

IEooc_Application4_Exercise1: Energy Sufficiency

Goal: Understand energy sufficiency as a concept and compare it with energy efficiency; think about ideas to introduce energy sufficiency in households; work with numbers to calculate energy savings potential; think about how energy sufficiency can be implemented on a larger scale

According to the International Energy Agency (IEA), energy efficiency increased remarkably in OECD countries in the last four decades. But, the total energy consumption decreased only by a small number in some countries. In Germany, the total power consumption in the residential sector remained more or less constant over the last decade. This means that energy efficiency is only one of the main determinants of energy consumption of appliances.

In a report titled “Energiesuffizienz” (energy sufficiency), Brischke et al. introduce a causal chain of transformation from basic needs to technical service supplied. Figure 1 shows this chain. According to this concept, **basic, culturally independent needs** (e.g. health) are transformed into **demands, needs and desires** (e.g. fresh food), which are then transformed into **utility needed** (chilled food) and **utility aspects desired** (certain amount of chilled food at home). The final **technical utility demanded** (e.g. refrigerator) is what the consumer needs, which he/she seeks in an appliance with a certain **technical service**.

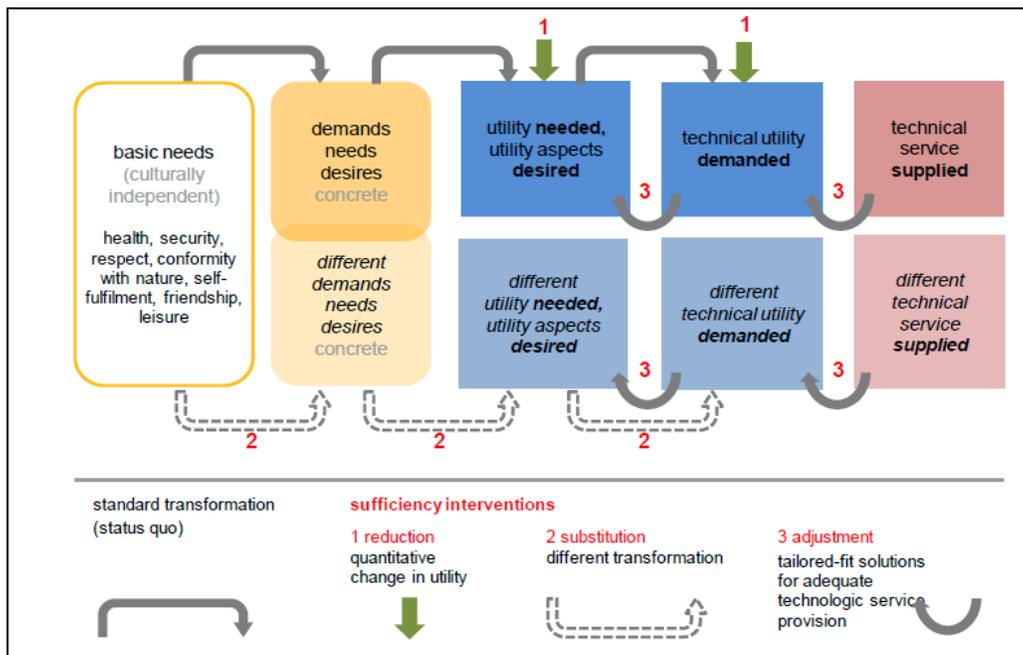


Figure 1: Causal chain of transformation from basic needs to technical service supplied, energy efficiency approaches and points of intervention. Source: Brischke et al. (2015).

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The energy sufficiency approach in this causal chain of transformation can be introduced by three approaches – reduction of utility, substitution, and adjustment. Figure 1 also shows points of intervention where these approaches can be introduced in the chain.

With this concept of energy sufficiency in mind, complete the following tasks:

1. Select three devices/appliances in a common household which require energy for their use.
2. For these three devices/appliances selected, identify:
 - a. Basic, culturally independent needs
 - b. Culturally influenced demands, needs, desires
 - c. Utility needed and utility aspect desired
 - d. Technical utility demanded
 - e. Technical service commonly supplied
3. For the three devices/appliances, think about how energy sufficiency can be introduced at different points of the chain through each of the three approaches: reduction, substitution, adjustment
4. For these three devices/appliances, come up with a rough energy consumption per month figure. You are free to take any assumptions necessary.
5. In line with the energy sufficiency approaches identified in part 3, calculate energy savings potential for the devices/appliances.

Further, think and discuss about the following:

1. How does energy sufficiency differ from energy efficiency? Are these approaches complementary or substitutive?
2. How could design play a role in achieving energy sufficiency?
3. What kind of energy policy options exist for the sufficiency approaches identified in part 3 above? To identify them:
 - a. Think about barriers to implementation of these approaches
 - b. Think about policy actions needed for the sustainable options
 - c. Try to assemble the different policies into an integrated strategy

References:

Brischke, L.A., Lehmann, F., Leuser, L., Thomas, S. and Baedeker, C., 2015. Energy sufficiency in private households enabled by adequate appliances

Thomas, S., Brischke, L.A., Thema, J. and Kopatz, M., 2015. Energy sufficiency policy: an evolution of energy efficiency policy or radically new approaches?