

RESOURCE EFFICIENCY THROUGH CIRCULAR ECONOMY

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Sustainability - Resource Efficiency - Circular Economy

The basis for life and survival of the human species is our earth system, which provides the resources necessary for life and absorbs and processes the emissions resulting from production and consumption. At the latest with the industrialization and the exponential world population growth, we are reaching the limits of the ecological capacity of the planet in terms of resource consumption and emissions (Planetary Boundaries).

The biggest challenge is therefore to de-couple resource consumption from economic growth, population growth, and from the development of living standards. This means that we must reduce the consumption of finite, fossil resources to a minimum and must not consume more of the renewable raw materials than actually grows back in a given period.

What does this mean? Cutting consumption alone cannot be the solution, especially from a global perspective. A careful and at the same time efficient use of natural and renewable resources is becoming a key factor for sustainable development and a society with viability for the future. The solution is resource efficiency.

An essential component of resource efficiency is that we transform our current linear production and consumption patterns into circular processes.

In addition to increasing resource efficiency, a circular economy also prevents the creation of contamination and contaminated sites and also makes an important contribution to climate protection.

Thesis:

No sustainability without resource efficiency

No resource efficiency without circular economy (Fig.1 and Fig. 2)

Current Status

- Planetary boundaries in terms of resources have already been exceeded
- World population, industrialization, standard of living continues to increase
- Circular economy comes to its limits even in developed countries, as lack of product design makes it difficult or impossible *to return secondary raw materials to the economic cycle*
- Selective approaches, treating with symptoms instead of a holistic life-cycle approach
- Current political framework conditions are not sufficient; rather target definitions than clear, binding regulations
- The public sector often fails to act as a role model (example: lack of demand for recycled construction material).

Solution approaches and requirements for stakeholders/responsible parties

The four decisive stakeholders are politics, science, business and citizens (Fig.5).

The transformation to sustainable production and consumption (UNEP SDG 12) is only possible when these four stakeholders take their responsibility together.

Requirements for stakeholders in terms of resource efficiency and circular economy are, for example:

Politics

- Define the end of waste status - waste must become a resource
- Link product approvals or building permits to deconstruction ability and recyclability
- Resource/Cycle label analogous to energy label
- Intensify stakeholder dialogues (stakeholder interests versus common good interests?)

Science

- Development of lifecycle models, including the necessary calculation methods
- Definition of requirements for the end of waste status
- Research and development in the material flow sector
- Advise politics and industry in a non-interested, neutral way
- Support stakeholder dialogues in an interest-free, neutral manner

Economy

- In addition to material flow and logistics competence, also integrate climate and digitalization competence into waste management (Fig. 4).
- Integration of recycling know-how and experience into product development ("information recycling" - connecting the end with the beginning, (Fig. 3)
- Inclusion of global supply chains into the circular strategy (Fig. 3)
- Development of reuse concepts and repair concepts

Citizens/Consumers/Voters

- Accept and demand secondary products
- Demand sustainable, resource-saving products (label!)
- Support sustainability-oriented policies

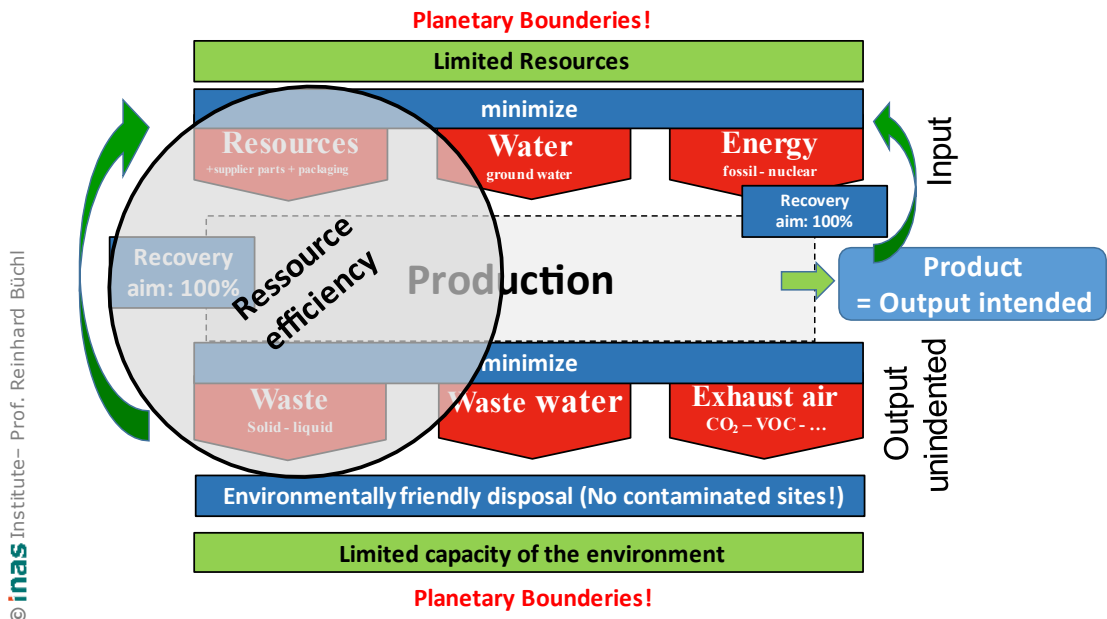
Conclusion:

On the way to sustainability/resource efficiency, we have to put all processes to the test and "reinvent" ourselves wherever necessary.

The premises are: Preserving livelihoods, securing economic stability and enabling a dignified life for all.

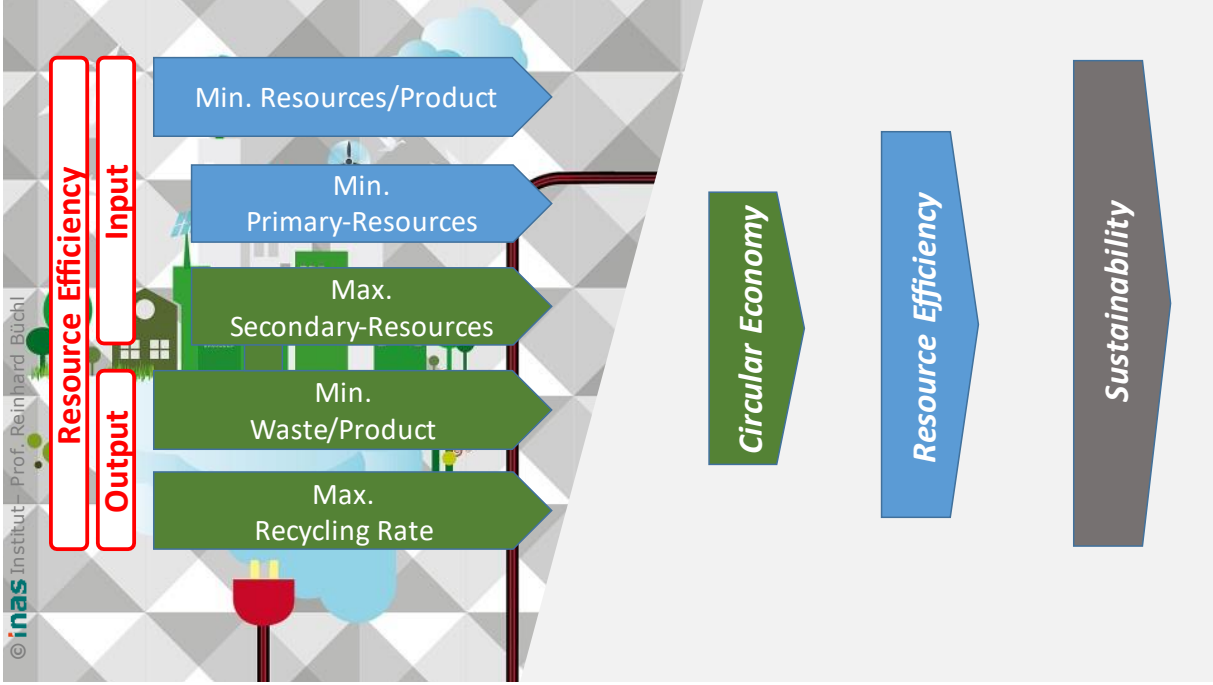
Thesis:

In the interaction of the four stakeholders combined with a global common strategy, it is possible to respect the planetary boundaries, especially through resource efficiency with the help of the circular economy.



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Fig. 1

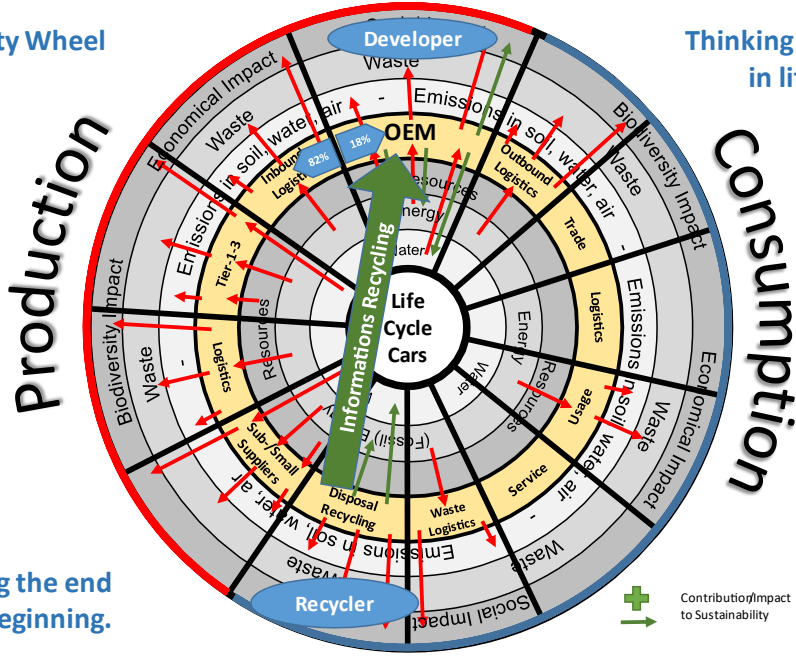


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Fig. 2

Sustainability Wheel

Thinking and planning in life cycles

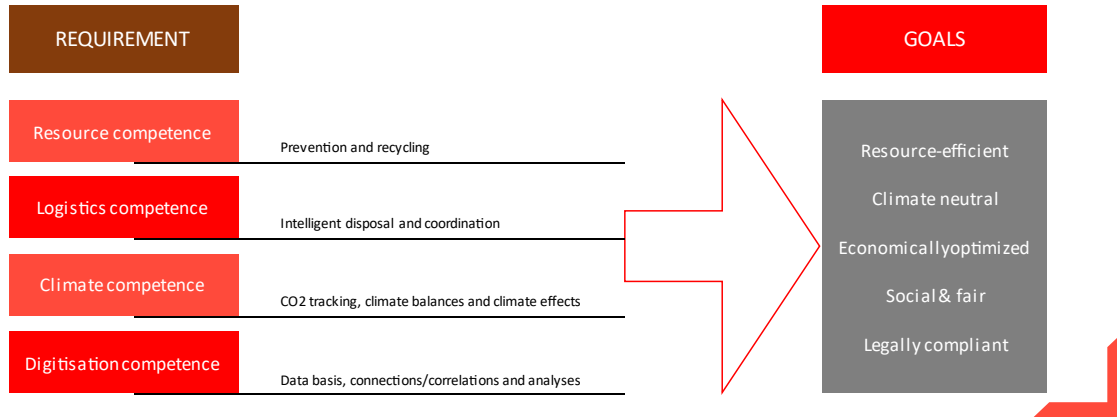


Connecting the end with the beginning.

Fig. 3

The basis for a sustainable circular economy is an innovative waste management

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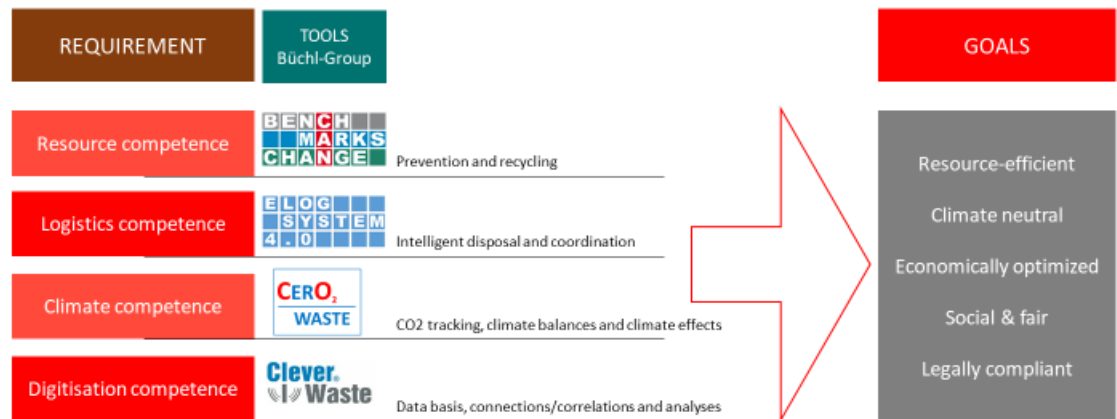
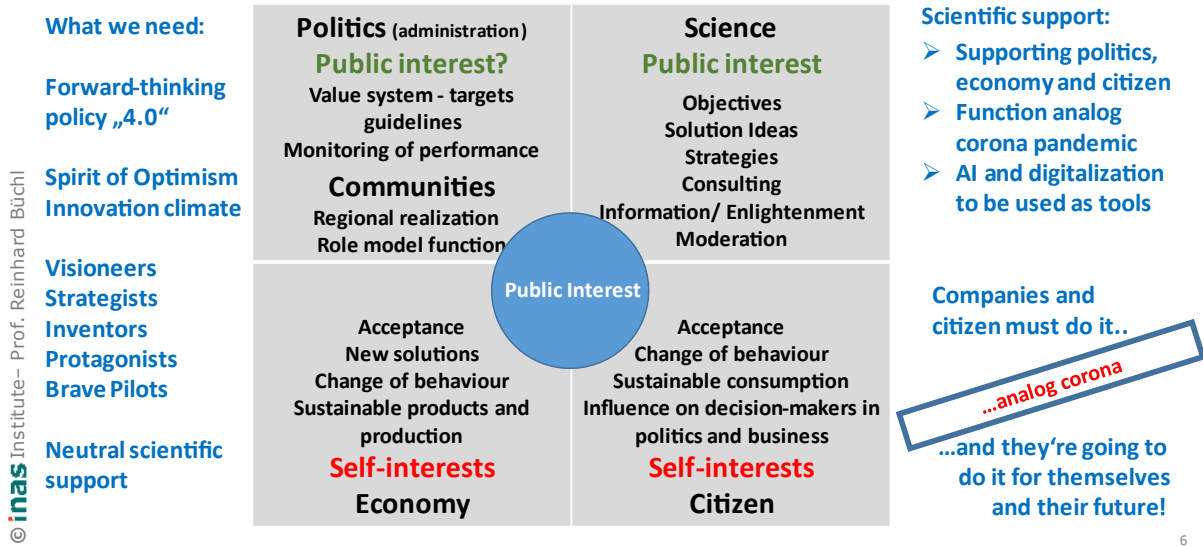


Fig. 4

Stakeholder and their responsibility on the road to sustainability Global and local



Stakeholder and their responsibility on the road to sustainability Global and local

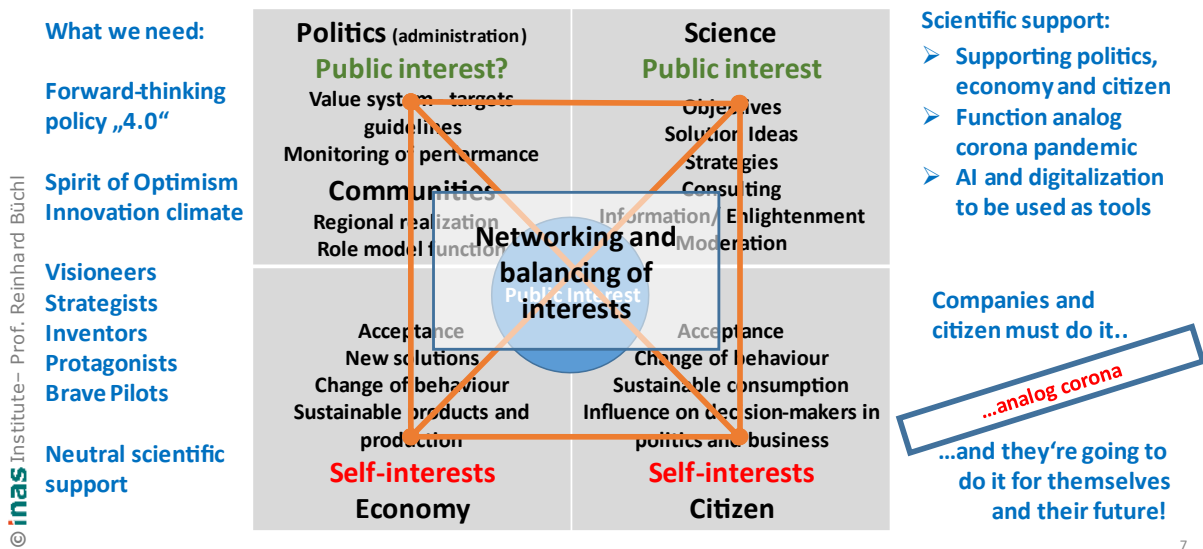


Fig. 5