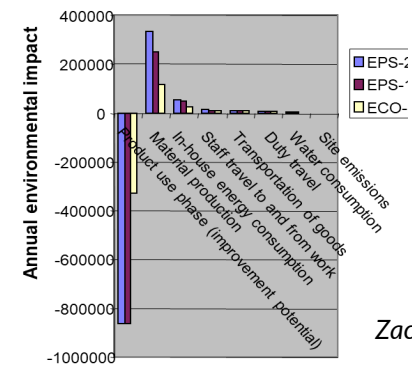


FROM 'sustainability' visions TO action

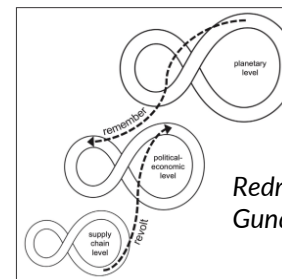
**Developing resilient and sustainable production systems
for the attractive, green and competitive industry of the future**

Ulrika Harlin
RISE
Linköping university

Martin Kurdve
RISE
Chalmers, MDU



Zackrisson et al 2005



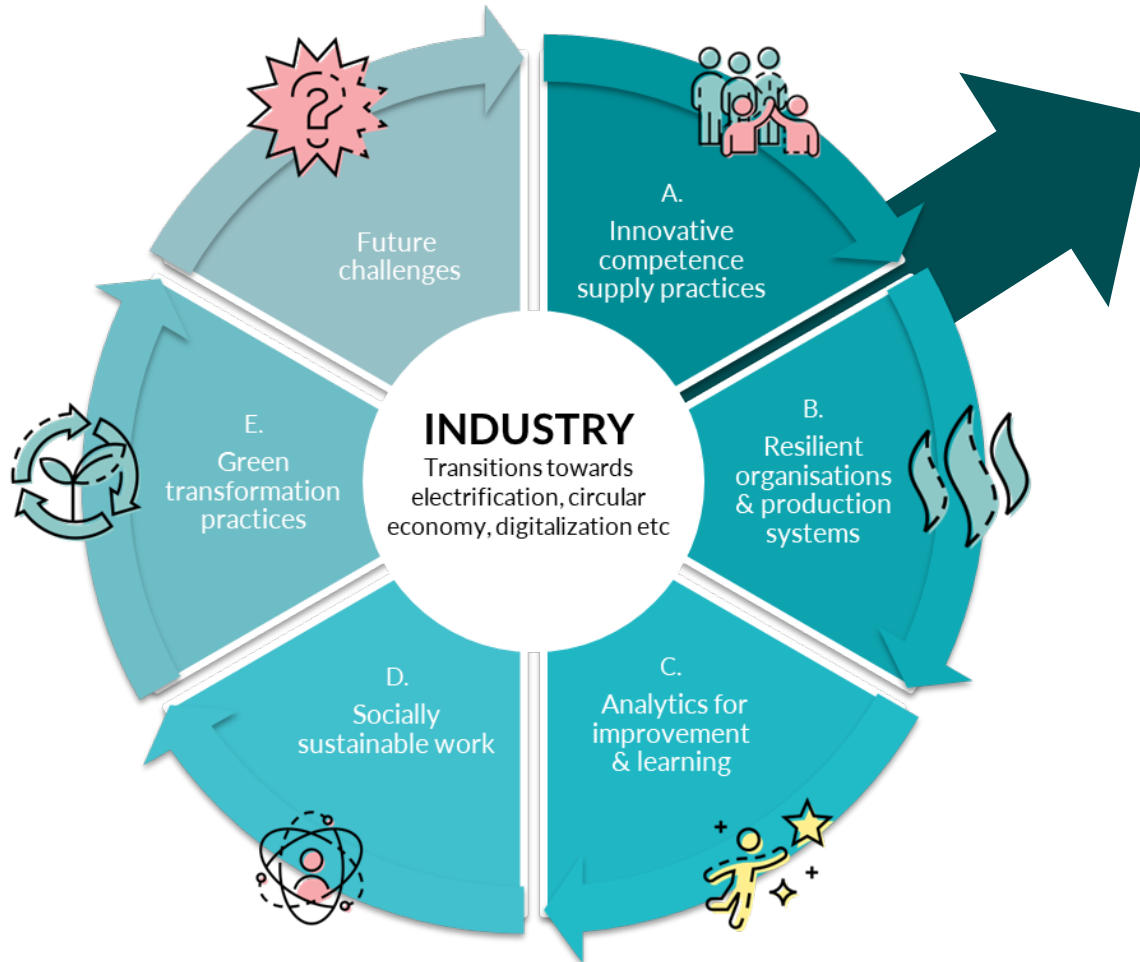
Redrawn from
Gunderrsson and Holling 2002

Our world is changing rapidly...

Existing industries
are being developed



New industries are
developing

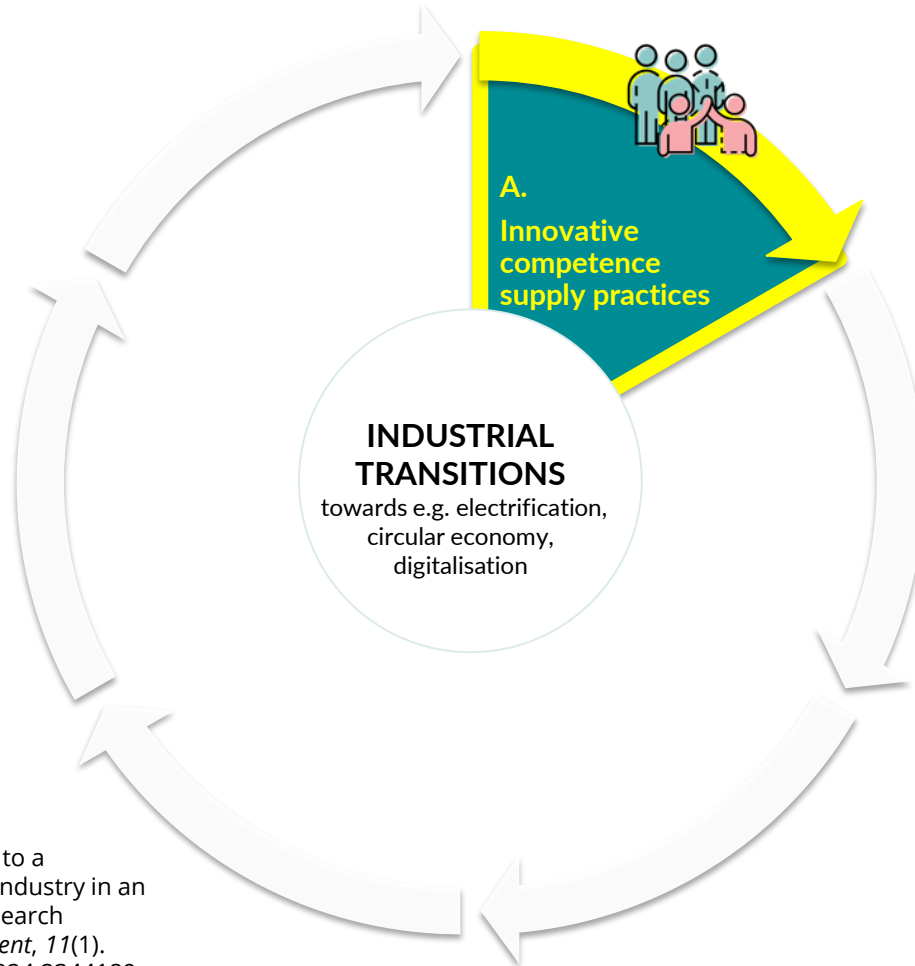


VISION

A sustainable,
competitive and
green industry in a
time of rapid change

Wallo et.al. (2024) Charting the path to a sustainable, competitive and green industry in an era of rapid change: proposing a research agenda. *Cogent Business & Management*, 11(1).
<https://doi.org/10.1080/23311975.2024.2344189>

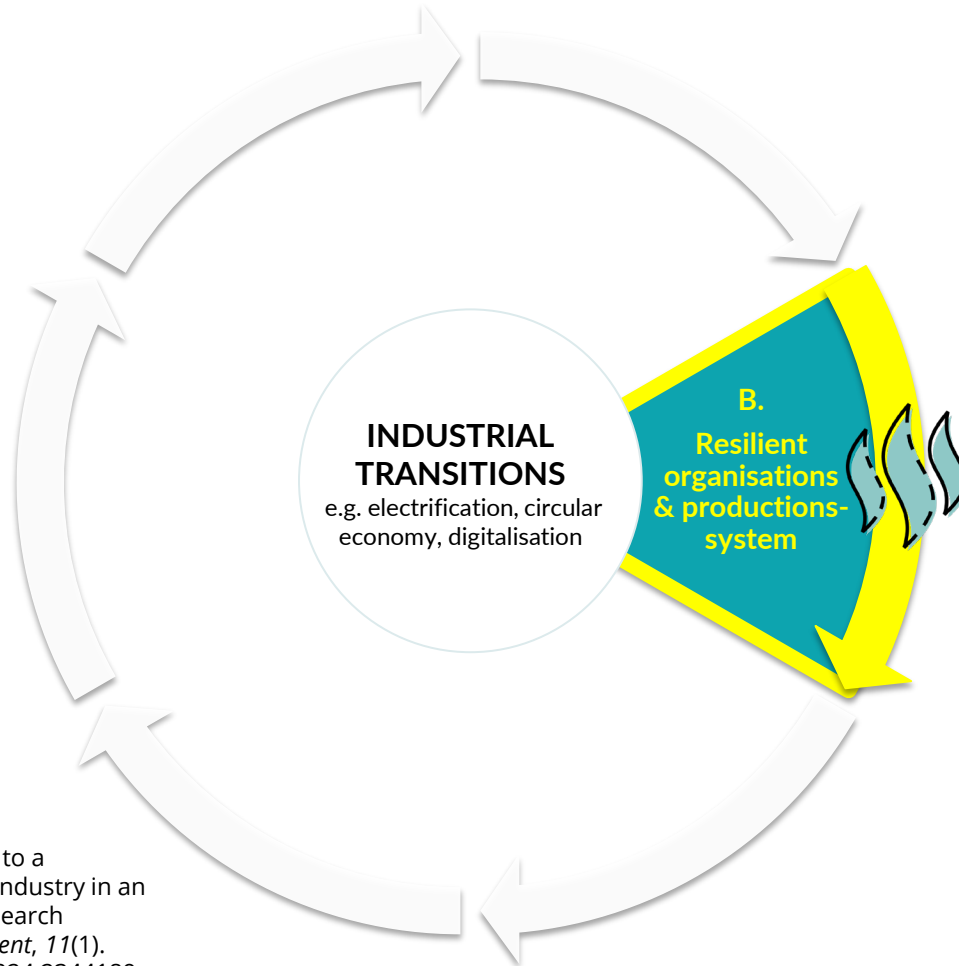
A. Innovative competence supply practices



To work in climate smart ways creates higher demands and new competences when designing products and processes

...not only as cheap as possible but also as sustainable as possible.

B Resilience



We need production systems and organisations that have:

- ability to maintain its function before, during and after major changes or disturbances
- ability to take advantage of new opportunities and emerge stronger on the other side

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[Hollnagel, E., *Resilience engineering in practice: A guidebook*. 2013: Ashgate Publishing, Ltd.]

Examples project RASP:
RESILIENT AND SUSTAINABLE PRODUCTION

Greenfield and brownfield production development projects



Säfsen, K., Harlin, U., Johansen, K., Larsson, L., & Rönnbäck, A. Ö.
(2023). Resilient and sustainable production systems: towards a
research agenda. *International Journal of Manufacturing
Research*, 18(4), 343-365.



How to build a production facility in stages that is also upgradeable?

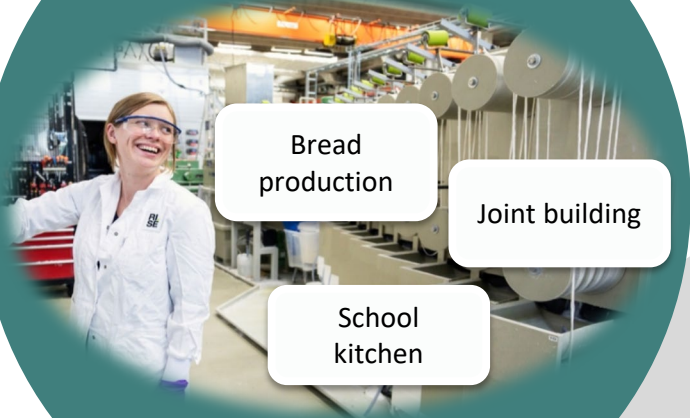
How can sustainability be taken into account when making new investments in production?

How to develop user-centric workplaces in an increasingly complex and digitalized production environment... that is constantly changing?

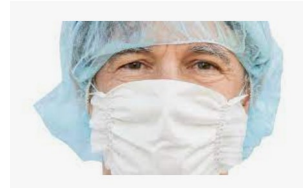
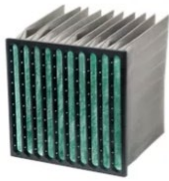


Resilient and sustainable production systems

Development projects



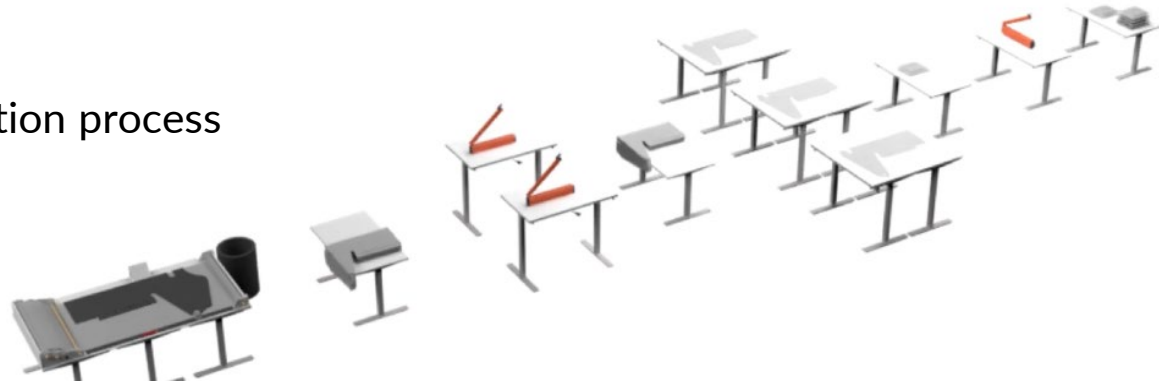
**Analysis of
obstacles and success factors
to include sustainability and resilience
in the development of production systems**



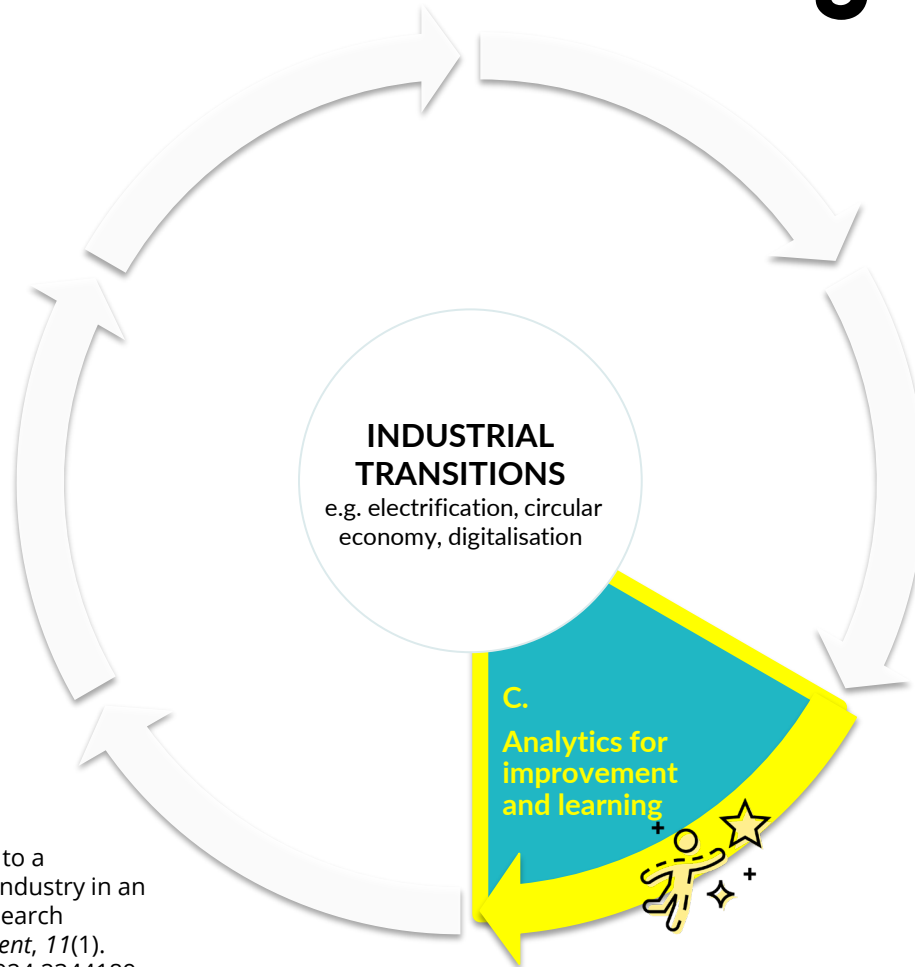
Production transition lessons learned from Covid

Major shortages of face masks, respirators, hand sanitizer, protective gowns, diagnostics and visors. Many questionable products in circulation

- Quickly develop equipment/process
- Ensure quality, material supply, production process
- Practice agile processes!



C. Analytics for improvement and learning



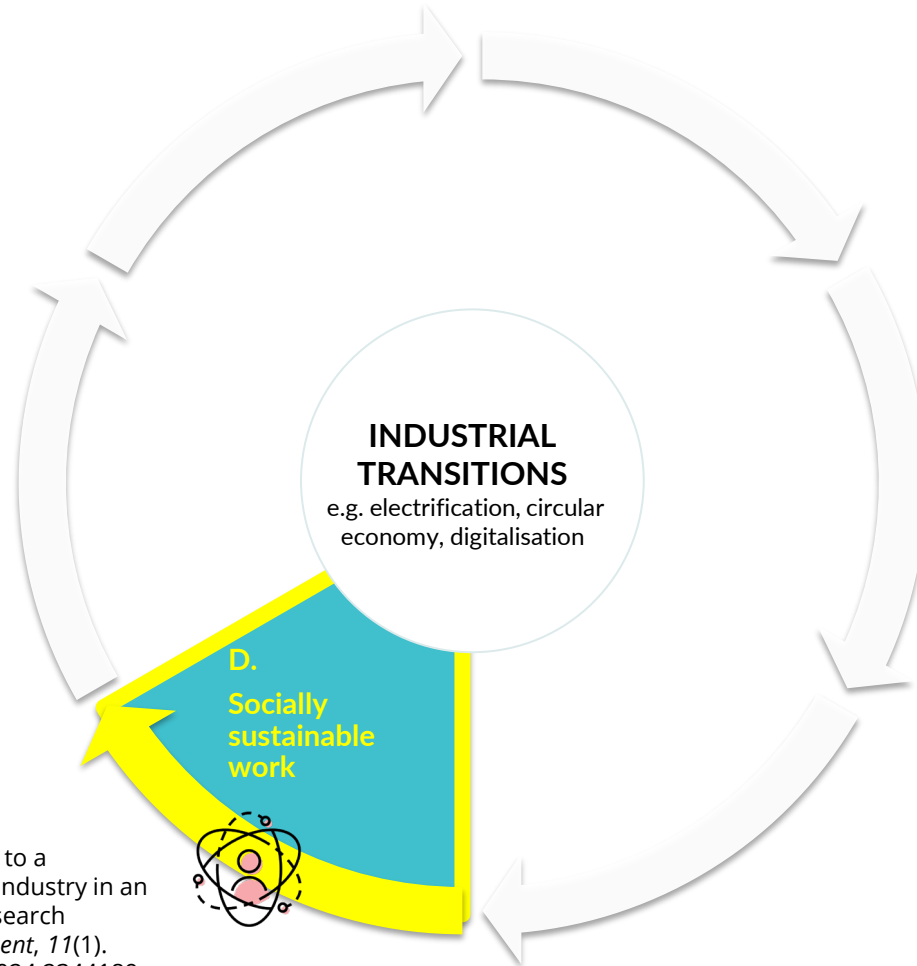
We need to make better fact-based decisions, yet difficult due to rapid changes and uncertainties

How can we systematically use data and do statistical analysis to gain insights and drive continuous improvement in our organisations?

How can measurements and KPIs not only be used for control and follow-up – but also to support improvements and learning?

Wallo et.al. (2024) Charting the path to a sustainable, competitive and green industry in an era of rapid change: proposing a research agenda. *Cogent Business & Management*, 11(1).
<https://doi.org/10.1080/23311975.2024.2344189>

D. Socially sustainable work

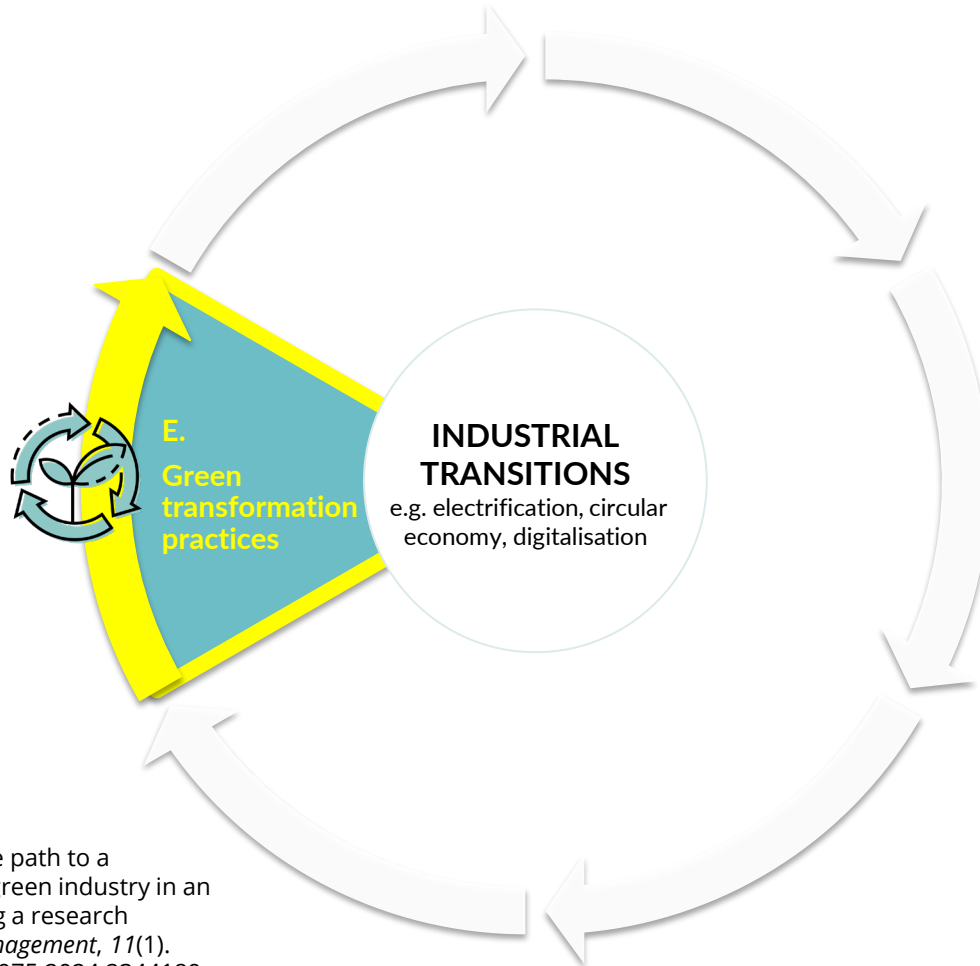


*We are building a bridge
at a fast pace
while we at the same
time are walking... no...
speedily running on it*

- Understanding the impact of change
- Create an entrepreneurial company culture through inclusive workplaces and autonomy in teams, taking advantage of diversity
- Create seamless collaboration across traditional borders

E. Green transformation practices

*Collaborate with people
taking you to the next level*



Wallo et.al. (2024) Charting the path to a sustainable, competitive and green industry in an era of rapid change: proposing a research agenda. *Cogent Business & Management*, 11(1). <https://doi.org/10.1080/23311975.2024.2344189>

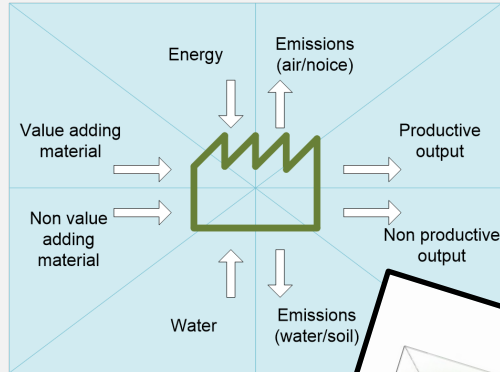
Transform Operations

Redesigning the system

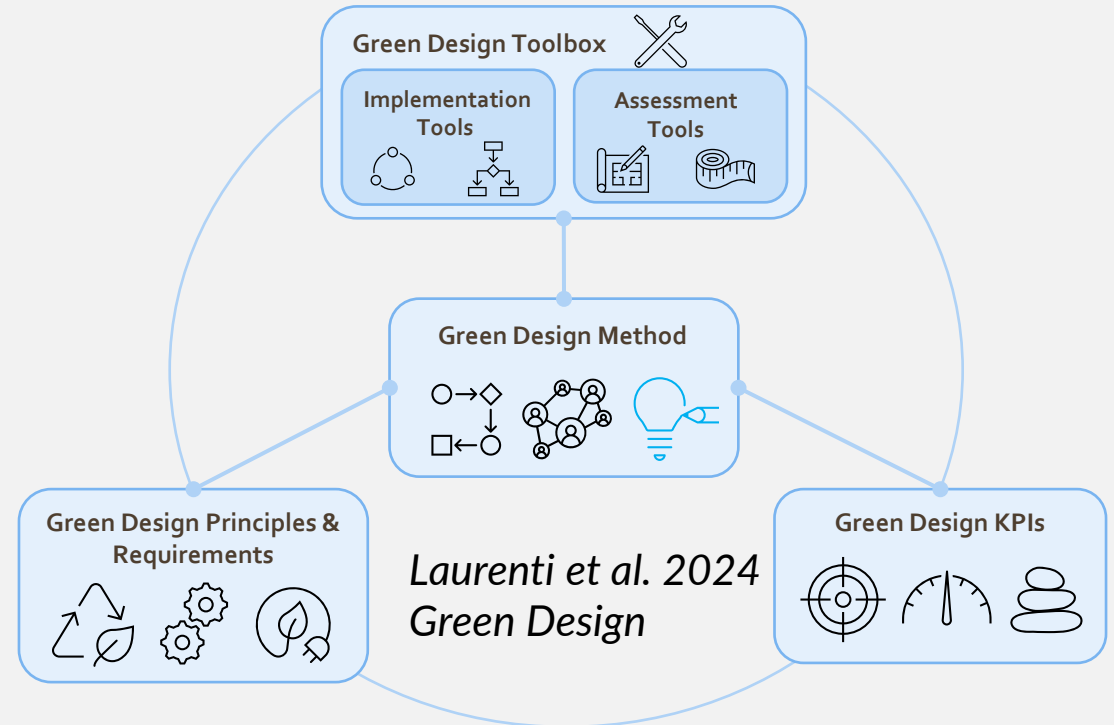
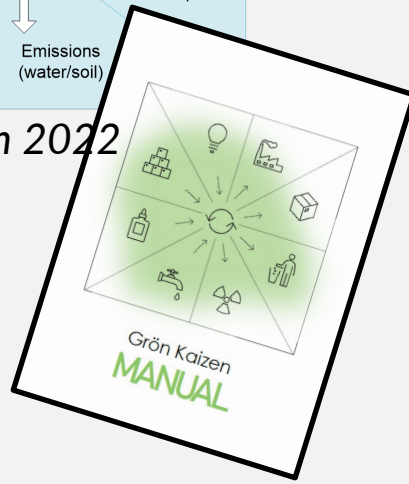
Grasp the window of opportunity
for change

- Operations 30%
- Design 60%

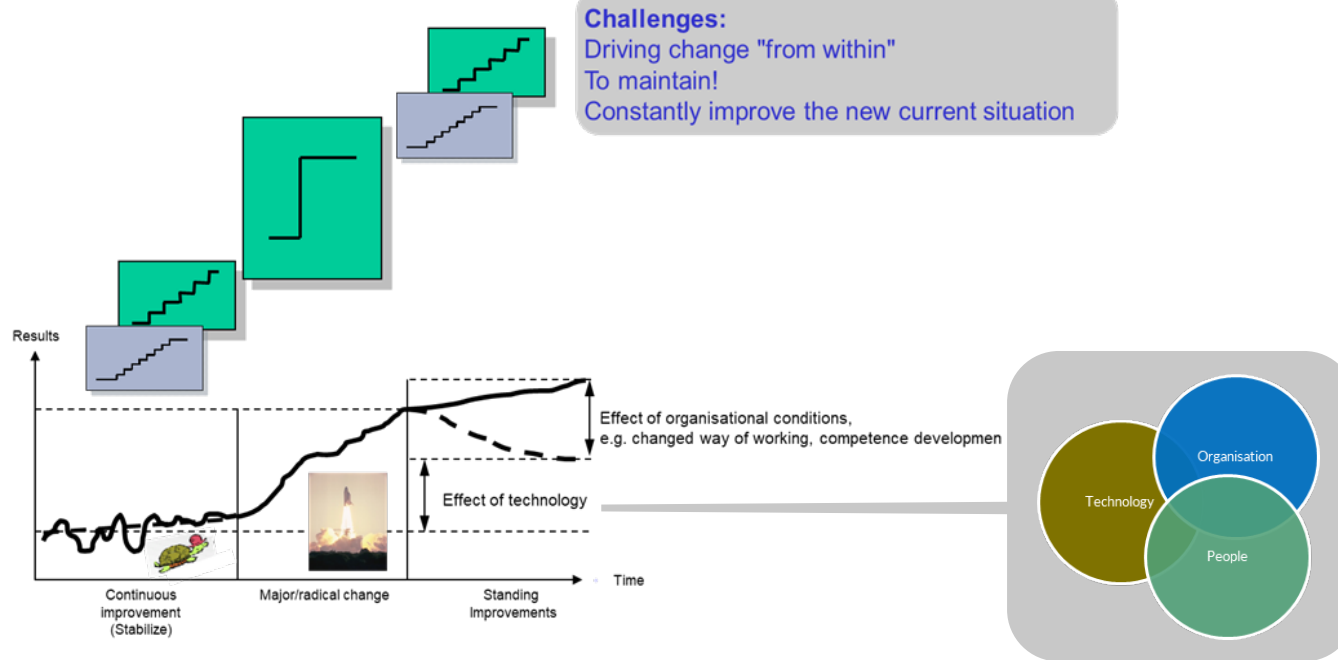
Green Performance Map



Kurdve & Bellgran 2022



We know that technology is essential ... but it is not enough



www.leanresan.se
Project Lean & Green Production navigator
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We need increased knowledge of HOW to consider organisational conditions while operationalising visions into actions within an environment of rapidly evolving circumstances

Reflections

Welcome to collaborate!



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