

EDITORIAL

Forty years ago, a report of a previously little known group was published: “The Limits to Growth” by the Club of Rome. The message caused a big stir at a time that was still oriented toward the continuing dynamic of the economic miracle period. Coincidentally, soon after that the first oil crisis brought about car-free Sundays in Germany – something unprecedented at that time, but perhaps even today – and this further increased the effect of the message, even though the causes were completely different and had nothing to do with a scarcity of oil resources.

This had consequences, even if the models of the Club of Rome were far too simple and the premises questionable. The awareness of the finiteness of natural resources has grown ever since, there is much talk about sustainable development today and some steps have also been taken, the resource productivity in the industrialized countries has been increased significantly, and much more.

Nevertheless, it is worth asking whether the desire for unlimited growth, for a life and a societal development without scarcities and use competition, leading to conflicts and requiring arduous compromises, are still a key driver of many technological developments. Some of the visionary promises of nanotechnology and synthetic biology are of this type, giving rise to secularised hopes of redemption, particularly among US American authors.

Maybe not the prospect of redemption, but more or less explicit expectations of a “golden age” exist also in the energy sector. This is tradition. Nuclear energy in particular was once considered to be the key to the “energy paradise”. However, it has been shown time and again that the far-reaching promises have either not occurred or that the use of energy was restricted not only by limited resources but also by unintended consequences.

Energy transition, the hope of a more sustainable energy supply, the switch from coal, oil, gas, and uranium to renewable energy sources are consequences of disappointments caused by

older energy supply technologies. However, here too the expectations of unlimited and this time “really” clean growth are high. The sun doesn’t send us a bill, Franz Alt writes. Renewable energies are renewed, as the name suggests, so they have to be available in unlimited quantities. Brave new energy world!

It is part of the business of technology assessment to not simply follow such stories but to examine them with an open mind. This has consequences for the current energy transition. Though the sun doesn’t send a bill, the technologies for producing usable energy from solar energy must be developed and paid for. Available in unlimited quantities? Maybe in theory, but surely not in practice. Scarcities arise elsewhere – including e.g. the limited availability of agricultural land, which restricts the availability of biomass, or the limited availability of some rare metals that would be required for the widespread use of energy conversion and storage technologies. Renewable energies are not infinitely available – it’s just that the scarcity lies elsewhere than with fossil ones.

But here, too, engineers are trying to find a way around the scarcity. In the case of biomass, for example, microalgae are expected to reduce or eliminate dependency on agricultural land and, thus, competition with food production. New prospects of a paradise of unlimited energy supply? The contributions to the thematic focus in this issue show that there is potential but, again, that “trees do not grow into the sky”. This seems to be a basic experience of scientific and technological modernity: When we manage to overcome scarcities, new ones emerge.

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