INVITED SPEAKER

RENEWABLE ENERGIES & CIRCULAR ECONOMY AS CENTRAL PILLARS FOR THE CLIMATE-NEUTRAL INDUSTRIAL SOCIETY OF THE FUTURE

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One of the key global tasks for the future is to ensure a sustainable supply of raw materials and energy for national economies, and the transformation to a climate-neutral society is a basic prerequisite for this. Roughly simplified, this can only work according to the following formula:

Climate-neutral society = renewable energies + circular economy

This is not really a new insight and the current interim result does not look good neither internationally nor at national level. Since the 1970s, global resource and energy consumption has been higher than the world's ecological capacity for regeneration. Worldwide, the ecological footprint was still around 75% higher in 2023, i.e. we would need 1.75 Earths to achieve a balanced ratio. In Germany, the ecological footprint is currently twice as high, i.e. if everyone lived like this, we would need 3 Earths! USA is right behind with around 5 Earths! The two most populous countries, with a total of around 1.4 billion inhabitants each, are India (approx. 0.8 Earths) and China (approx. 2.4 Earths), which are in a (much) better position than Germany.

Currently, the share of renewable energy in Germany's energy system is just under 20% and the circularity rate (CMU), i.e. the proportion of waste and residual materials that are fed into recycling processes, is only around 12%. Against this backdrop, the basic prerequisite for the climate-neutral Germany we are aiming for in 2045 is that we significantly reduce our material and energy consumption. This can only be achieved by significantly increasing efficiency and reducing consumption. Other key areas of action are switching our energy supply to renewable energies (RE) completely and in all sectors over the next few decades. Secondly, we need to develop our “linear” economic system into a truly circular economy.

After a rather general introduction, the lecture will focus in particular on what this means in concrete terms for an industrial society, such as Germany. How must the construction, chemical, steel, cement and food industries, for example, develop in order to survive in a climate-neutral society? How can the climate-neutral energy supply of the various industrial sectors be organized? What role does the avoidance, reduction and recycling of waste play in the various industrial sectors? What options are available to generate the necessary negative emissions?