

Sustainability of the Digital Sharing Economy; Platforms for Transdisciplinary Research

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1. Abstract

The existing environmental problems indicate that current production and consumption patterns are not sustainable. The ICT-enabled sharing economy has transformed the prevailing patterns of production and consumption, raising questions about opportunities and risks of shared consumption modes for sustainability. Various positive and negative potentials of digital sharing for sustainability are assumable.

2. Definitions

Sustainability
“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” (WCED 1987)

Digital sharing economy
A digital sharing economy is a resource allocation system, based on sharing practices, that is enabled by information and communication technology (ICT) and coordinated through participation of individuals and possibly commercial organizations (businesses) with the aim to provide temporary access to resources that may involve either direct or indirect monetary value.

3. Conceptual Relation

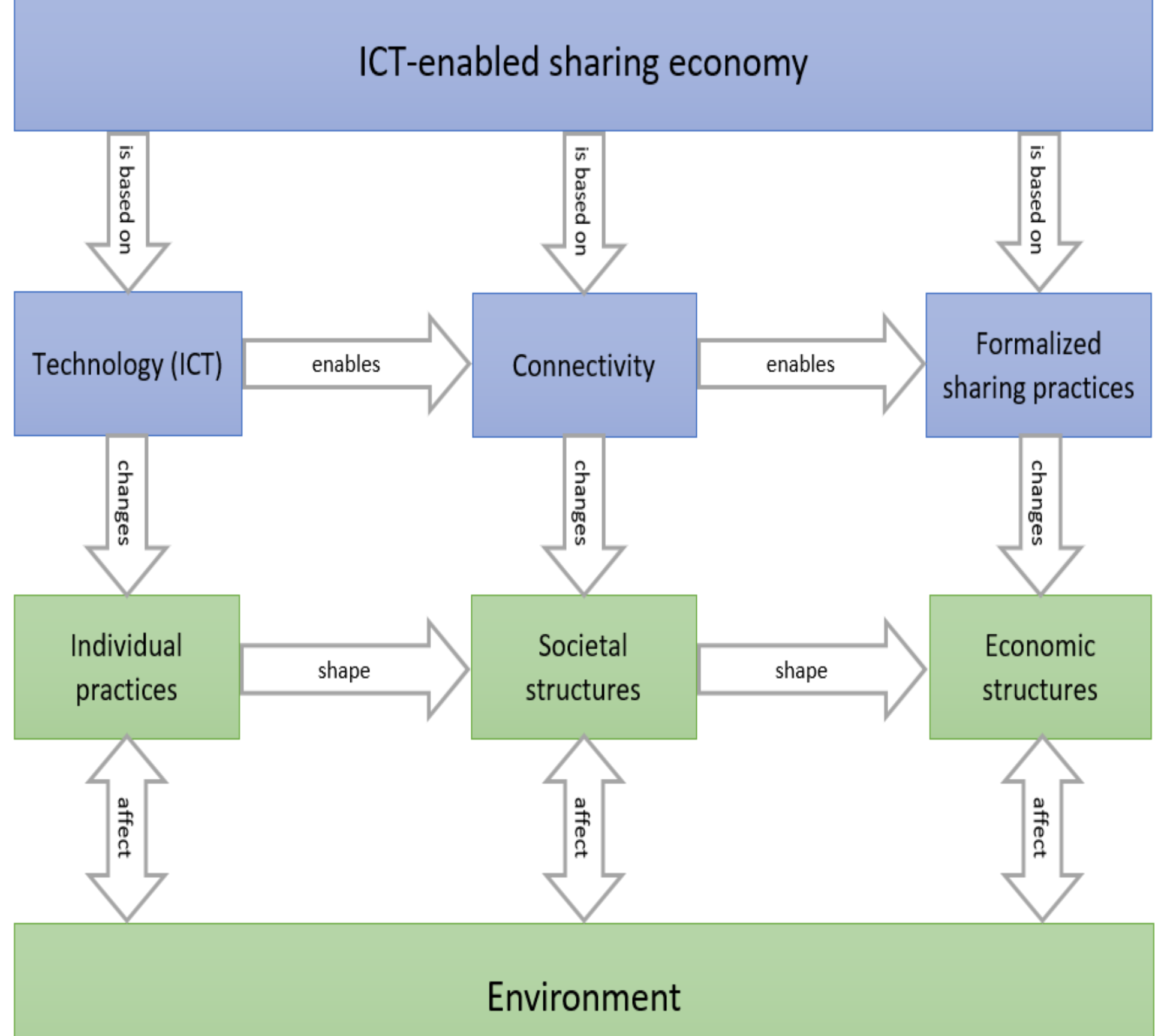


Fig.1 Conceptual relations between aspects of the ICT-enabled sharing economy (blue) and aspects of sustainability (green).

4. Transdisciplinary Approach

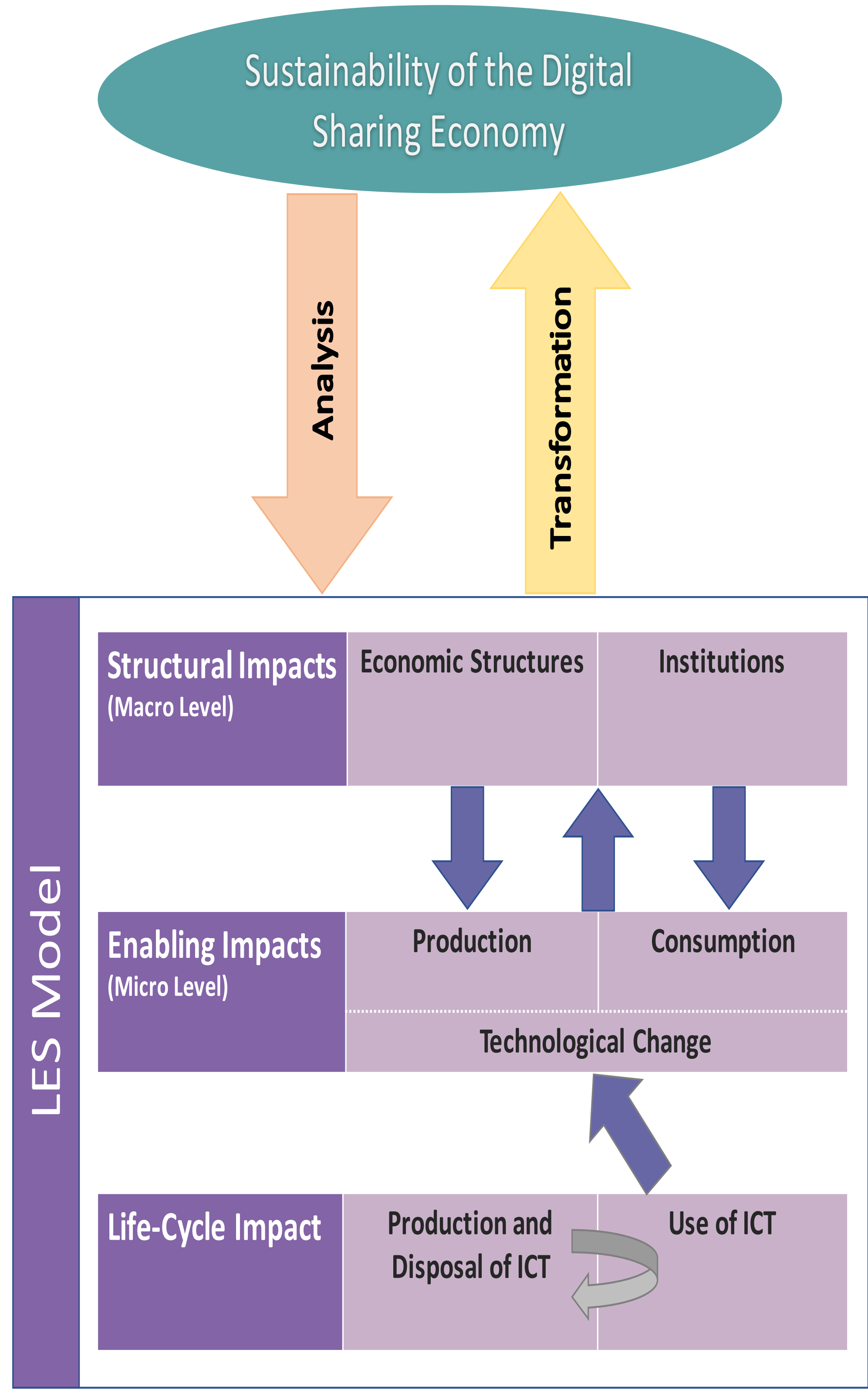


Fig.2 Using the Life-cycle/enabling/Structural Impacts (LES) model (source: adapted from Hilty and Aebischer (2015)) as an analytical tool for transdisciplinary approach towards the sustainability of the digital sharing economy.

5. Analysis (LES Model)

Life-cycle/Enabling/Structural impacts:

Life-cycle impacts are mainly based on the fact that all life cycle stages of ICT cause the exchange of energy and materials with the environment (including human).

The most obvious **enabling impacts** of the digital sharing economy on sustainability are facilitating increased access to resources and intensified shared use.

Structural impacts of digital sharing economy are changes in societal structures that result from enabling effects and persist over a long term. Structural changes alter the conditions for the patterns of production and consumption and vice versa.

6. Discussion

- ❖ To what extent is the sustainability impact of **assets and energy used** over their life cycle, calculated per functional unit provided, smaller than in the non-sharing pattern?
- ❖ Is the **person providing/receiving** the service in a social position that is better or worse than before?
- ❖ To what extent is the expected change increasing the opportunities for every **consumer** to be part of a system of fair distribution?
- ❖ To what extent is the expected change increasing the opportunities for every **provider** to participate in a given market in the long run?

7. Conclusion

- ❖ It should be reflected whether and to what extent material and energy saving benefits may be counterbalanced by rebound effects.
- ❖ If block-chain technology is used in the future, it is necessary to explore whether the energy consumption of the block-chain is worth the expected contributions to energy savings.
- ❖ Creating and improving equal opportunities for fair distribution/competition for everyone in sharing markets require dedicated considerations.
- ❖ Institutions and related policies can speed up the digital transition towards sustainable development.

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