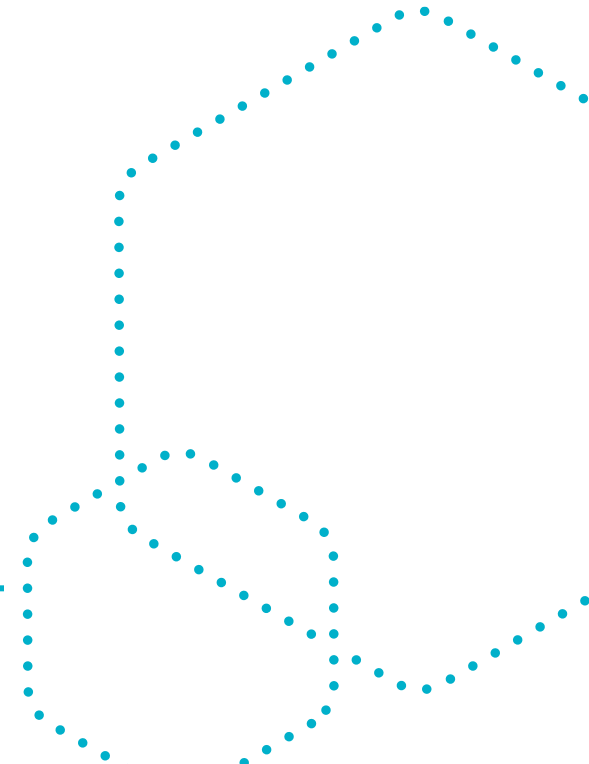


# **Twin Transition as a Transformer of Work and an Opportunity for Development**

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# Transitions

- **The green transition** refers to a shift towards ecologically sustainable economy and growth, which leans on low-carbon solutions that promote biodiversity and on the sustainable use of natural resources.
- **The digital transition** refers to the comprehensive integration of digital information technology into everyday activities.
- (In a work context) **the twin transition** refers to the implementation of the green transition by making use of the opportunities of digital information technology in the development of products, services, operating processes, working methods and working environments.

# Global warming and the loss of natural resources as wicked problems

- **Complexity:** diversity of the interactive relationships involved
- **Dynamism:** their constantly changing nature
- **Uniqueness:** their historical specificity
- **High risk:** their potentially fatal effect on nature and humanity if left unresolved



Humankind may not have an understanding and ability to solve these problems in a sustainable manner with its current knowledge, competence of other available resources.



The need to boost investments in research, development and innovation.



**For society and  
humanity as a whole:**  
ecologically sustainable  
development



**For companies and other  
work organisations:**  
new business opportunities



**For employees  
and citizens:**  
new jobs and qualitative  
development of work

This win-win-win proposition illustrates the implementation of the twin transition in an ideal world, where different goals and interests can be easily reconciled.

In the real world, however, the twin transition is a **tense process**.



**Increased energy consumption of AI**  
**Carbon footprint of green energy**  
**Increased digging of metals from the soil**

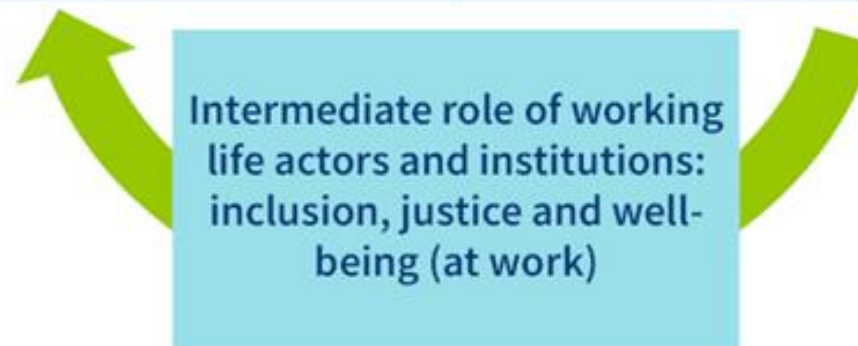


**Business and plant close-downs**



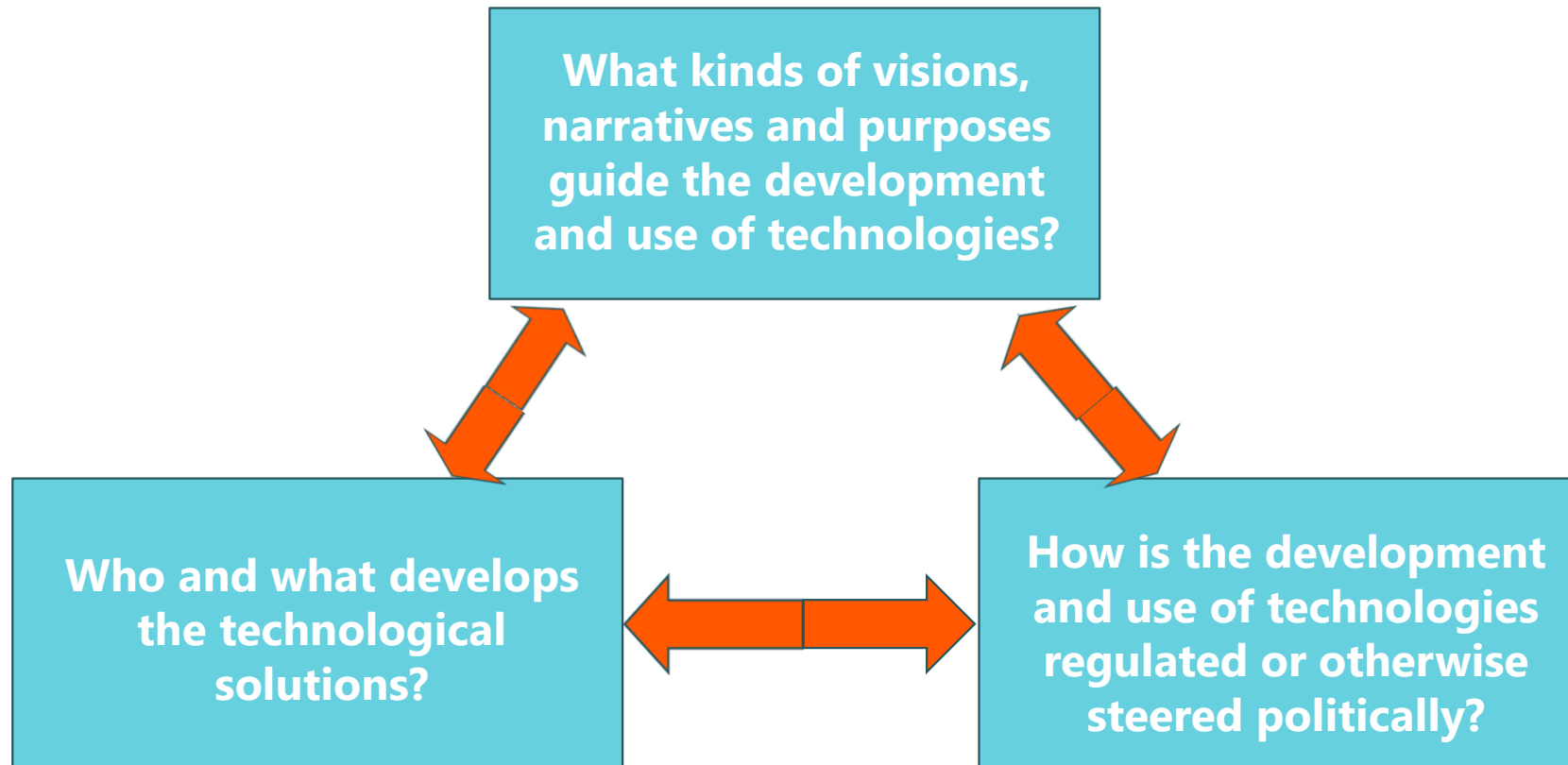
**Loss of employment**  
**Deterioration of job content**  
**Feelings of social injustice**

Work organisation level		Policy level	
Digital transition	Green transition	Digital transition	Green transition
<p>Methods to promote strategic and (business) operational objectives: products, services, markets, processes, brands (customers, labour, citizens, potential investors), etc.</p> <p>Transitions a) overlap at the work organisation level, b) may take different forms in different work organisations and proceed at different rates c) and are not automatically in line with policy-level objectives and methods.</p>		<p>A way to support the realization of the green transition and other economically and socially sustainable social activities</p>	<p>A societal vision, the achievement of which is guided by the set policy objectives.</p>



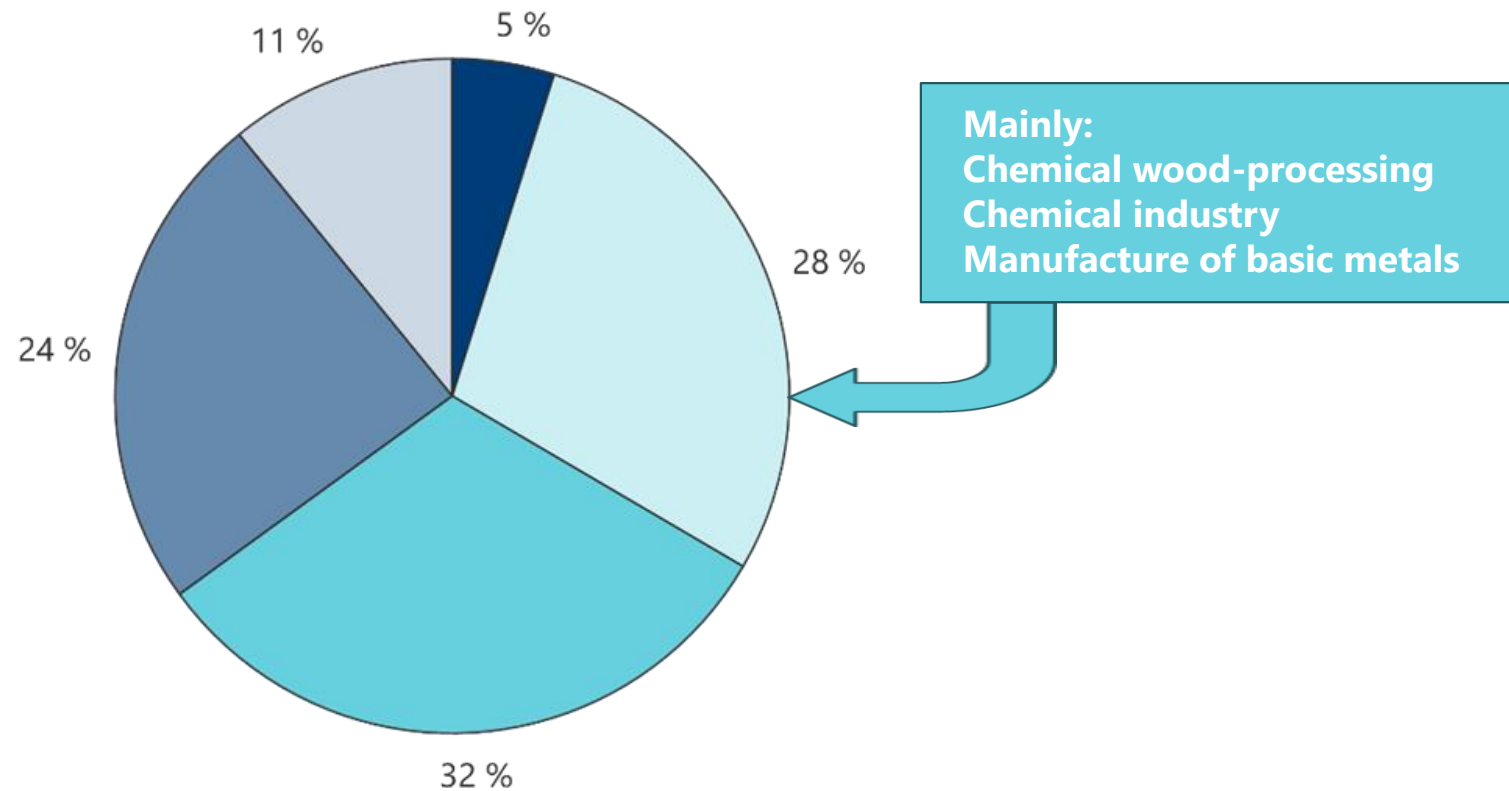
# TECHNOLOGY – neither good nor bad, not is it neutral

(Kranzberg's first law of technology)



# CO2 emissions by industry in Finland (2022)

CO2 emissions (2022)



■ Primary production ■ Manufacturing ■ Energy supply ■ Transport and storage ■ Others



## Focus of the twin transition in work contexts

- GHGs emissions are heavily concentrated in a few industries.
- Individual industries are not islands separated from the rest of the economy.
- The targets in the twin transition are not so much individual industries as **functions that are vital for a society.**
- These include energy production, food production, traffic and transport, health and well-being services, education, construction and financial services.
- These functions cut across boundaries between industries as diverse value chains and networks and other organizational interdependencies.
- Many innovations or other reforms promoting the twin transition that are targeted at the ways in which the different functions of society are implemented are **cross-cutting in terms of work and employment and other impacts.**

# Digital solutions to promote the green transition

**Measuring, monitoring and evaluating the ecological sustainability of activities and processes and identifying new solutions**

**Measuring, monitoring and evaluating the functionality of products and services**

**Monitoring and predicting process deviations, disruptions and faults**

**Monitoring and optimising the energy and resource efficiency of facilities**

**Monitoring and predicting demand for products and services**

**Virtualisation of products and services and their production methods**

**Introducing new types of virtual information and communication methods**

**Comprehensive analysis and optimization of complex systems**



**Measuring, monitoring and evaluating the ecological sustainability of activities and processes and identifying new solutions.**

Digital information technology can be used to measure greenhouse gas emissions generated by operations and processes and to compare the ecological sustainability of alternative solutions. The accumulation of information also helps to design new solutions that are more sustainable ecologically.

**Monitoring and predicting demand for products and services.**

Digital information technology can be used to develop predictive models of factors that influence fluctuations in demand for products and services. Increased predictability of market demand helps to improve supply chain management, reduce the carbon footprint of storage, and reduce unnecessary use and waste of various resources.

## Twin transition and employment

- The general view among experts on the employment impacts is that, as a whole, they will be moderate and more likely to be slightly positive than negative in terms of total employment.
- However, any impacts that increase or decrease employment may affect different industries, regions, occupations and organizations in very different ways, and for this reason, they may be **very different in terms of direction and scope.**

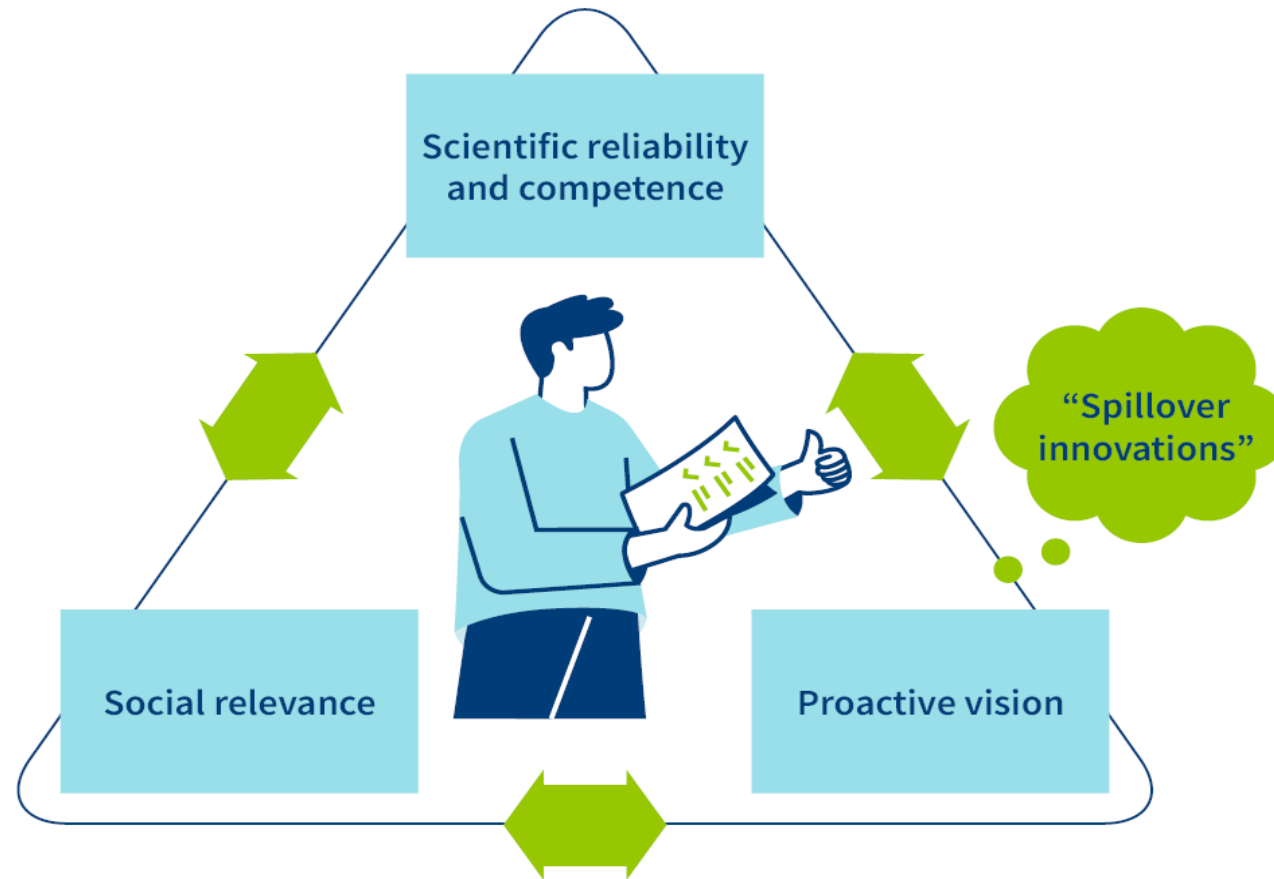
# Different trajectories for different types of industries and occupations?

- The need for new expertise and innovations required by the twin transition will further strengthen the long-standing growth in the demand for **highly-skilled professionals** across the board.
- The infrastructure investments required for the twin transition target at industries with high GHG emissions. The building of new infrastructure will increase the demand for **labour in blue-collar positions in manufacturing, maintenance and construction**, but may also lead to reductions in manufacturing and energy supply with strong ties to fossil energy sources.
- The twin transition aims to make resource use and recycling more efficient in all industries. This is reflected as employment cuts, especially in services not targets of the investments into twin transition infrastructure, such as **trade, transport or tourism**. Concurrently, services linked to the green transition and the circular economy may have positive employment point impacts in some service-intensive sectors alongside manufacturing.

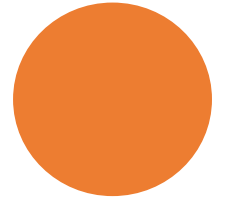
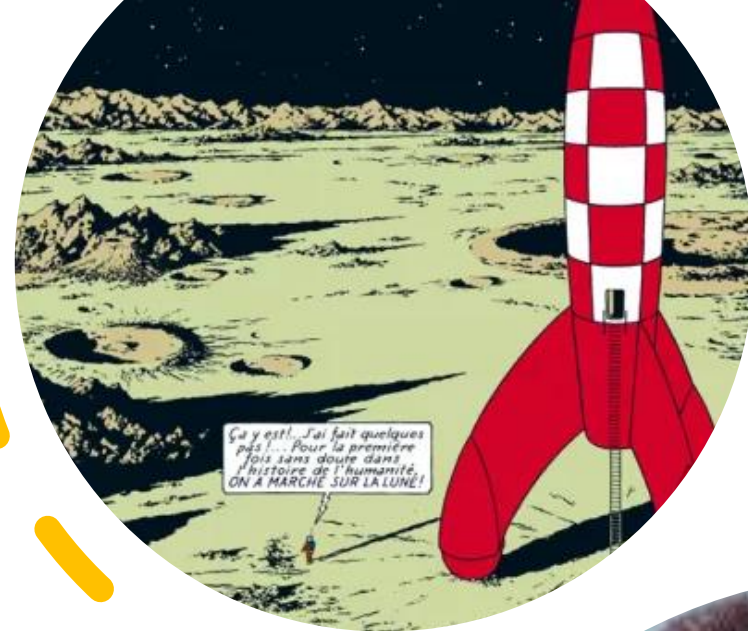
# Emerging labour policy issues

- Sufficient employee competence and supporting opportunities for competence development.
- Using the leeway opened by the twin transition to improve the quality of work.
- Opportunities for employees to participate in developing new solutions.
- Fair distribution of the outputs of the twin transition.
- Financial, professional and psychological support for employees during significant changes to their position and nature of their work.
- Ground rules for privacy, transparency, information security, data protection and ethical use of data in digital solutions and data sources and compliance thereof.

# New requirements for working life research



*“Kennedy foresaw the way in which the ambitious mission [to land a man on the Moon and return him safely to the Earth] would result in ‘spillovers’ affecting life on earth – **technological and organizational innovations that could never have been predicted in the beginning**” (Mazzucato 2021:4).*

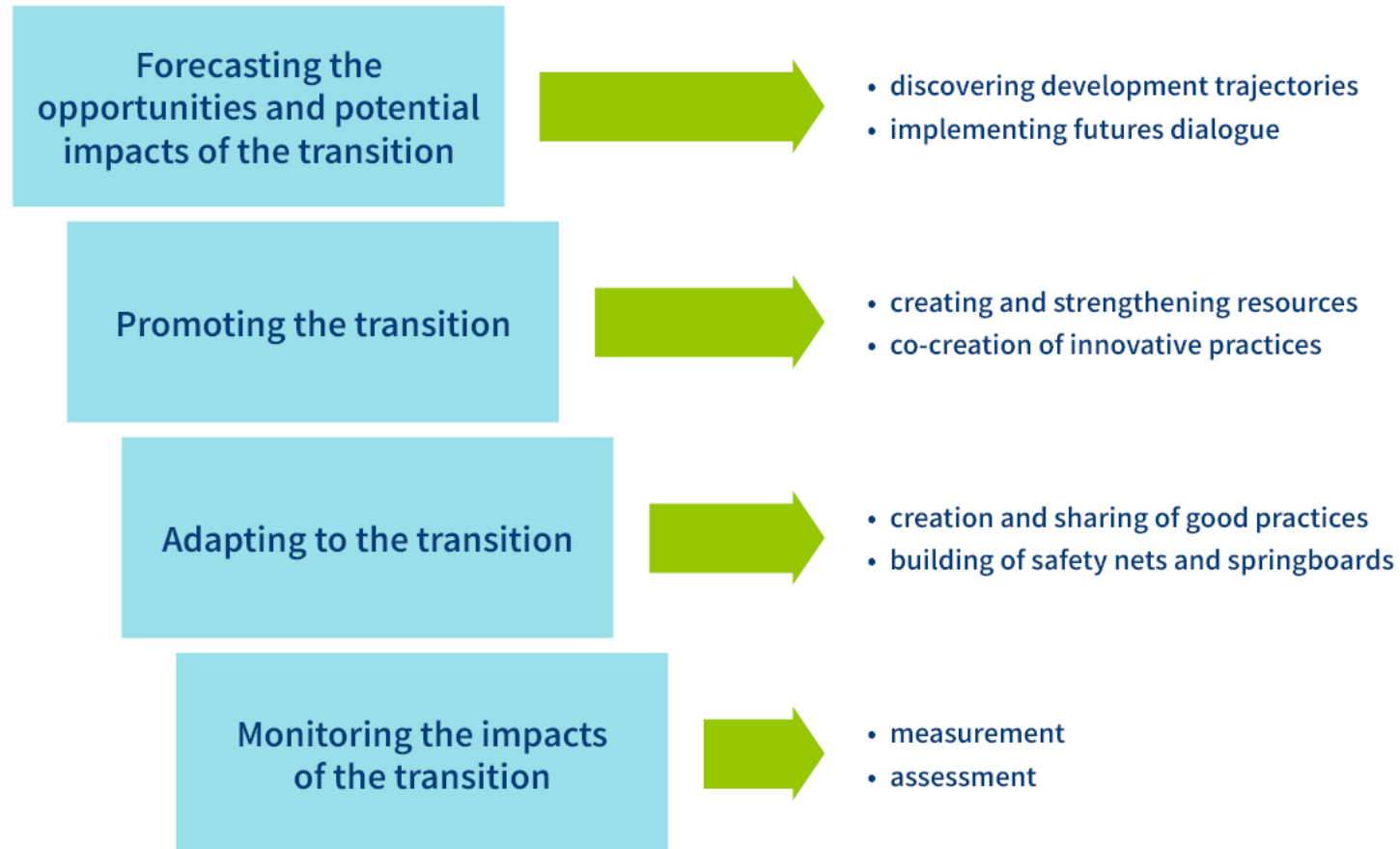


*“At least as important as the spin-offs, however, was the **process** of this massive science- and innovation-led mission. Innovations required researchers from different disciplines and sectors to co-operate to solve problems” (Mazzucato 2021:85).*





# Different positions of working life research



## Final remarks

- The twin transition is linked to **an important social dimension!**
- While the focus of the twin transition is understandably on industries with the highest GHG emissions, the transition applies to **all industries and occupations!**
- Despite the interconnected nature of digitalization and the green transition, promoting the green transition at the work organization level is **much more than just introducing new technological solutions!**

# Thanks! Questions?



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