

Renewable energies

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ABSTRACT

At prevailing economic practice the alarming “two degrees-limit” of global warming will be reached long before the known fossil fuel reserves are gone. A future alternative energy economy relying on renewable energies will be more diverse yet more expensive than traditional combustion the new figure of merit is the cost of CO₂ avoidance. This communication surveys the relevant alternatives – solar energy in its various manifestations, geothermal and tidal energy – and assesses their current contribution to the over-all energy supply, revealing a deplorable lag between renewable capability and the needs of climate conservation. Nuclear energy is seen as low-CO₂ bridging technology between the fossil period and the age of renewables; being restrained in Germany in favor of subsidizing alternative energies, the German experience with renewables is drawn upon in this survey. Thermodynamics teaches: Energy can be transferred from one system to another, as from sun to earth. It can be transformed from one form into another, as from light to electricity. Energy can not be produced nor destroyed nor renewed. The term “Renewable Energy” is applied to energy derived from our surrounding for human use. Renewable energies will have to replace fossil fuels – coal, oil and gas – for two reasons: If we continue to burn them, reserves will be exhausted before long; emission of carbon dioxide is about to change our climate by the so-called green house effect.

Keywords: Energy mix; Climate change; CO₂ avoidance

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