

Basic conditions of the development of technologies and their following conversion into products

Which could be a standard to value technologies and products?

A) The life must remain possible on this earth.

The requirements from the ecological sustainability are basic therefore. Without working environment no life is possible.

The commission of inquiry „Schutz des Menschen und der Umwelt“ in ihrem Abschlußbericht „Konzept Nachhaltigkeit-Vom Leitbild zur Umsetzung“ (Bundestagsdrucksache 13/7400) 5 criteria or also targets for the sustainability agreedly:

1. the dismantling rate of renewable resources should not cross their regeneration rate. This corresponds to the demand for maintenance of the ecological efficiency, i.e. (at least) after preservation of the ecological real capital defined from the functions.
2. non-renewable resources should be used only in the degree in which a substitute equivalent functionally and physically is created in form of renewable resources or higher productiveness of the renewable ones as well as the non-renewable resources.
3. material entries in the environment should orientate themselves by the loading capacity of the environmental media and all functions are to be taken into consideration, not least also the " quiet and more sensitive regulation function.
4. the time measure of anthropogenic entries or interventions in the environment must stand in the well-balanced relation to the time measure for the reactivity of the environment to relevant natural processes.
5. dangers and unacceptable risks for the human health *and for the natural inventory of the biological species and their diversity, as well as for the environment as the whole are to be avoided.* (Vote Prof. Rochlitz)

B) Products must be used permanently.

Therefore it is necessary to construct and to manufacture products in that way that a repair is possible. Besides, a repair may not end with the exchange of parts; the parts themselves must be able to be repaired. Wearing parts must be standardised, so that they are accessible everywhere and a market for used spare parts can set up.

The price of the new product may not fall short of the expenses of a repair, so that a repair is really carried out,!

C) The use of a product may not promote the consumption, but must show a quality of selflimitation.

„ The cycle of the flow of information or the feedback as a basic principle of cybernetics.... This closed info cycle is called negative back effect, feedback or countercoupling. The corrections must have an effect always and basically in such a way which they remove resulted deviations or whose forming counteract. “

(Taschenbuch Maschinenbau Band 1/I Grundlagen, VEB Verlag Technik, Berlin 1974)

This is the demand for stable systems. With a stable system the system answer to an input or disturbance variable may just grow not infinitely.

Example of such a technology:

The bicycle is an example for a self-restricting transport technology. The cyclist considers before he starts whether the effort are worthwhile for the drive, or whether he have the energy for the drive. The effort must be produced at the same time to the transport.

(after „Das Narrenlob des Fahrrades“, MATTHIAS SCHMID, Fischer Taschenbuch 1980)

And here can be also shown how technologies cancel this selflimitation which systems become tendential unsteadier: Pedelec, E bike

Here the question of own effort is pushed in the background; possibly a factor of selfrestriction will be still the weather.

Thus I come to the essential point of my text: Networks

more exactly:

Traffic networks: Streets, rails...

Energy networks: Electricity network, gas network...

Info networks: Telephone network, Internet...

The requirement to these networks are generally that the networks fulfil their task in every situation that the networks are stable.

Traffic networks instabilities / overloads are tolerated in a certain extend: a traffic jam, the delay around some minutes.

With energy networks this is quite substantially more problematic: their endangered users get back-up-equipment.

With a breakdown of the telephone network or the Internet the relapse option „ deployment of dispatch riders “ seems antediluvian. Only the military and maybe the emergency services still takes this into consideration.

We see how important it is for the society that the networks remain stable.

What does this mean for the growth, or just for the restriction of the growth?

A network is stable if it can produce the demanded transport achievement any time, for passenger car, for truck, for electricity, for gas, for the information capacity.

A network must be able to perform more and more than is demanded at the moment, in order to be able to serve still without collapsing demand fluctuations to top. At the same time the network operating companies want to drag out the maximum profit from the networks as possible at any time.

These both requirements

1. the demand for network stability and
2. deliberate maximum network exploitation from operating companies side

cause that networks will always grow; to what size, actually?

Because these networks are basic for our present industrial society, not those of 1850, the degrowth approach can only succeed if it is put an end to the growth of the networks.

Technologies must be measured beside the points in the sections A) and B) always also in it, to what extent they depend on support from networks!

If a network is inevitable for a technology, this technology demands a growth of the networks!

D) The attention being entitled to them should also find eternity costs.

To diminish coal in Europe, coal mines had to become in bigger and bigger deepnesses, with the increasing expenses for the water balance in the mines.

Now the time of the coal mining comes to an end in Germany, but not the expenses for the water balance!

If the pumps were turned off, a big part of the Ruhr area would be flooded. The Ruhr area has fallen by the mining, so it must be pumped on and on.

It can be calculated therefore, when the complete energy content of the coal extracted in the Ruhr area will be consumed by the water pumping of the mines.

If we want to make progress with the degrowth approach and allow a life for future generations on the earth, then the technologies and products used by the people must fulfil the requirements introduced in the sections A, B, C and D. If this does not succeed for one of the requirements, the whole degrowth approach remains doubtful.

A) The life must remain possible on this earth.

The 5 criteria of the sustainability for a sustainable development appropriate for environment

B) products must be used permanently (products appropriate for repair and conditions foster the repair of products).

C) The use of a product may not promote the consumption, but must show a quality of selflimitation.

If a network is inevitable for a technology, this technology demands a growth of the networks!

D) No eternity costs may arise from a technology application.

There remains *the " middle technology* «: To use easily, cheap, for everybody understandable. And this does not require alienate work.