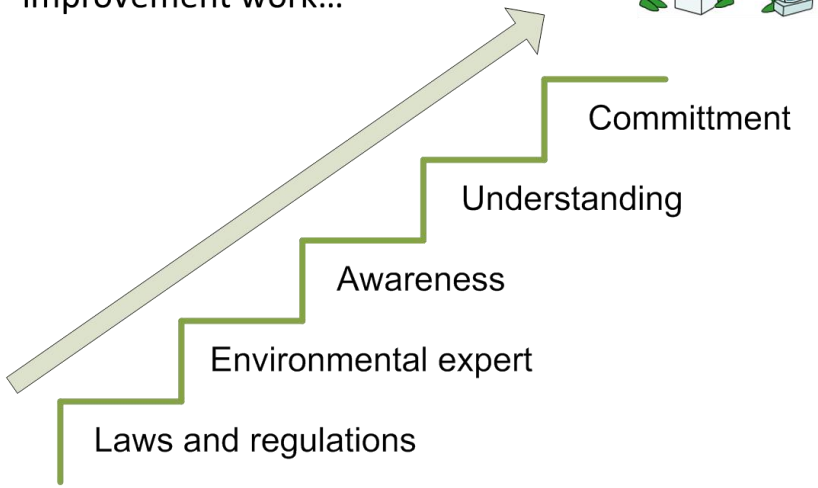
- A necessity in a limited world with limited natural resources
- Address sustainability issues while keeping focus on general efficiency

- Increase efficiency
- Value creation
- Process view
- Go to the action, go to gemba
- Visualization
- Operator involvement and engagement
- Continuous improvement or radical change
- Bottom up and top-down approach

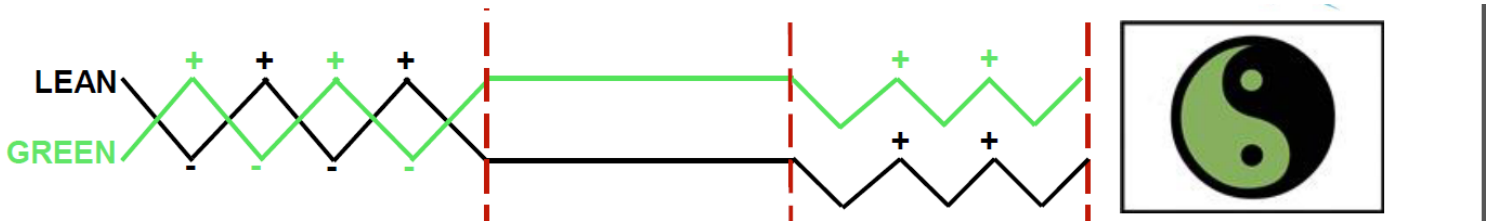


One goal is to get everyone committed to environmental improvement work...





Proactivity in both system increases

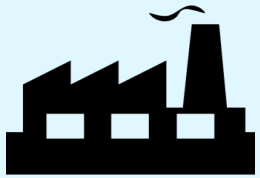


Trade-off	Ambidexterity	Synergy	Symbiosis
Lean contradicts organisation's green ambitions and vice versa.	Lean and green can co-exist and even be complementary.	Catalytic relationship between lean and green.	Lean and green are pursued as part of the same strategy.
E.g. more frequent deliveries increases CO_2 emissions. Lower CO_2 emissions reducing productivity.	E.g. efficient technical solutions for both lean and green outcomes.	E.g. clean tech. allowing tax concession. Simultaneous elimination of economic and green wastes.	E.g. L&G strategy for reducing 'loss' imparted to society during entire product life cycle.

Source: Martinez, Vazquez and Zokaei *et al*, 2010

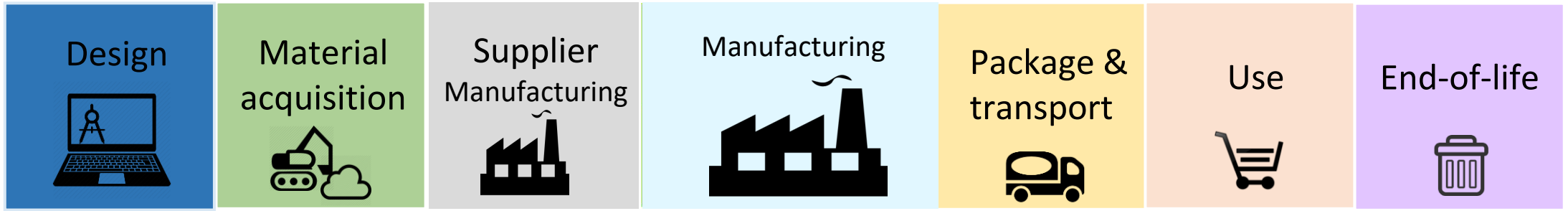
Lifecycle perspective

Rethink: Business model and value proposition for market

Design	Material acquisition	Supplier Manufacturing	Manufacturing	Package & transport	Use	End-of-life
						
Material selection Recycled material Recyclable material Durable material Lifespan Design for repair Design for recycling Business model	Energy consumption Energy efficiency Transport Water Chemicals Waste Soil depletion Working conditions Human rights	Energy consumption Energy efficiency Transport Water Chemicals Waste Emissions Packaging Working environment	Energy consumption Energy efficiency Transport Packaging Reclamation	Energy consumption Energy efficiency Customer behaviors Waste Repairability Durability Secondary market Environmental impact Customer relationship	Waste Reuse Recycling Remanufacturing Energy recovery Landfill	

Lifecycle perspective

Rethink: Business model and value proposition for market

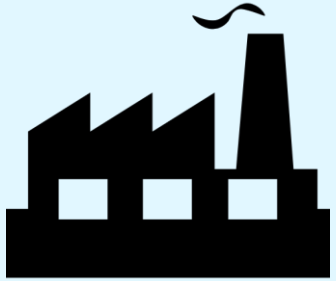


Sustainable production toolbox

- Environmental value stream map
- **Green Performance Map (Green Kaizen)**
- **Waste flow mapping**
- Lifecycle assessment
- Eco strategy wheel
- Circular Strategy Scanner
- …

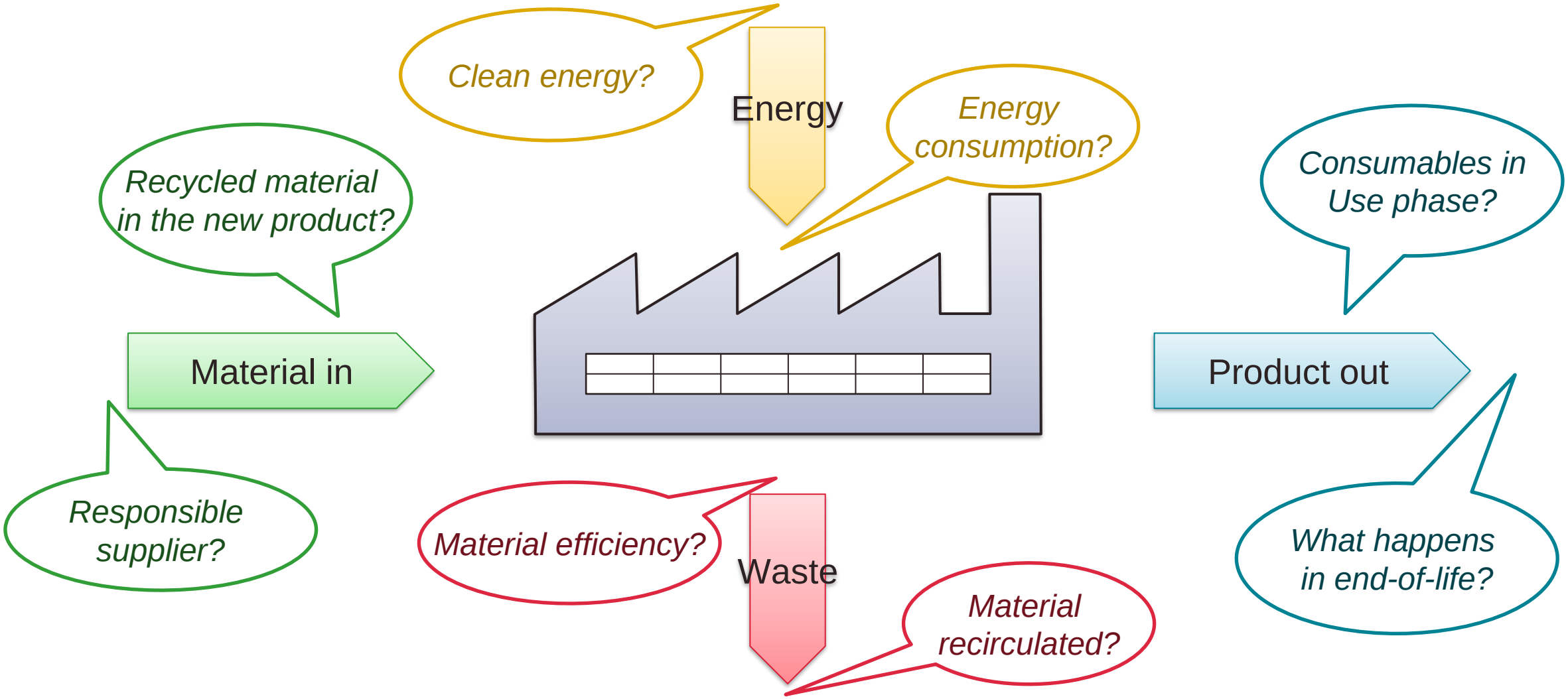
How to work with sustainability in production?

Manufacturing



Mapping is the key

How to work with sustainability in production?

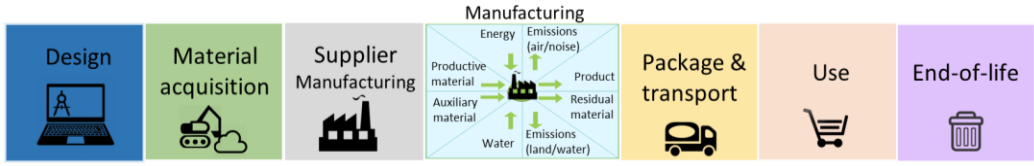


Green Kaizen

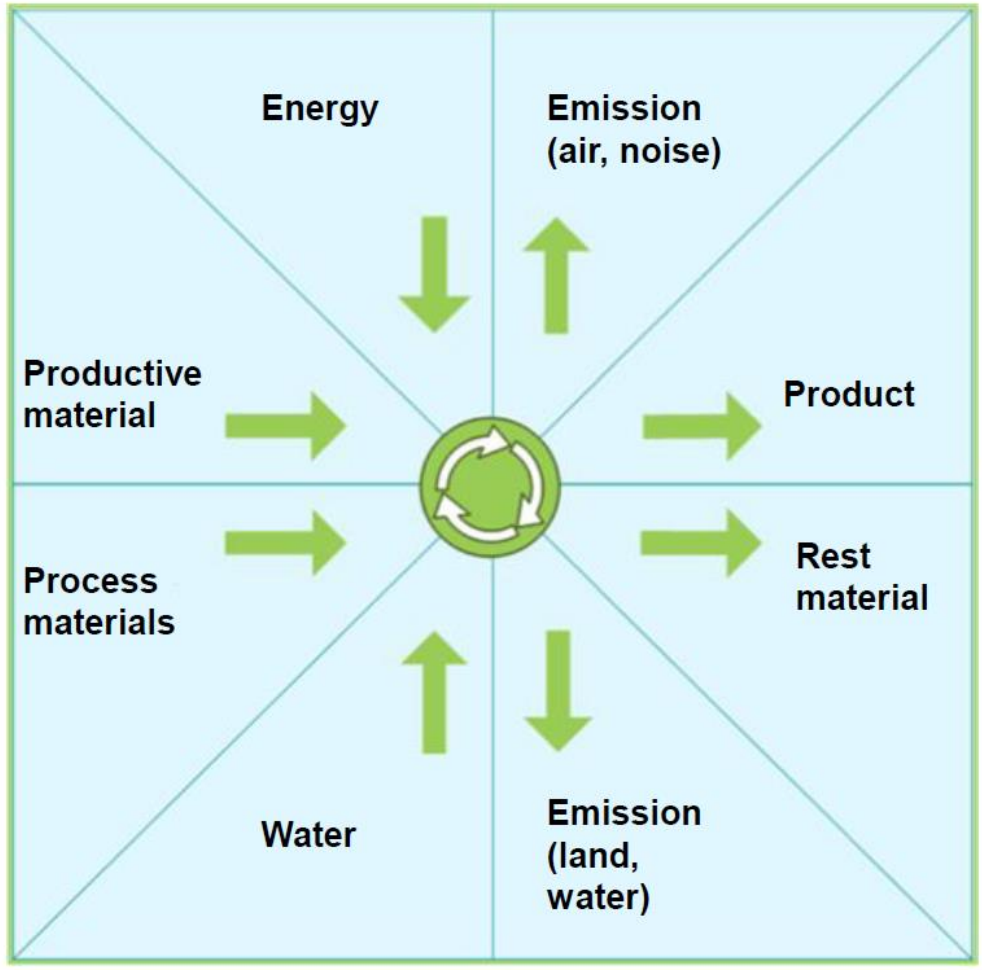
Green performance map

Green Kaizen

Green Performance Map

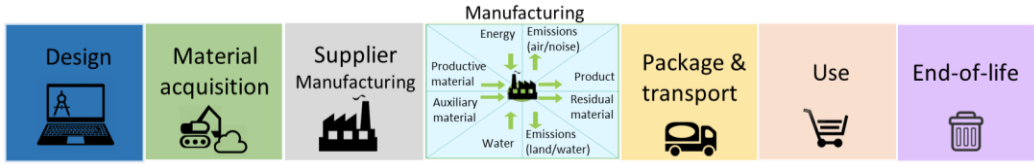


- Visual
- Input and output model
- Easy to use
- Makes environmental information easy to understand
- Supports the identification of relevant environmental aspects at all levels
- Encourages commitment from all staff



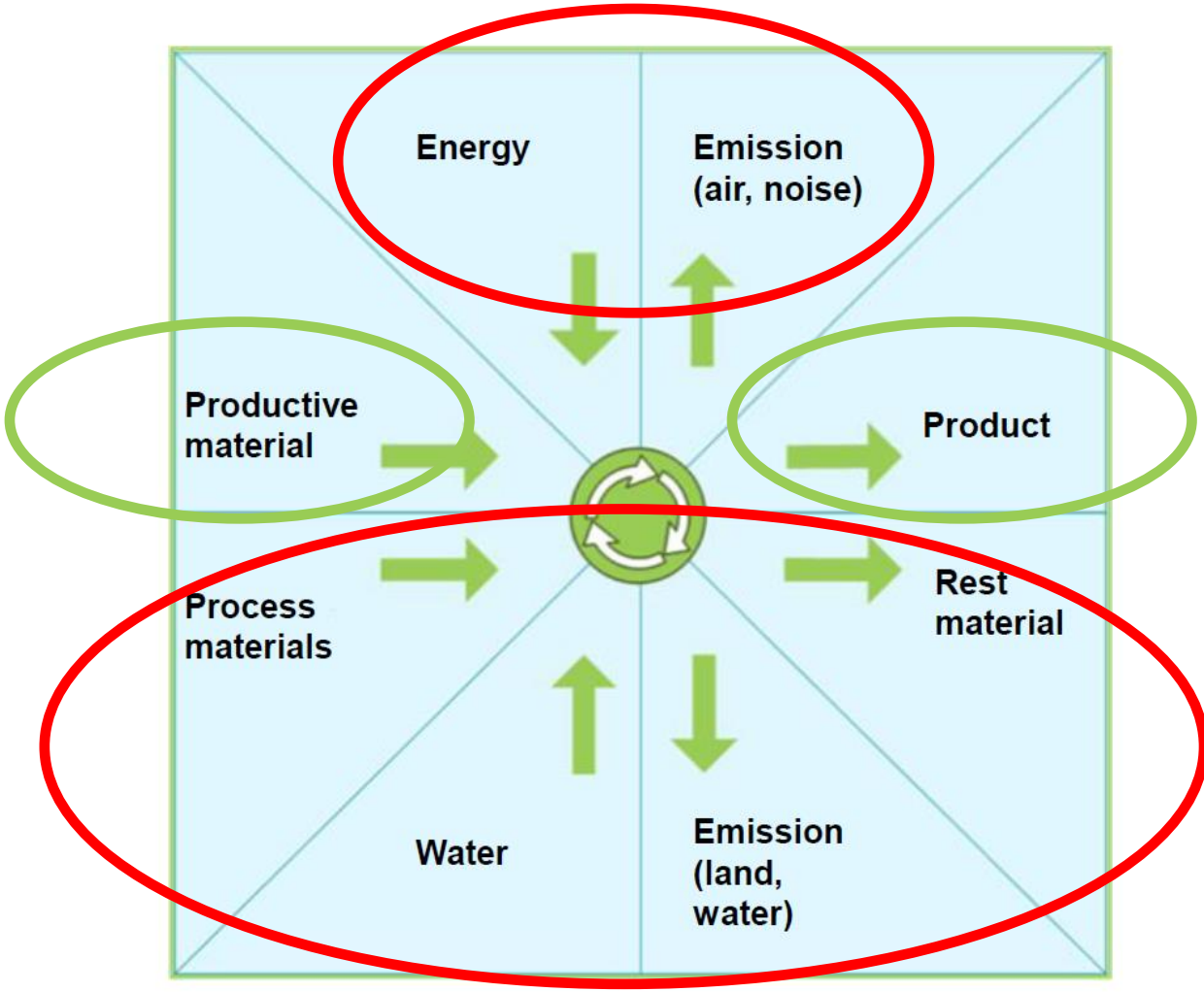
Green Kaizen

Green Performance Map



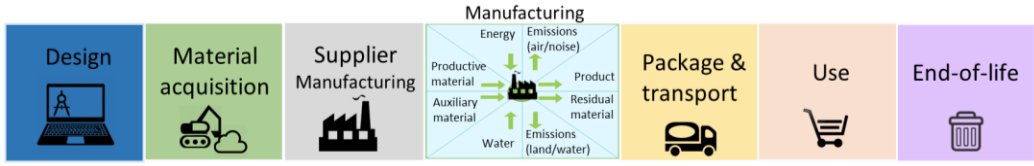
Value adding

Non-value adding



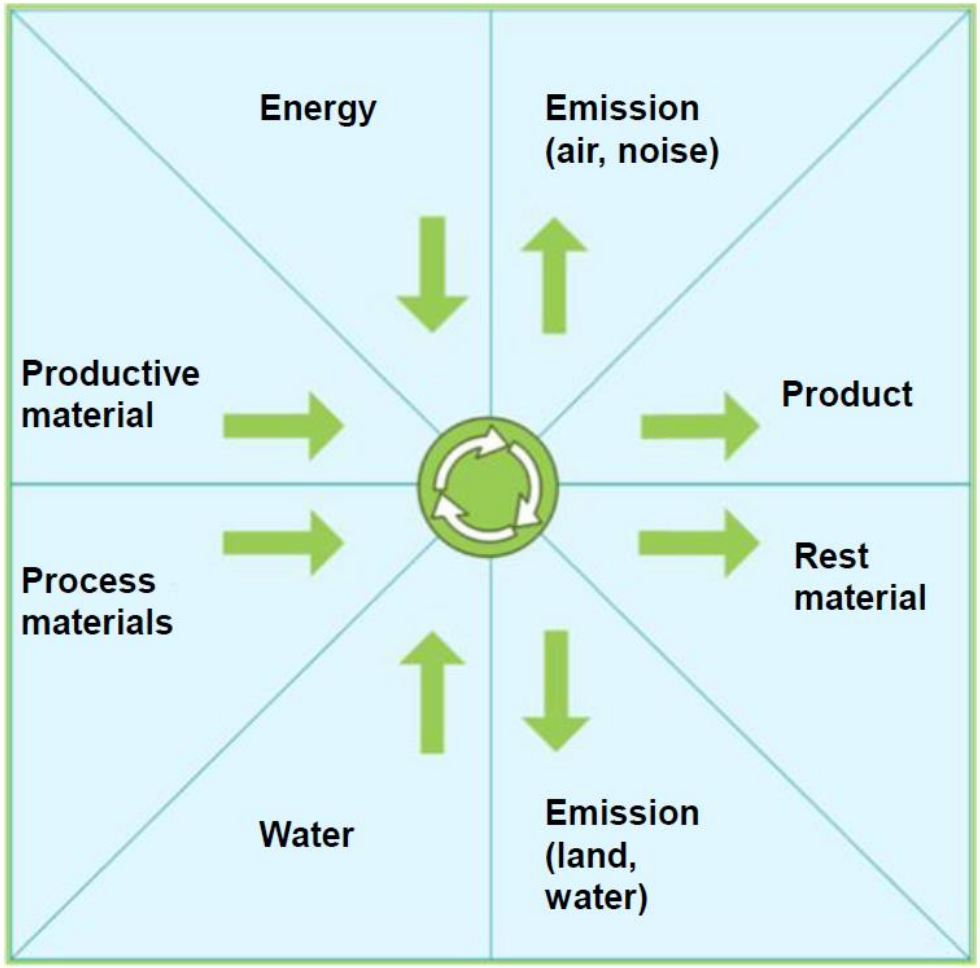
Green Kaizen

Green Performance Map



Steps

1. Identify environmental aspects in each category
2. Quantify
3. Prioritize the environmental aspects with color codes
   - Cost
   - Environmental effect
   - Effort, resource and time to solve
   - Companies' environmental strategy
4. Implement improvement



Green Kaizen

Green Performance Map

Steps

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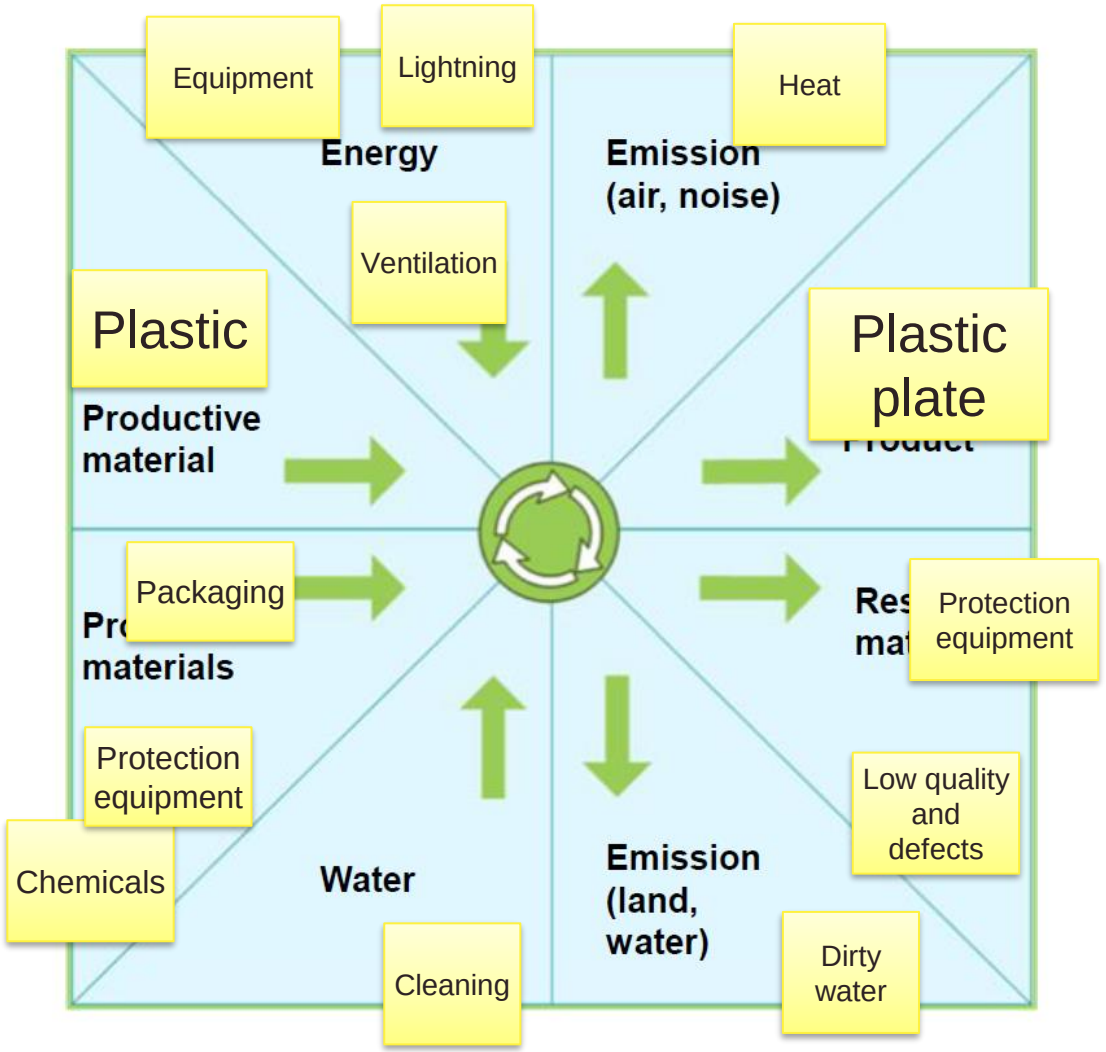

Green Kaizen

Green Performance Map

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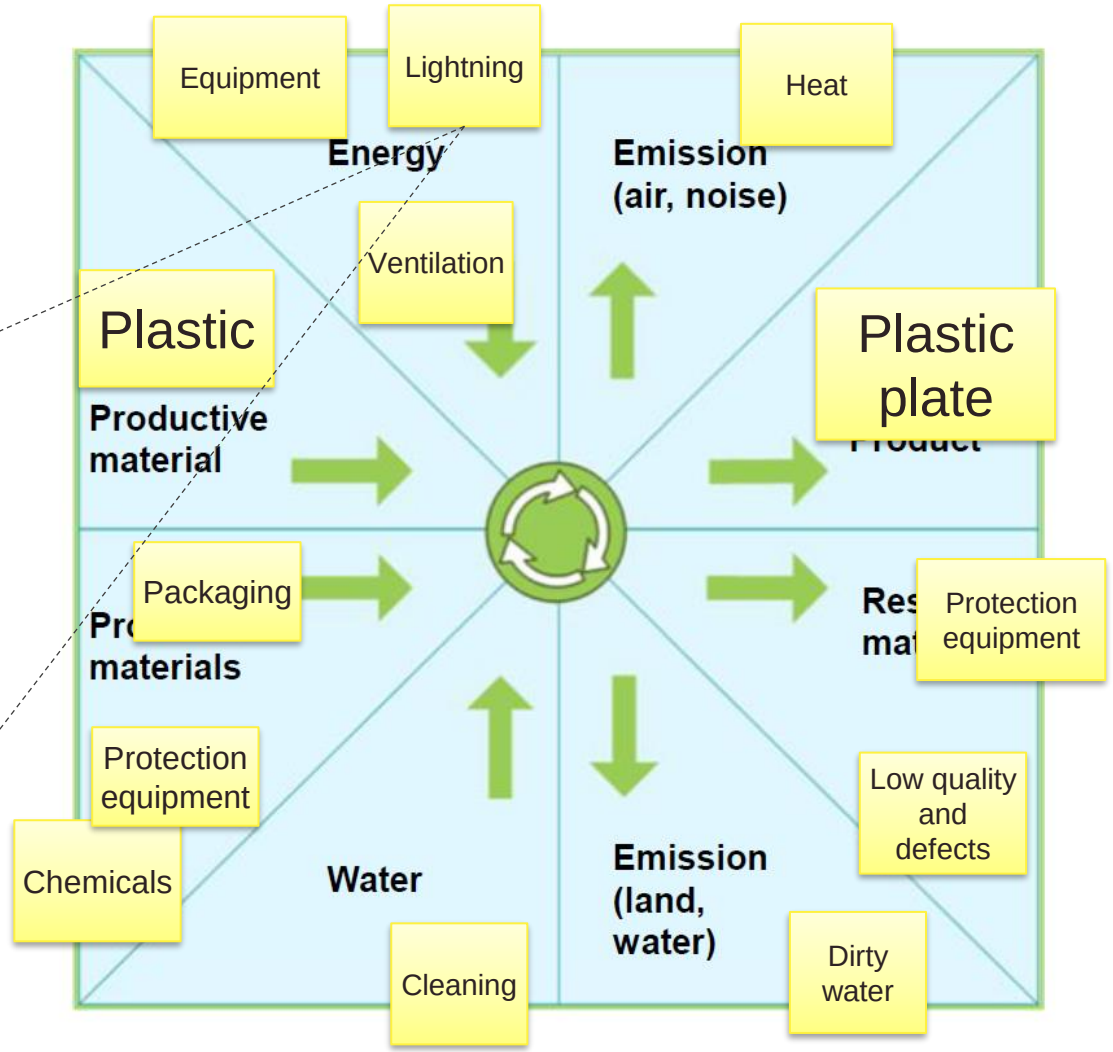

Environmental impact
- Amount
- cost

→

Electricity
- 8 818 MWh
- 4 409 500 SEK

Green Kaizen

Green Performance Map

Steps

1. Identify environmental aspects in each category
2. Quantify
3. **Prioritize the environmental aspects with color codes**
   - Cost
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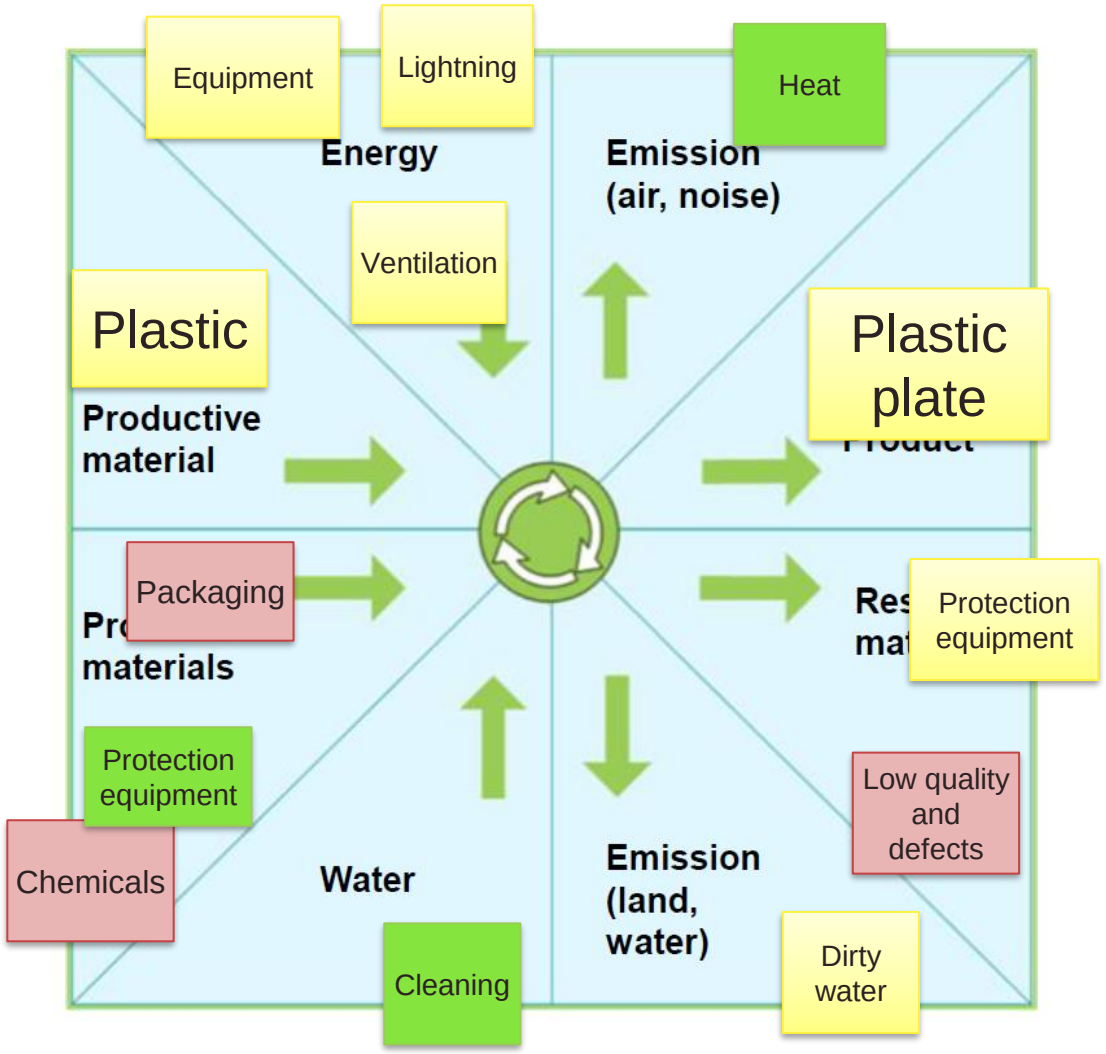
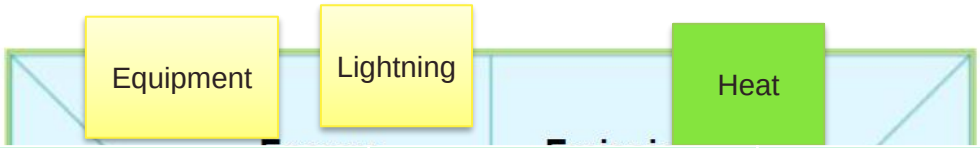


Green Kaizen

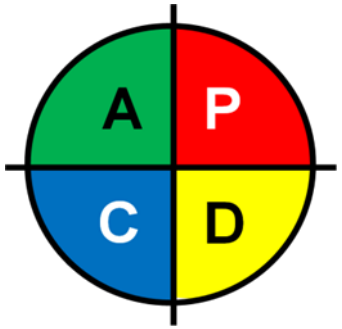
Green Performance Map



Date	Environmental aspect	Problem statement	Goal or KPI	Responsible	Deadline
W.23	Chemicals	Spills and Leaks	Number of Chemical Spill Incidents per Month	Chandler Bing	Dec 2024
W.23	Chemicals	Storage and Labeling	Percentage of Properly Labeled and Stored Chemicals	Ross Geller	Dec 2024
W.23	Chemicals	Compliance with Regulations	Number of Regulatory Violations per Year	Phoebe Buffay	Jan 2025
W. 23	Packaging	Damage During Transit	Root Cause Analysis and Frequency for Packaging-Related Damage	Joey Tribbiani	W.49 Nov
W. 23	Scraps	High amount of scraps	Kg scraps per produced product and root cause analysis	Monica Geller	Mars 2025

5. Evaluate the result

0. Prepaing GPM



4. Implement the Improvement actions

1. Identify environmental aspects

Datum	Kategori	Miljöaspekt	Problem	Åtgärd	Ansvarig
v 14	Energi	Användning av tryckluft för verktyg i monteringslinan.	Återkommande läckage	Kortsiktigt: Skapa nya rutiner för att söka och förhindra läckage. Långsiktigt: Utred möjligheten att ändra till elektriska verktyg.	XX XX
...	...	...	...	...	...

3. Plan the Improvement actions

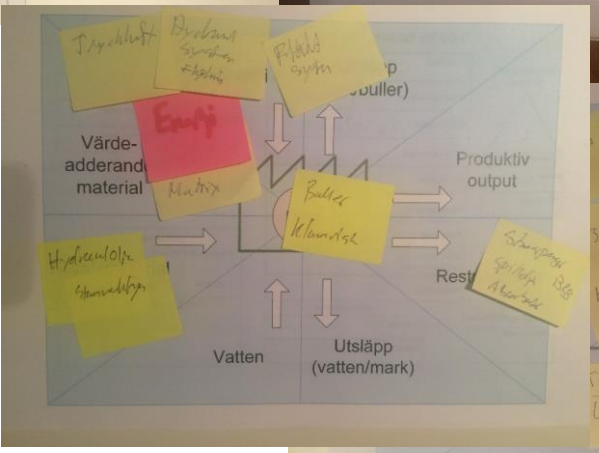
2. Prioritize identified aspects for Improvement

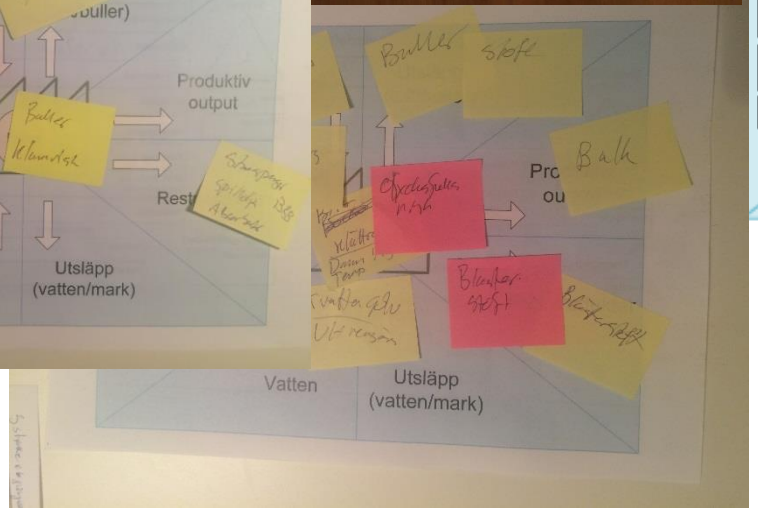
produktionslyftet

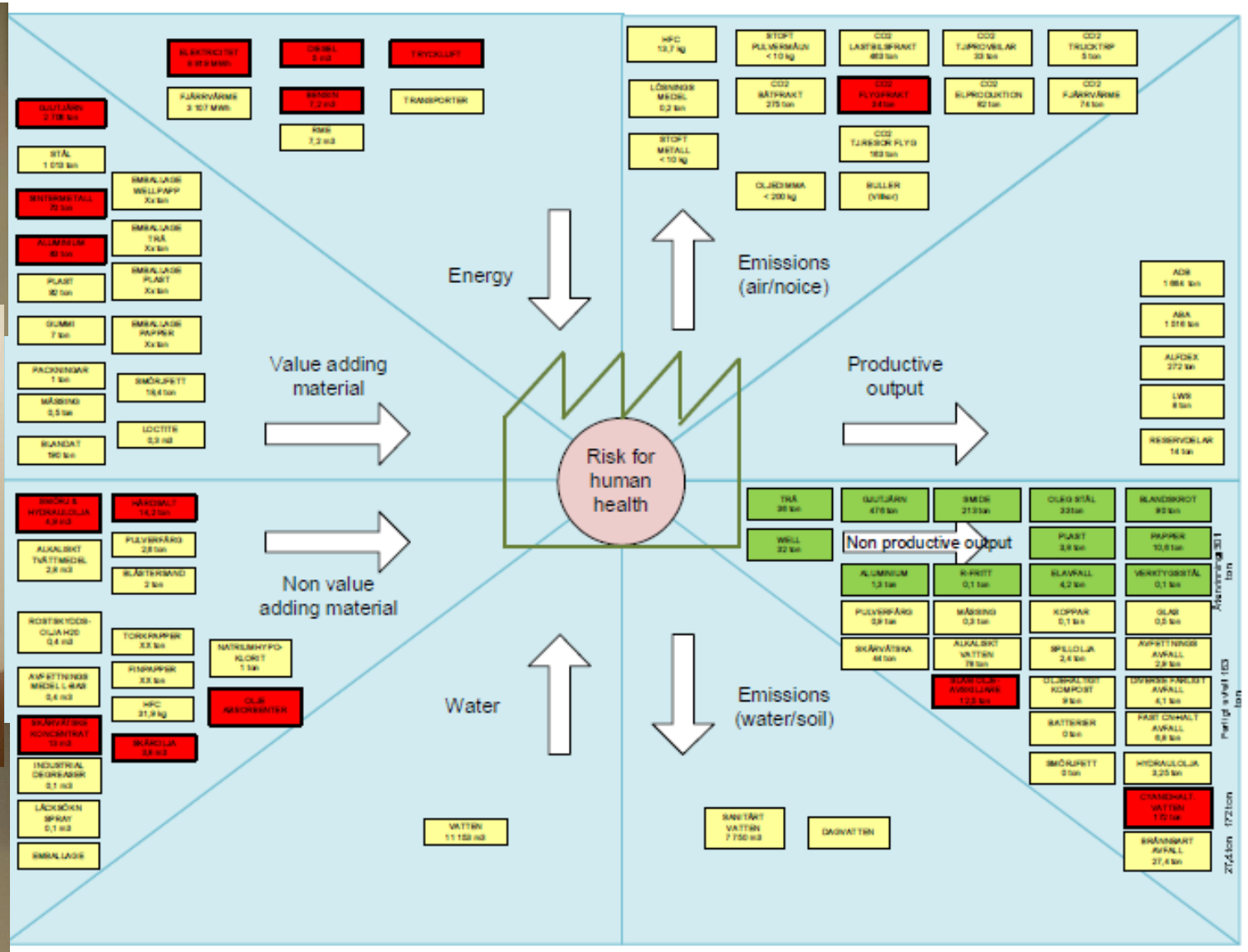

värde-
adderande
material
Utsläpp
(vatten/mark)

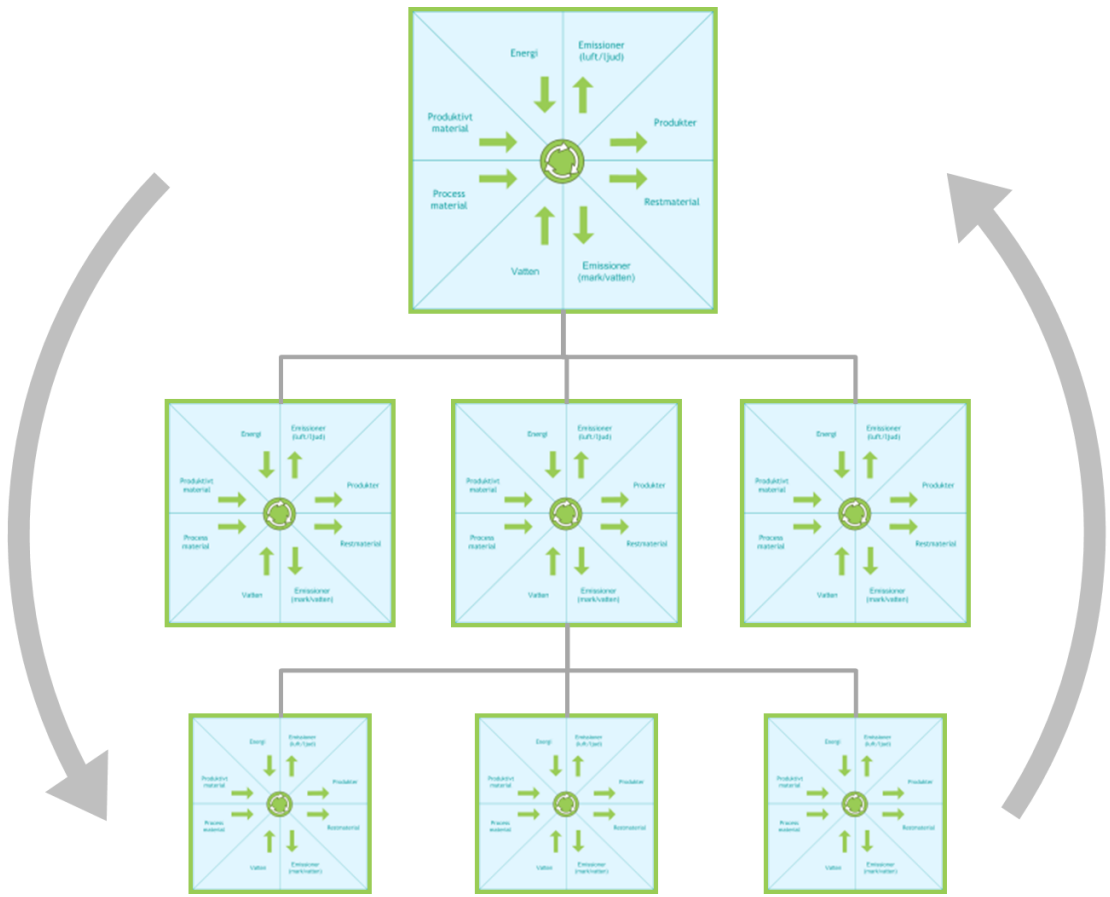

Hälsa
Vatten
Utsläpp
(vatten/mark)


Värde-
adderande
material
Vatten
Utsläpp
(vatten/mark)


Värde-
adderande
material
Produktiv
output
Vatten
Utsläpp
(vatten/mark)


Vatten
Utsläpp
(vatten/mark)


Energy
Emissions
(air/noice)
Value adding
material
Productive
output
Risk for
human
health
Non value
adding material
Non productive output
Water
Emissions
(water/soil)

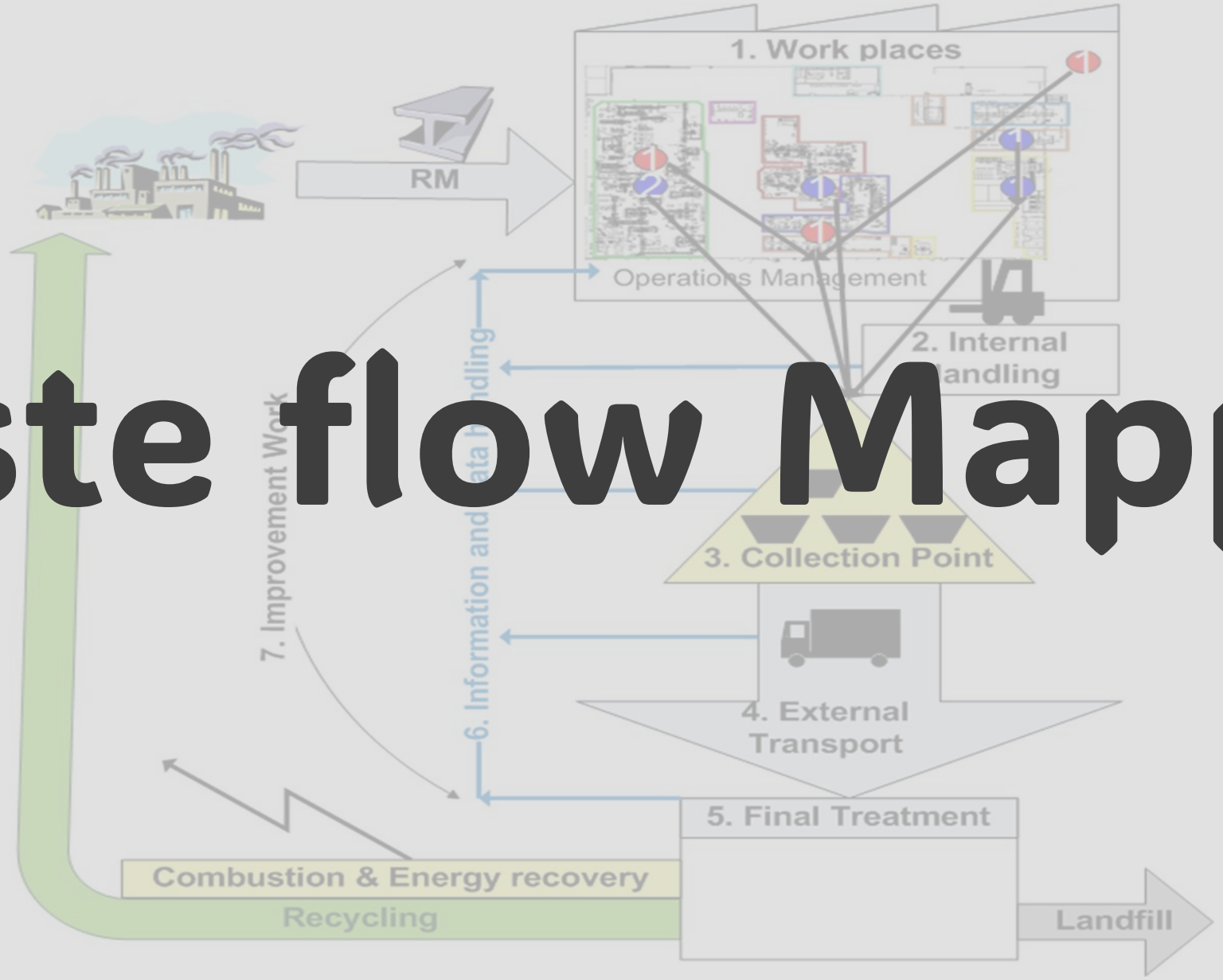


Factory

Operation/department

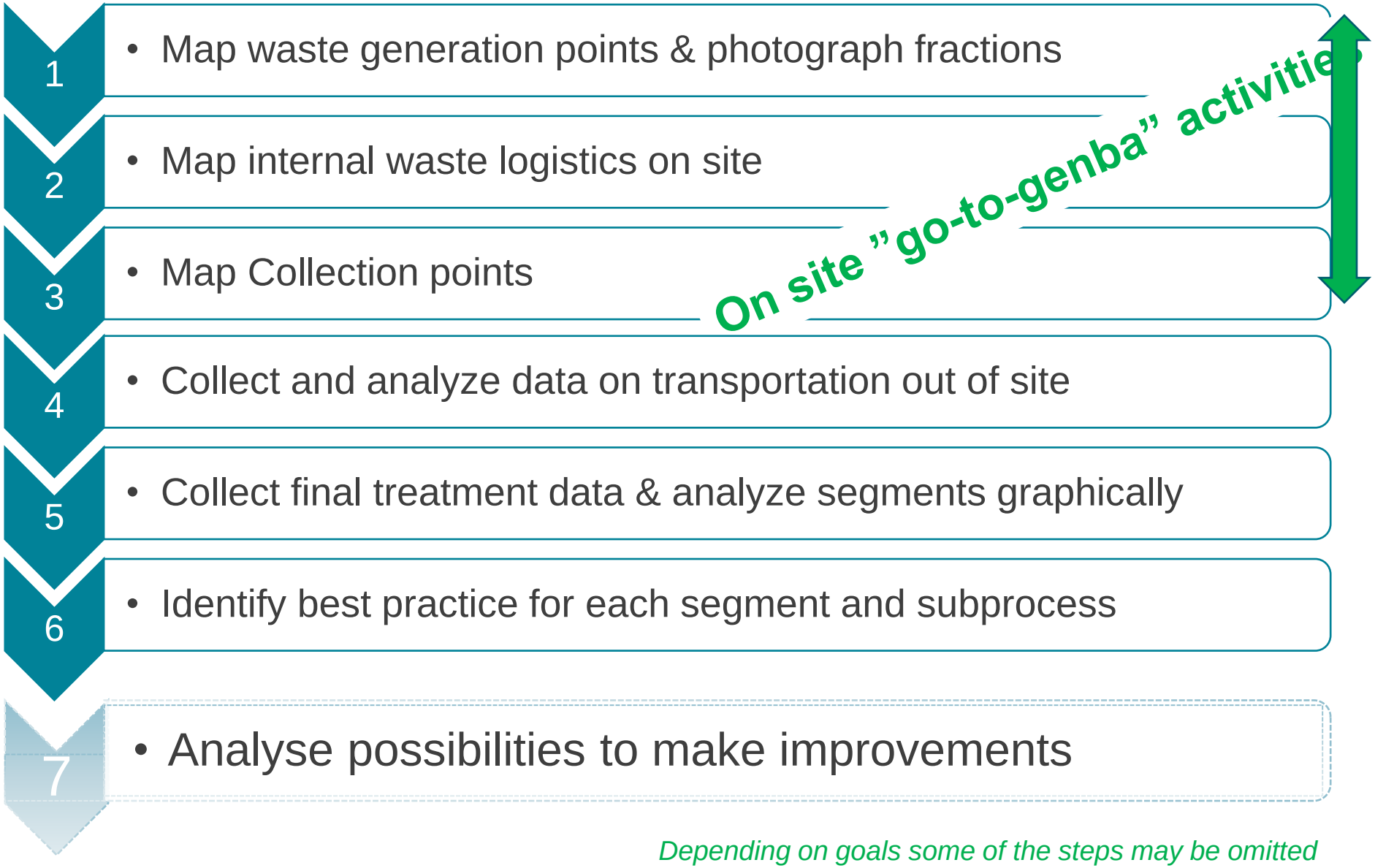
Process/production line

Waste flow Mapping



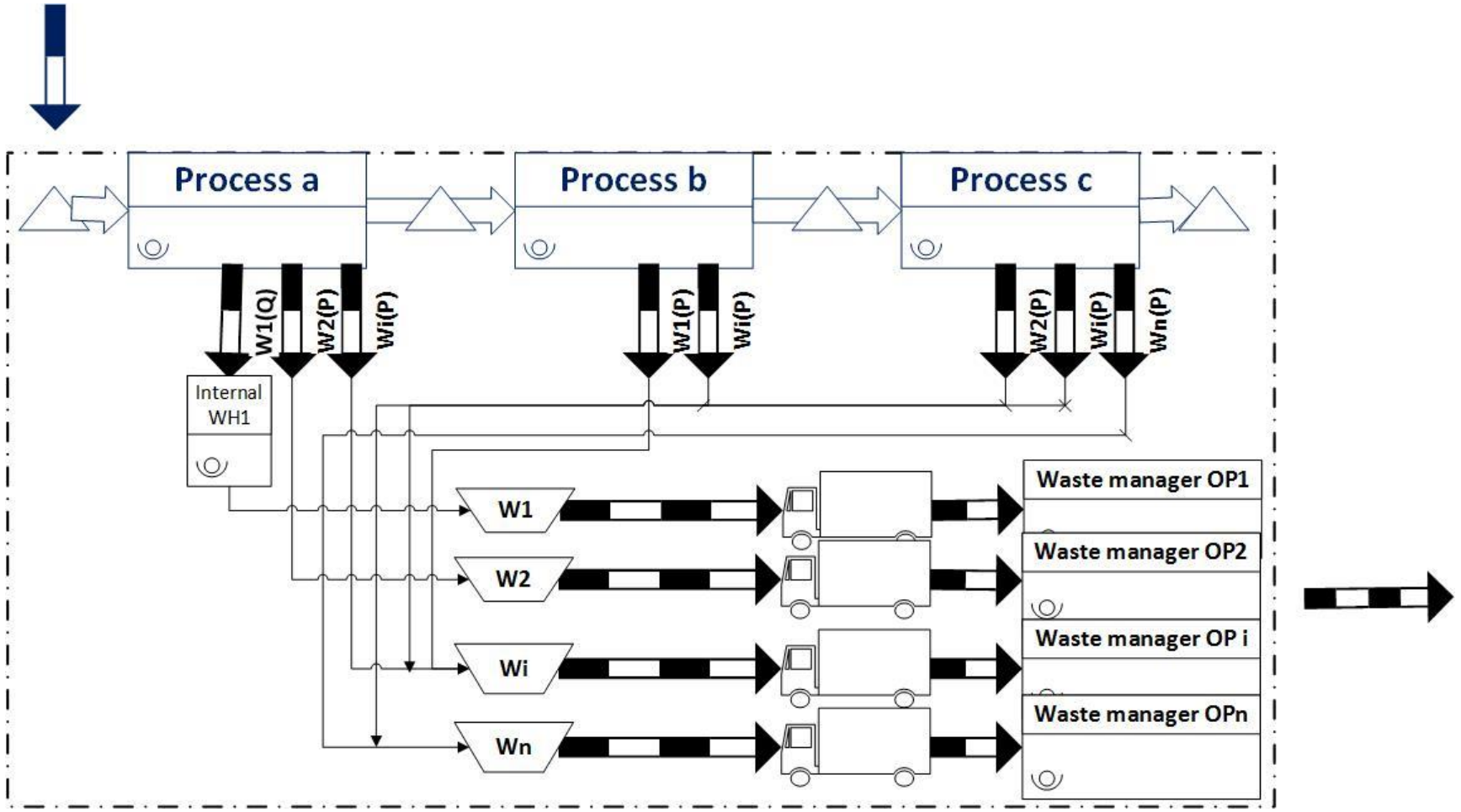
Operative stages in Waste Flow Mapping

Figure from Kurdve et al 2013

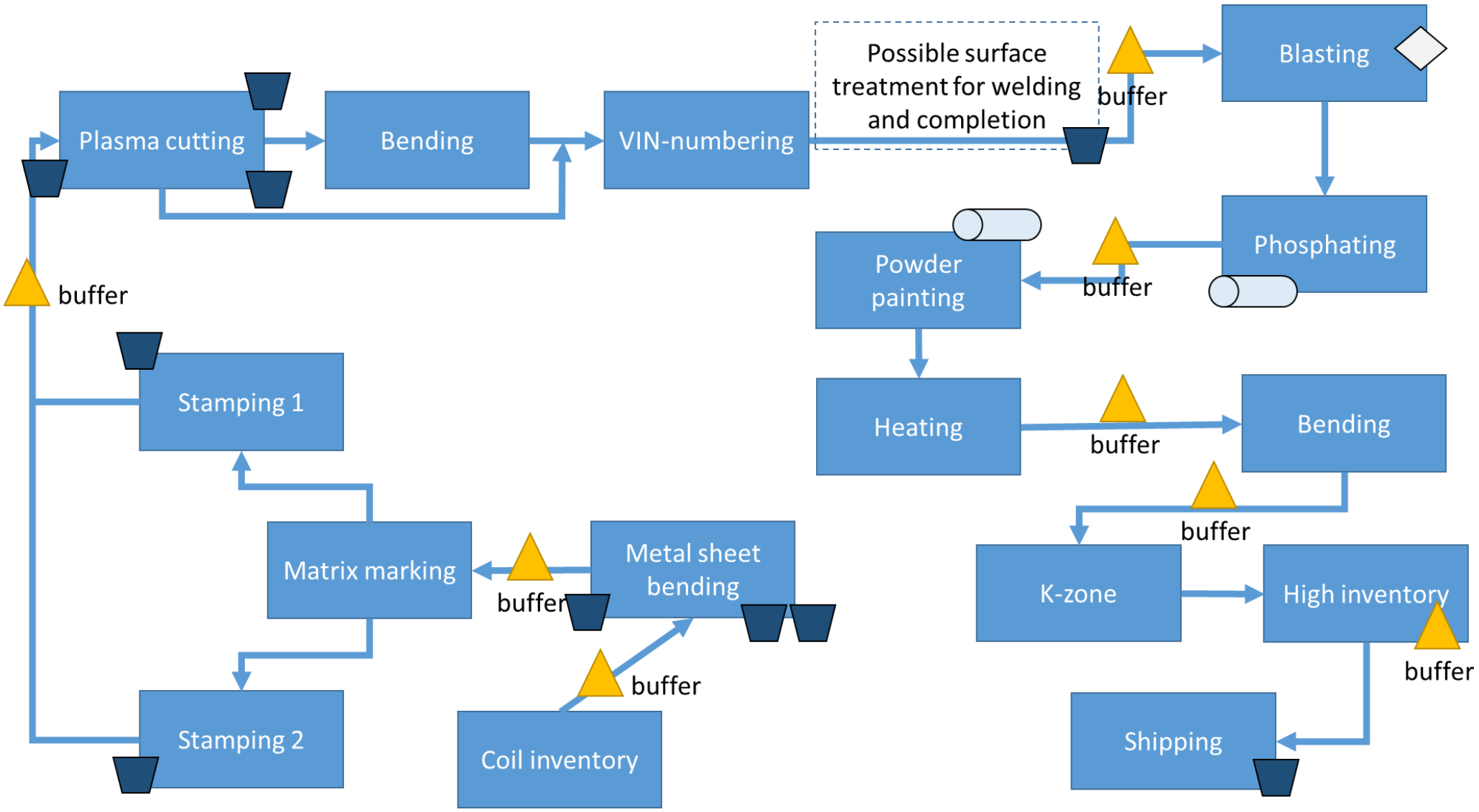


Depending on goals some of the steps may be omitted

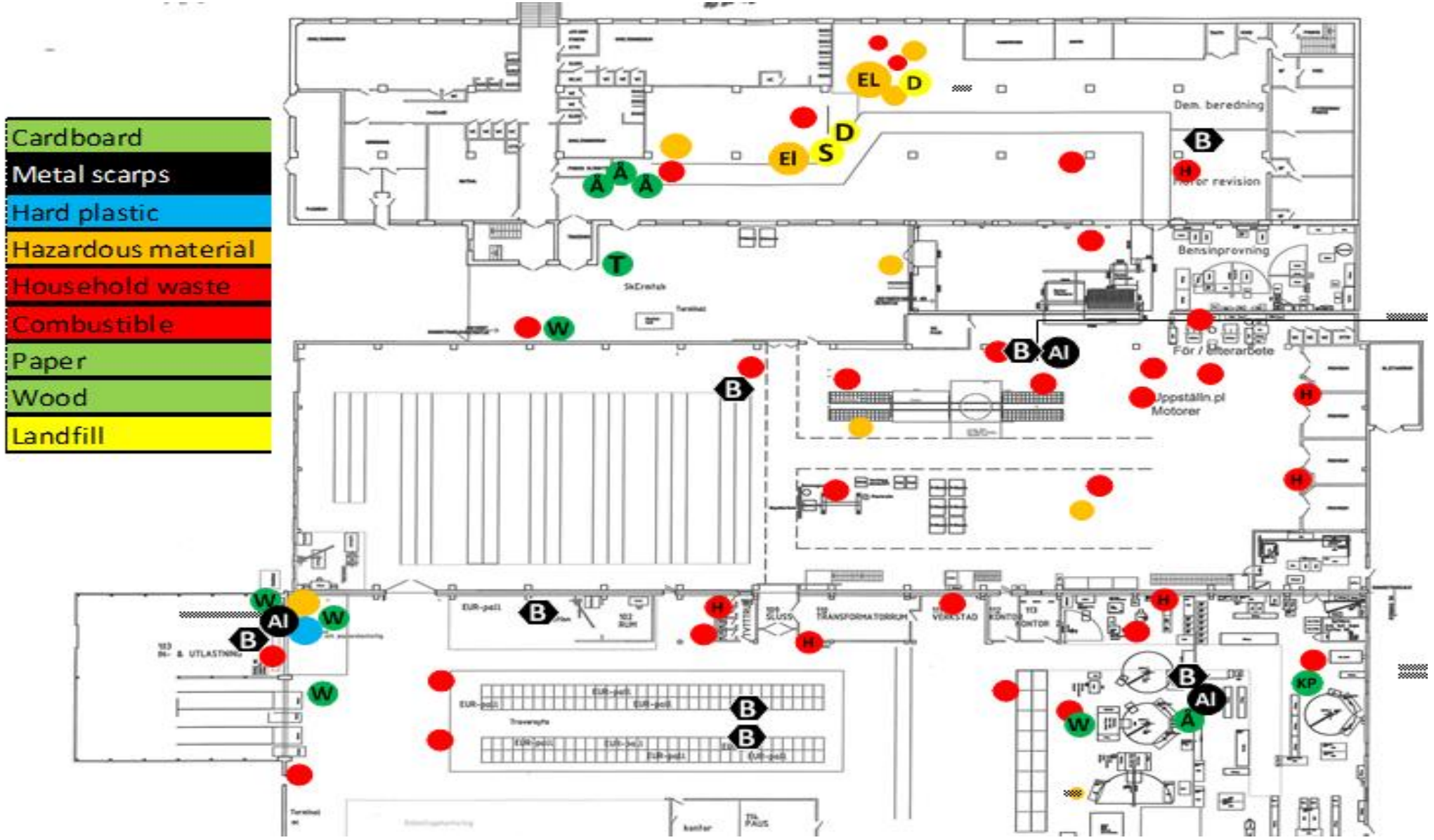
Process Mapping



Process Mapping



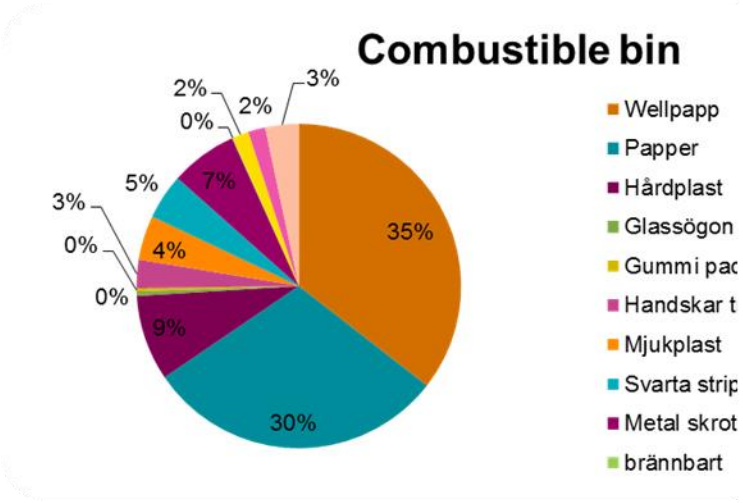
Eco mapping – waste management

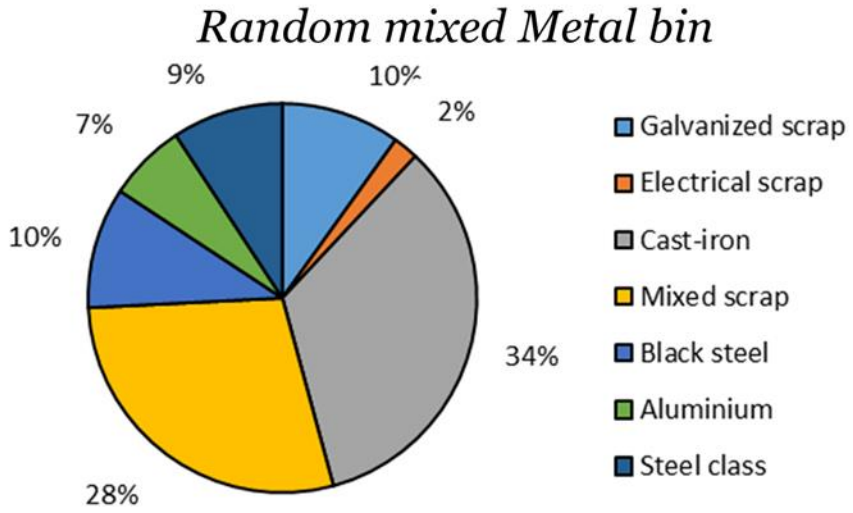


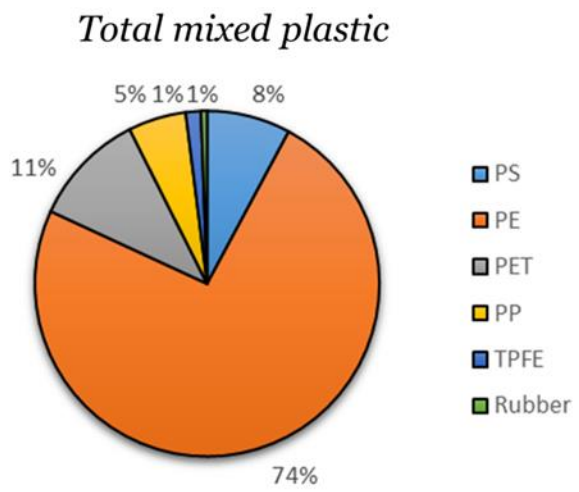
Waste sorting analysis

- Sorting
- Weighing
- Identifying
  - Reusing potentials
  - Unnecessary waste

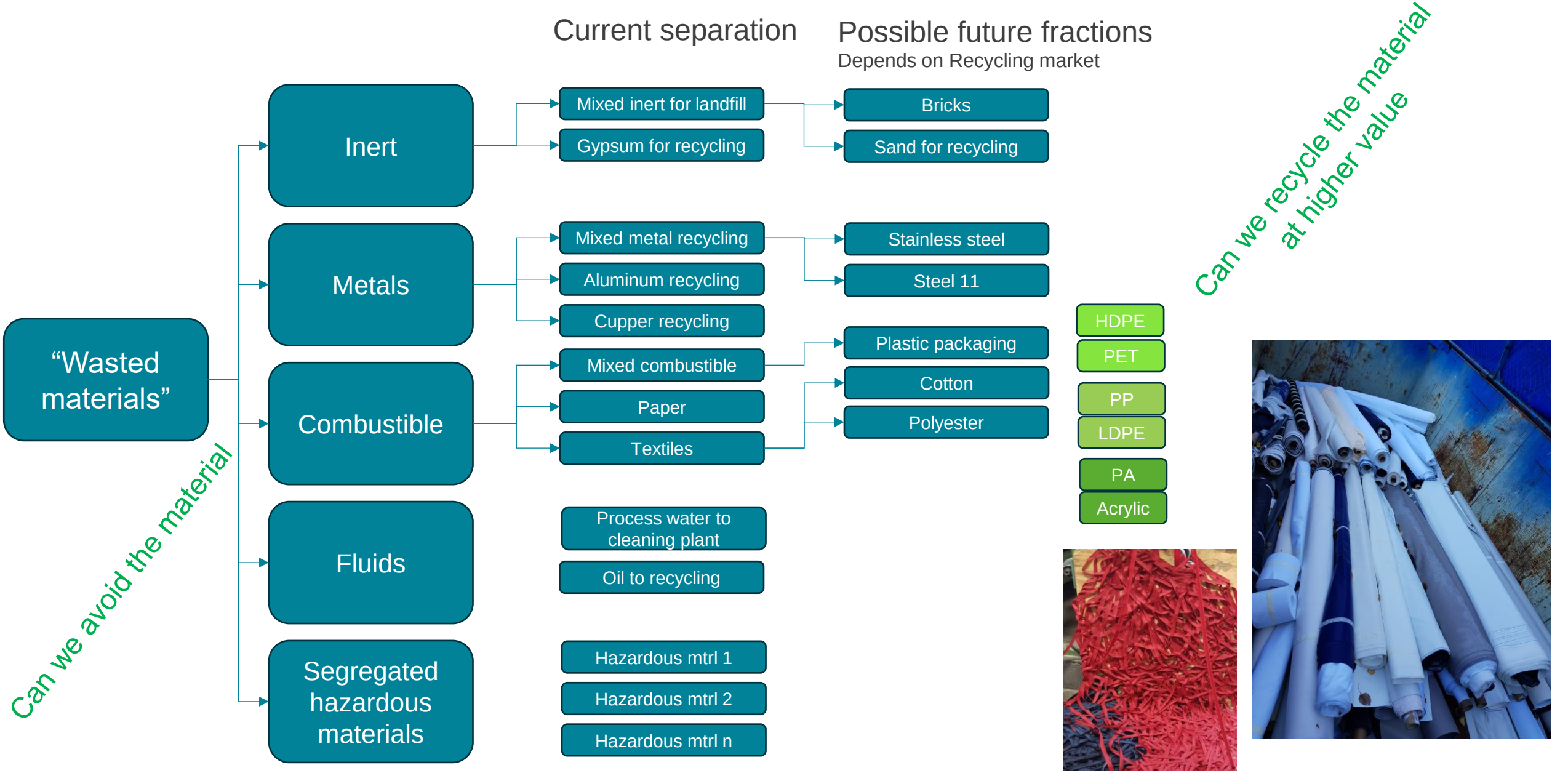
Reduce environmental effects and costs





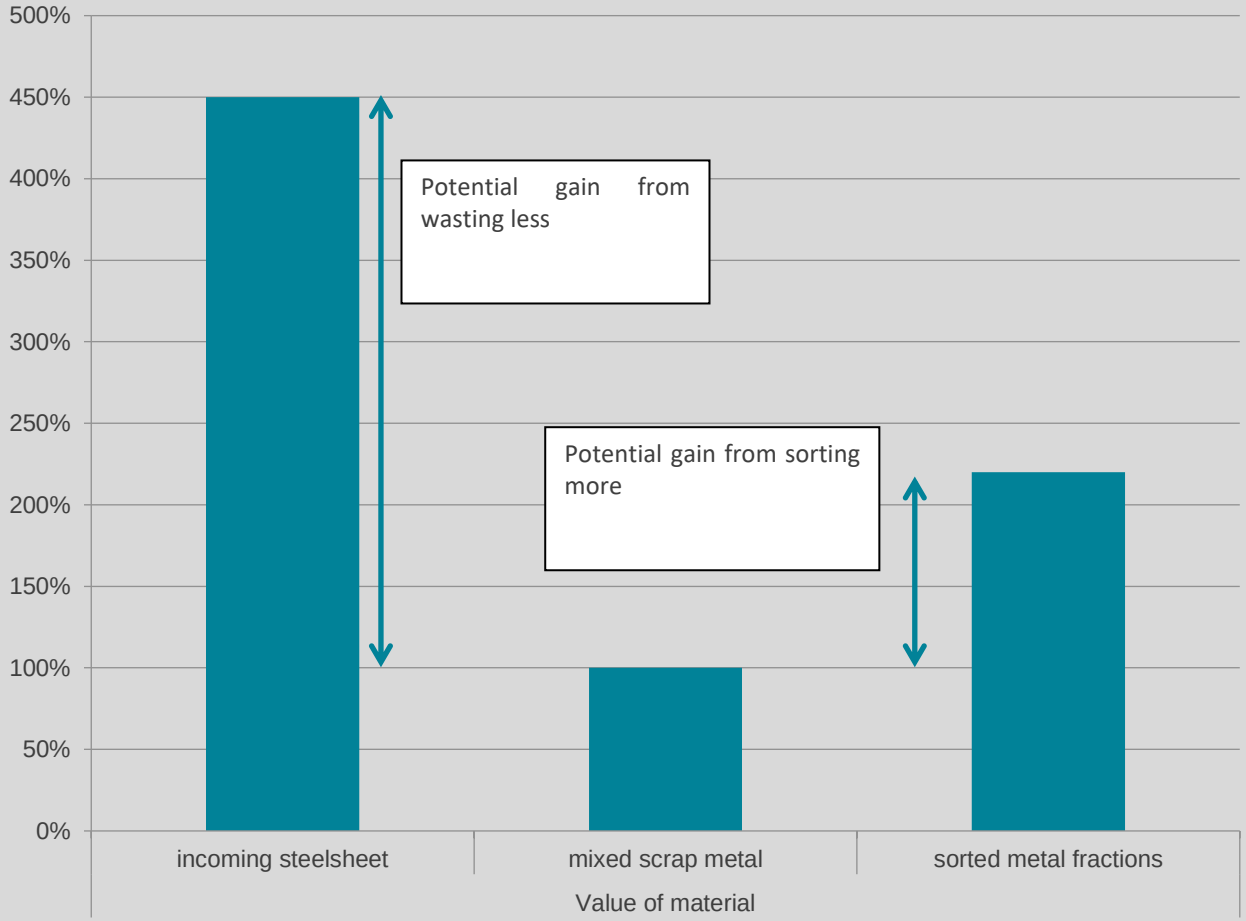


Map current and possible recycling sorting segments options



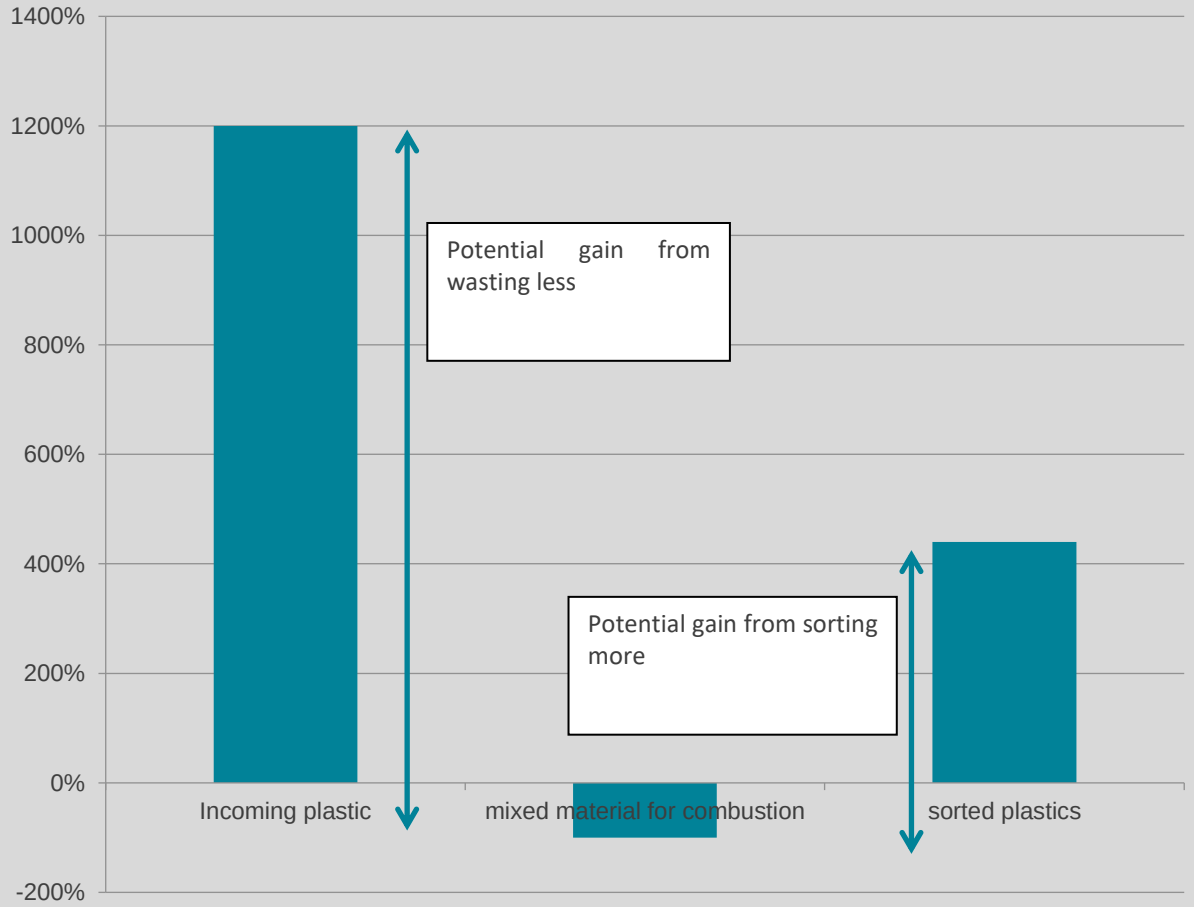
Potential for increased revenue and decrease costs by sorting metal scrap

In many plants steel is sent away as mixed scrap metal. In the best practice plant, most of the steel is (plant average is 96% sorted) sent away in each specific steel category. This gives over the double (120% increased) income compared to non sorting as mixed scrap metal. However, it is important to remember that the raw material cost is 350% higher and thus **the main saving is in avoidance of wasting material**.



Potential for increased revenue and decrease costs by sorting plastics

In one of the assembly plants the practice is to sort all plastic waste separately instead of sending it as combustible waste. This results in that instead of a cost for combustible waste the plant can get an income depending on the type of plastic ranging from 0-2200 SEK/ton. However, an even bigger gain is that **some of the plastic foam is reused** in the KD kitting area as packaging material. This **reduces the need for purchasing of new plastic foam.**



Analyse effects of sorting segments

Proposed segment indexes	Calculation	
Sorting degree	W (sorted)/ W (segment total)	(%)
Weight per produced unit	W (segment total)/P	(ton/#)
Cost per produced unit	C (segment total)/P	
Average segment treatment cost	C (segment total)/ W (segment total)	(SEK/ton)

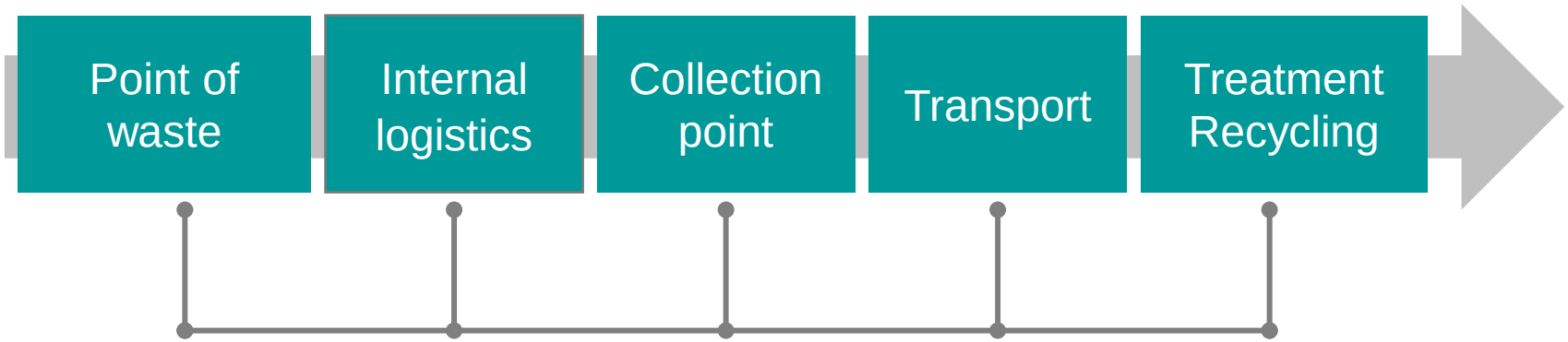
Horizontal KPIs for each of the five segments

	Bins	Internal handling	Ext. collection points	Ext. transportation	Ext. treatment
Service efficiency	# (bins)/ W (waste in bins)	Man-h/W	# (containers)/ W (waste in containers)	# (trucks)/ W (waste transported)	W (recycled)/ W (sum) (sum) & W (incinerated)/ W (sum)
Cost efficiency	C (bins)/ W (waste in bins)	C (man-)/W	C (equipment)/ W (waste in equipment)	C (transports)/ W (waste transported)	C (treatment)/ W (sum)
Overall effectiveness	C (bins)/P	C (man-h)/P	C (equipment)/ P	C (trucks)/ W (waste transported)	C (treatment)/P

Workplace: bins/signs | **Internal handling** | **Collection points** | **Transport** | **Final treatment**

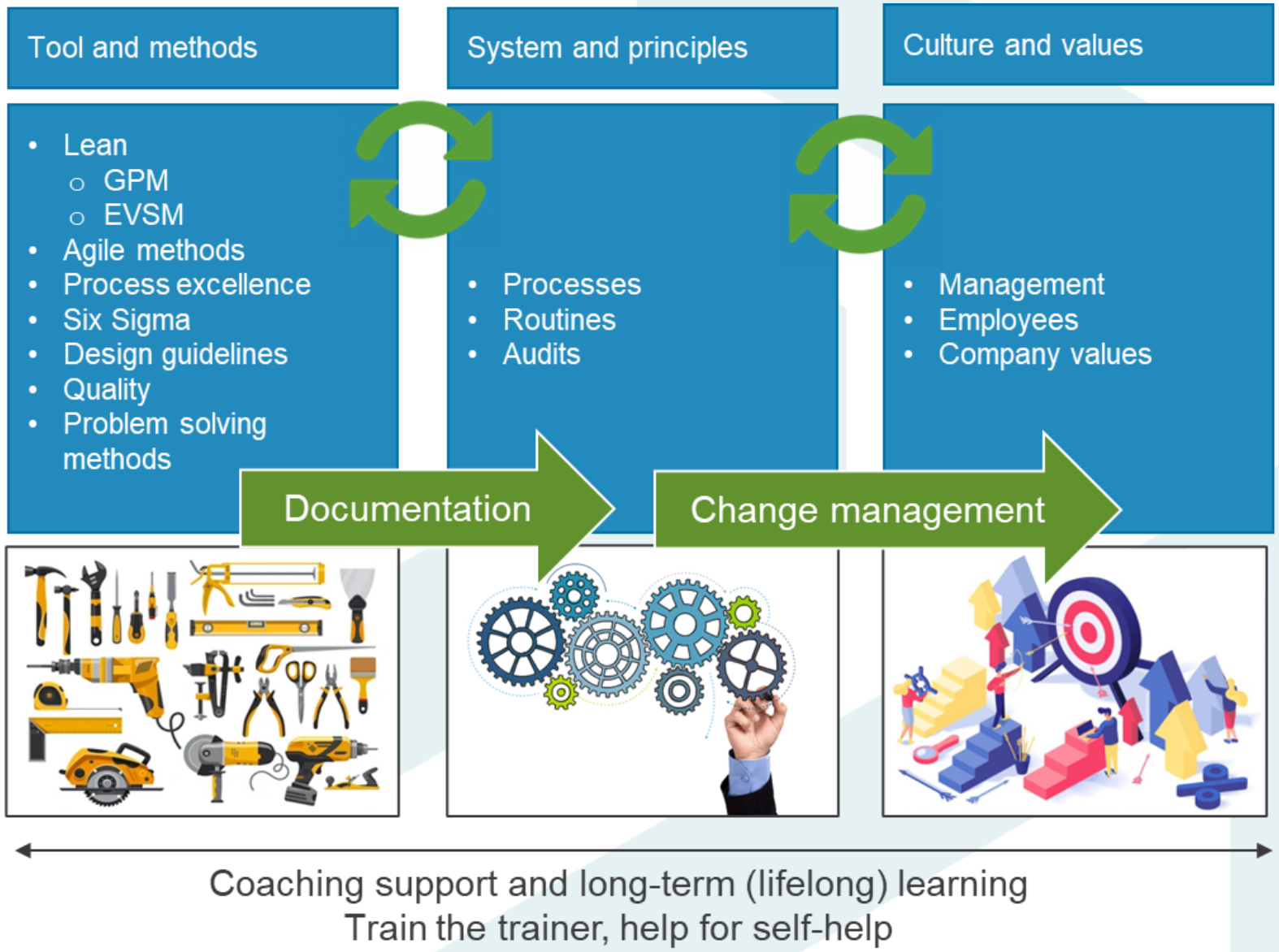
- Further support for doing cost and efficiency analysis is available in the handbook: WASTE FLOW MAPPING or (PDF) Waste Flow Mapping: Handbook
- Possibilities to combine with other methods and tools

Actor analysis – communication in the waste flow management



Inerviews with actors

Identify improvement possibilities in each step



Thanks for attention!

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Q&A

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Thank you

For more information about the RegioGreenTex Community Talks, contact: charlotte.denis@textile-platform.eu

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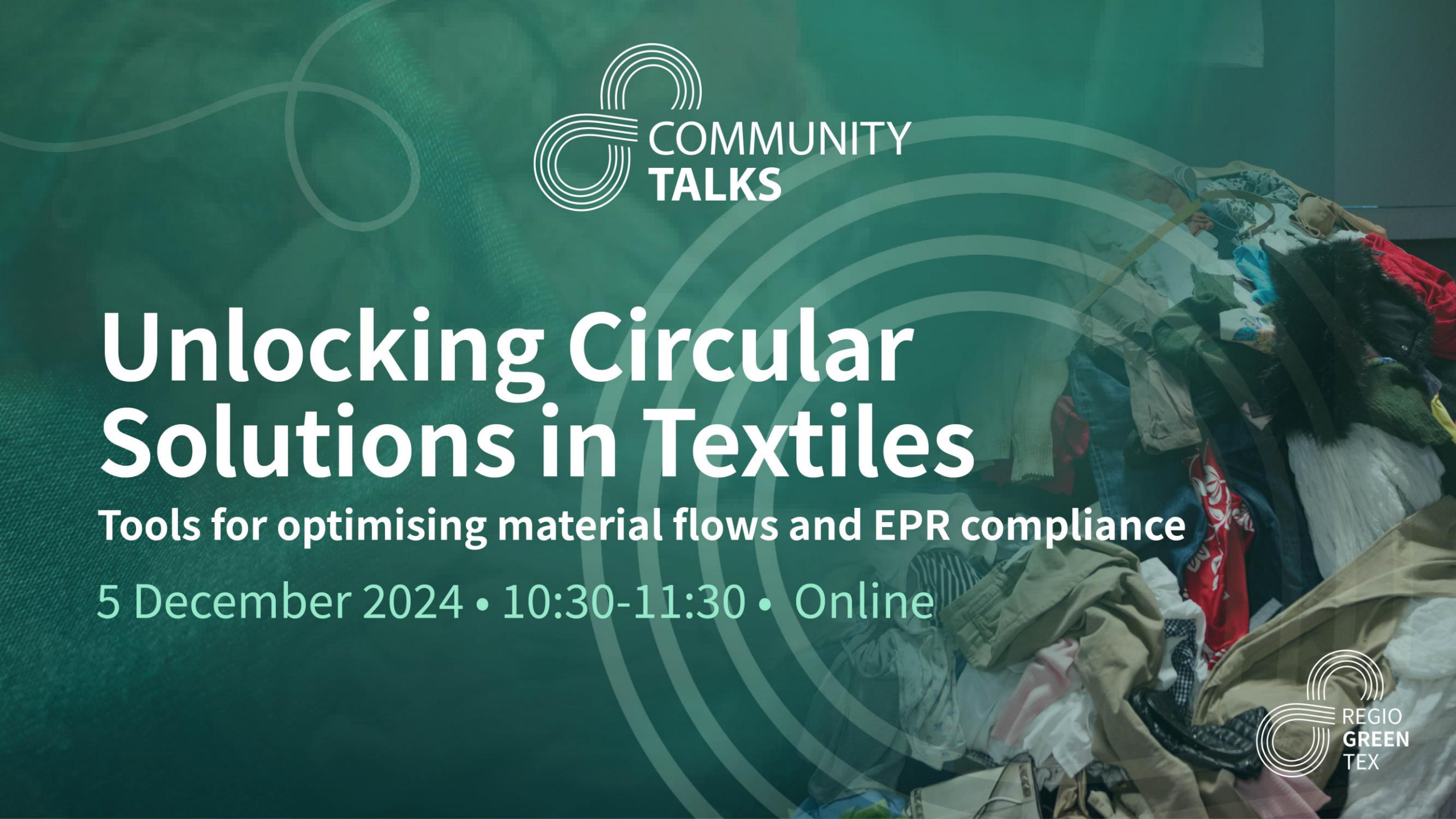

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