Solar energy heat map 2100: solar energy potential versus energy consumption, surplus or shortage per km²

The energy consumption per km² for the year 2100 is subtracted from the potential solar energy production per km². The resulting heat map shows the areas with surplus or shortage of potential solar energy.

The energy consumption in 2100 is based on the IPCC Middle of the Road baseline scenario. The potential solar energy production is estimated from solar irradiation, whereby areas are excluded or restricted for solar energy production based on land use, physical conditions and population density. The heat map clearly shows solar energy shortage areas at the US East Coast, Europe, Japan, West China, but also in developing regions like India, Indonesia, African countries in rain forest areas.

On the other hand, there is a solar energy surplus in deserts and in low density population areas such as the US Midwest, Kazakhstan, Patagonia and Australia. This heat map shows clearly the importance of renewable energy transport over long distances.