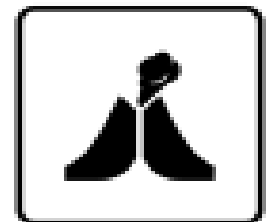
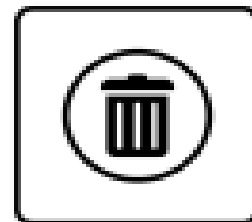
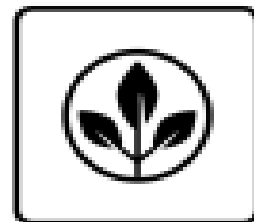
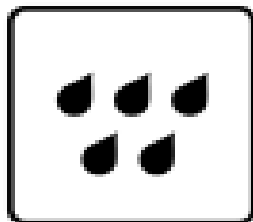
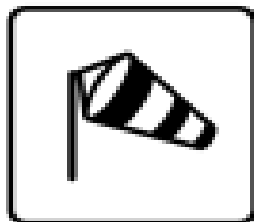
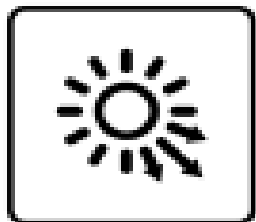


Global Energy System Based on 100% Renewable Energy - Power Sector



Study funded by the
German Federal Environmental Foundation (DBU) and
Stiftung Mercator GmbH

New Climate Protection Strategy

1. Stop greenhouse gas emission

(not only a reduction of emissions)

- switch to 100% renewables
- completely stop the use of fossil and nuclear energies in energy, chemistry, transport, agriculture

2. Take out carbon from atmosphere

- convert plants to humus soil (biocoal)
- reforesting big areas, greening the deserts
- Organic agriculture

The Target must be 330 ppm CO₂

This leads to global cooling, instead of global warming

100% RENEWABLES

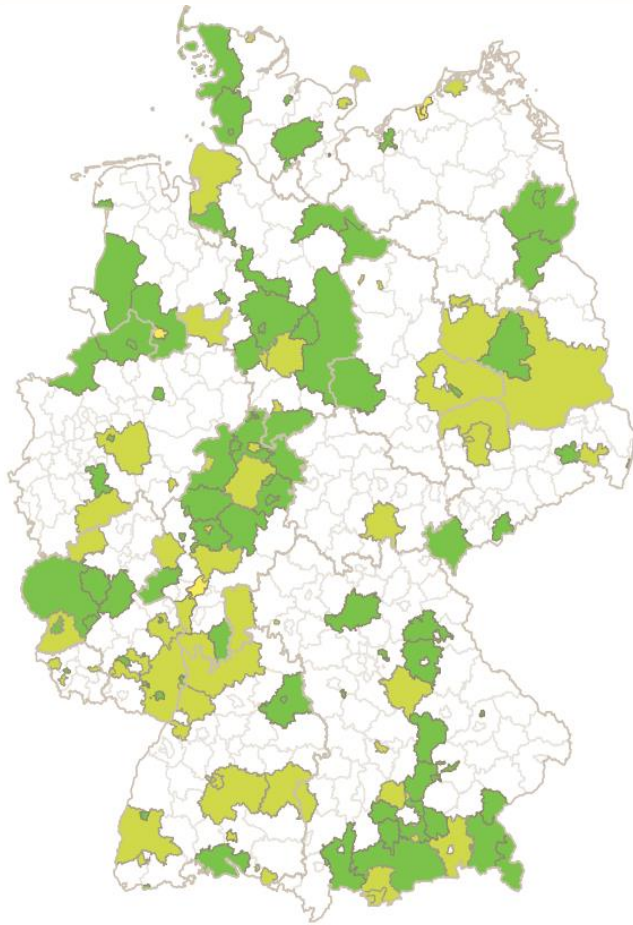
www.go100re.net

**Nov 2016, COP22, Marrakech:
48 countries (Climate Vulnerable Forum)
decided for 100% RE target**

*More Countries e.g.: Denmark; Sweden;
Costa Rica; Iceland; Cape Verde*

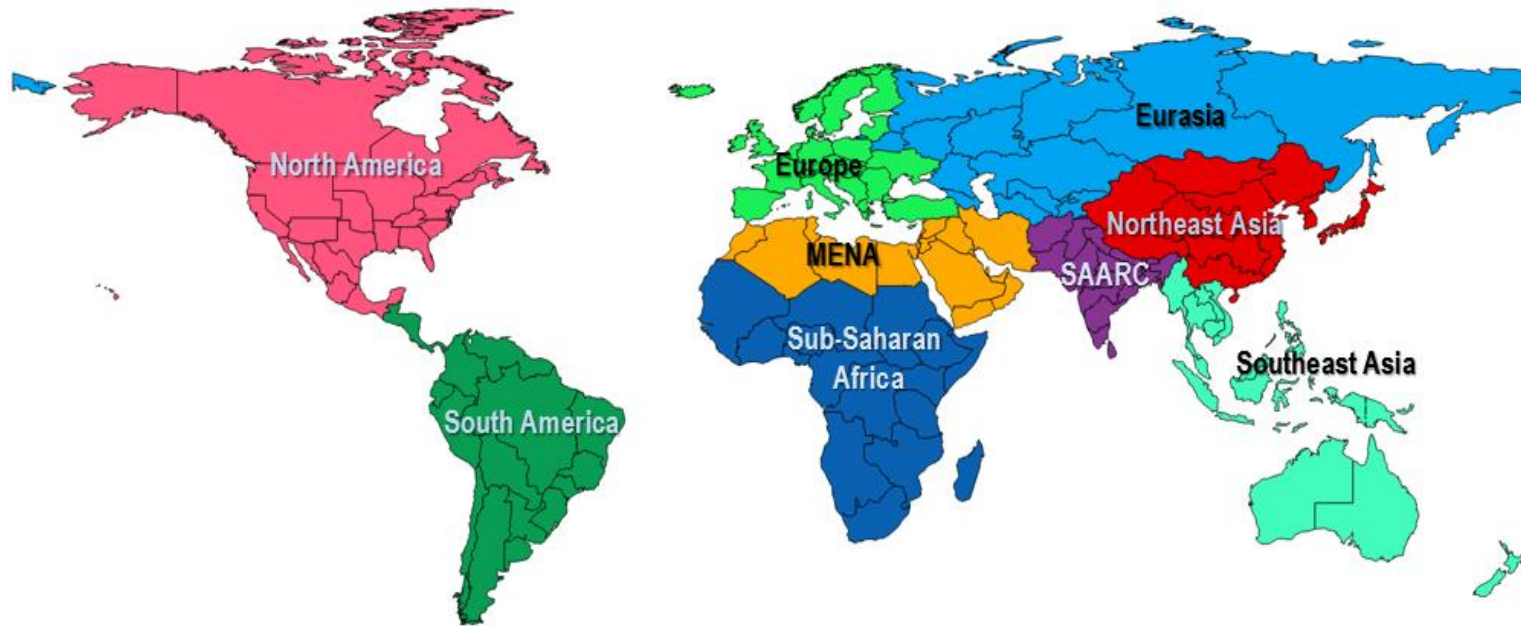
Cities with 100% RE target e.g.:
*Barcelona; Masdar City; Munich;
Masheireb; Downtown Doha; Vancouver;
San Francisco; Copenhagen; Sydney;*

Companies with 100% RE target e.g.:
Google, Coca-cola, Ikea, Walmart



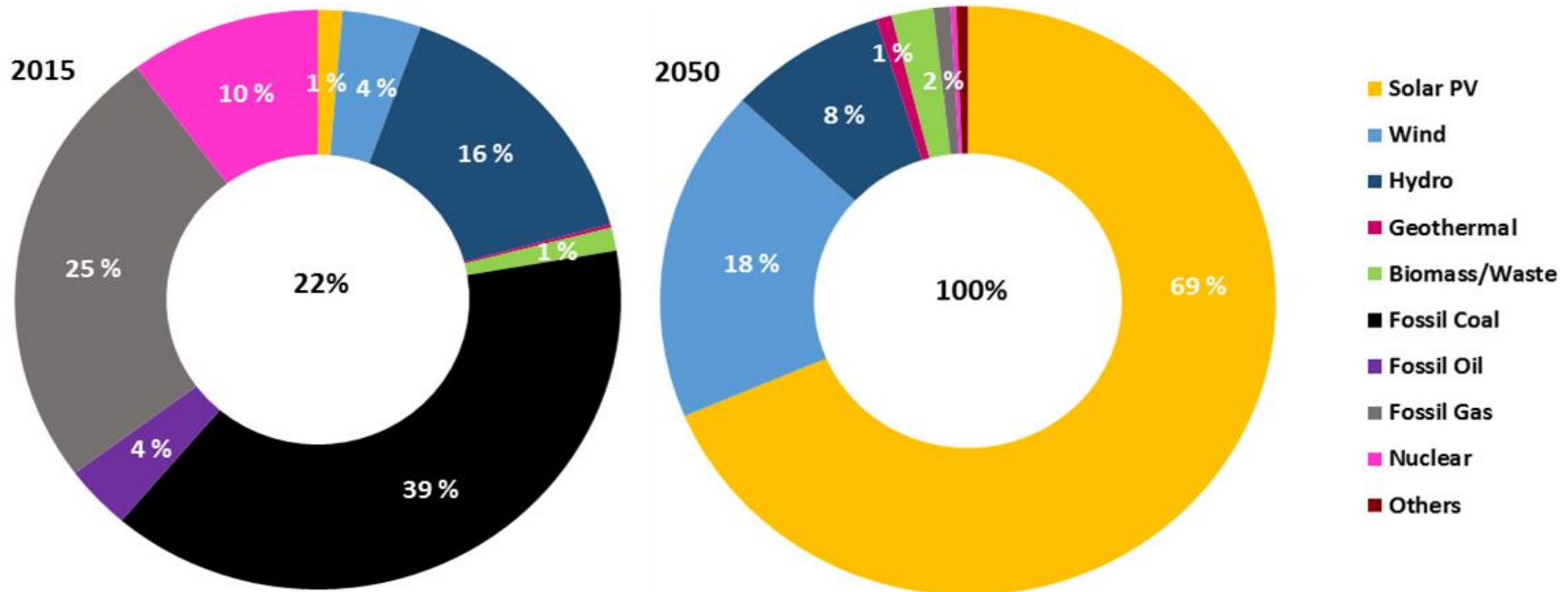
<http://www.100-ee.de/>

First Global Modelling of a Global 100% Renewable Energy System - Powersystem



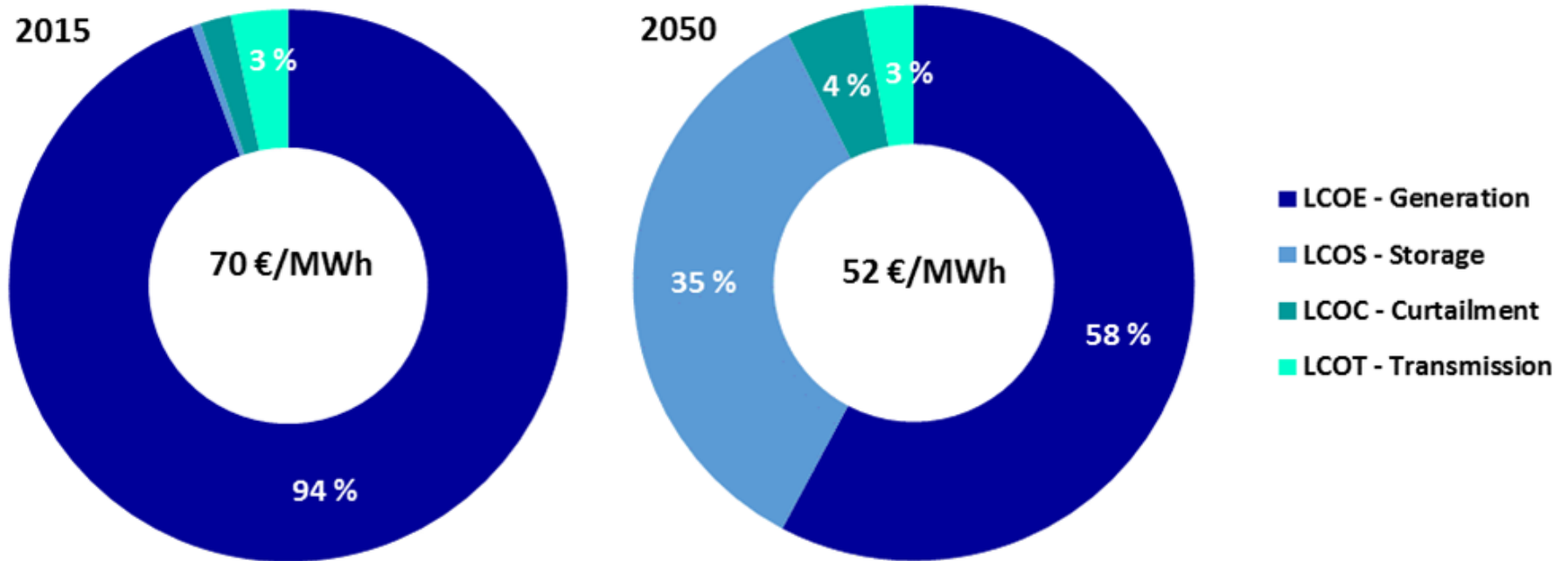
- The modelling by LUT runs at full hourly resolution
- Real weather data for solar, wind and hydro resources
- World population grow to 9.7 billion by 2050.
- Global power sector demand is set to increase from 24 TWh in 2015 to around 49 TWh by 2050.

Electricity Generation 2015 and 2050



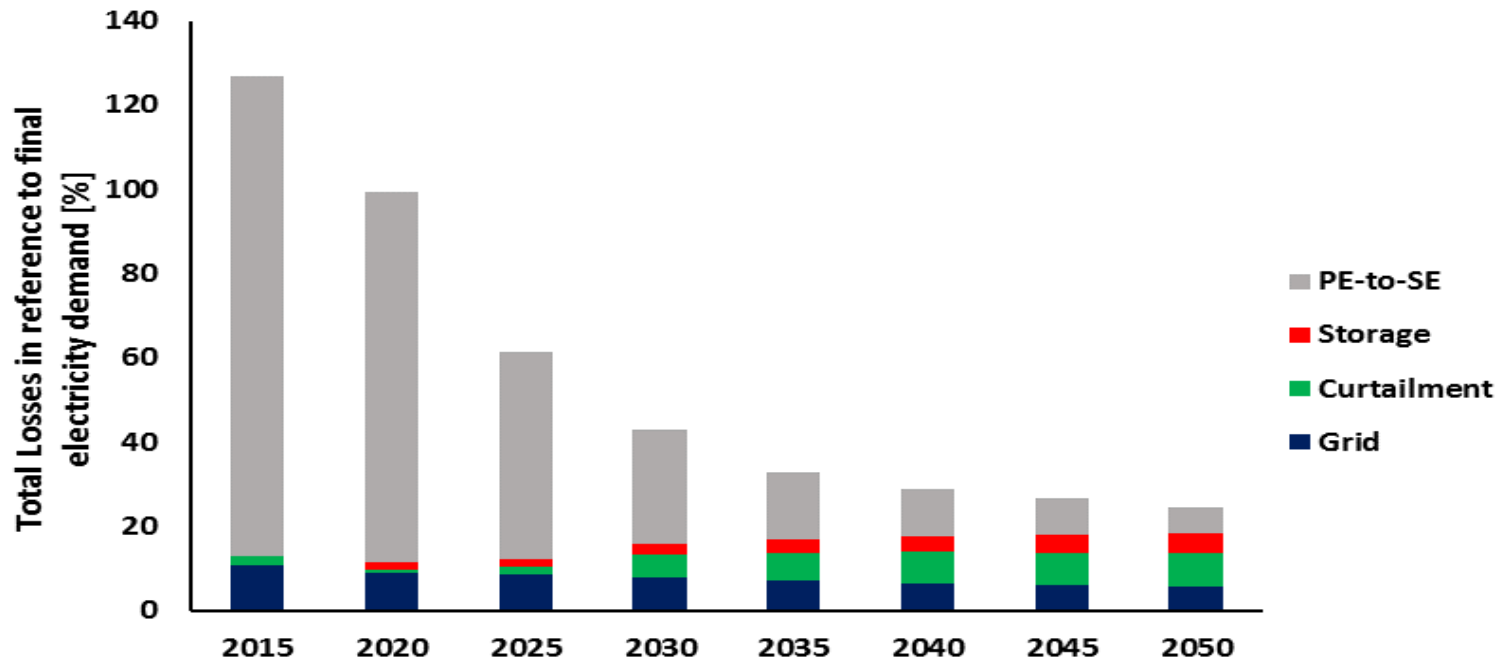
- In 2050, solar PV 69%, wind power 18%, hydropower 8%, bioenergy 2% of the total electricity mix globally.
- Gas generation is only from renewable energy based gas
- Nuclear power still accounts for negligible 0.3% of the total electricity generation, due to the end of its assumed technical life, but could be phased out earlier.

Renewable Electricity is Cost-efficient



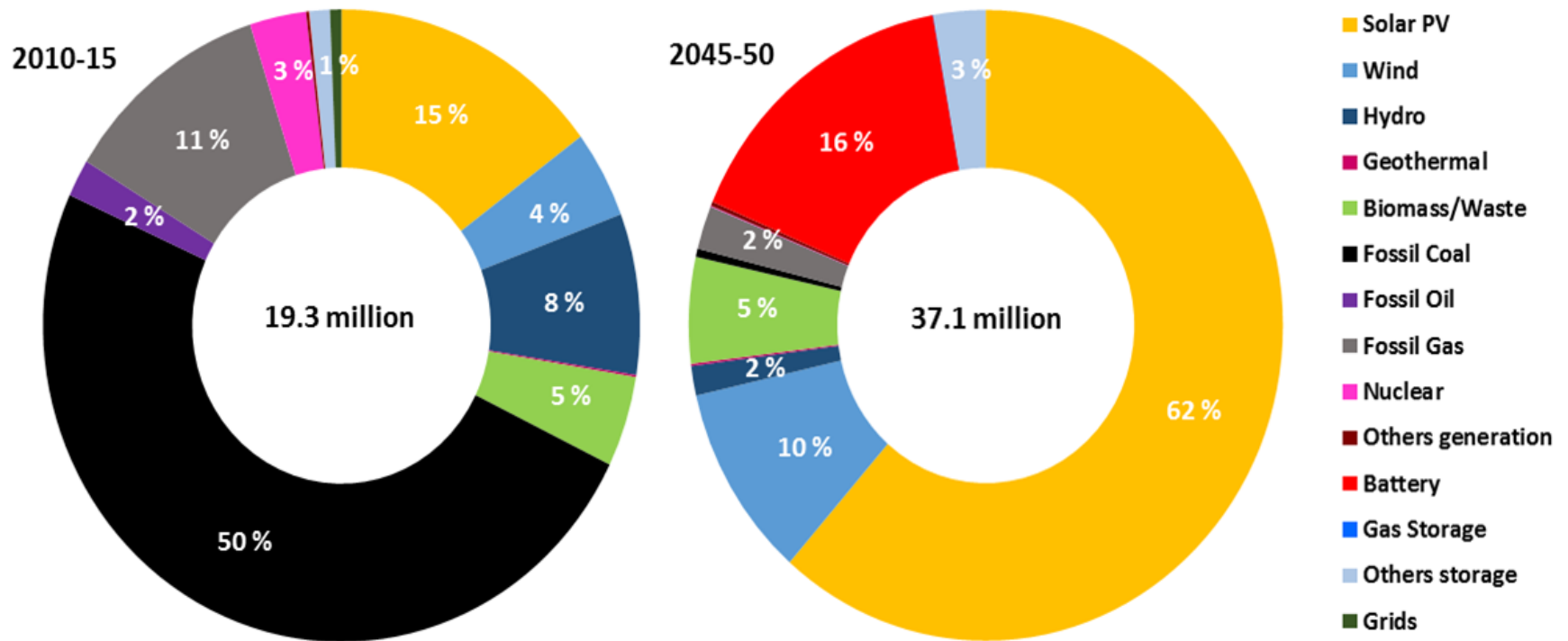
- Total levelised cost of electricity (LCOE) on a global average for 100% renewable electricity in 2050 is €52/MWh (including curtailment, storage and some grid costs), compared to €70/MWh in 2015.

100% Renewable Energy drastically reduce total losses in power generation



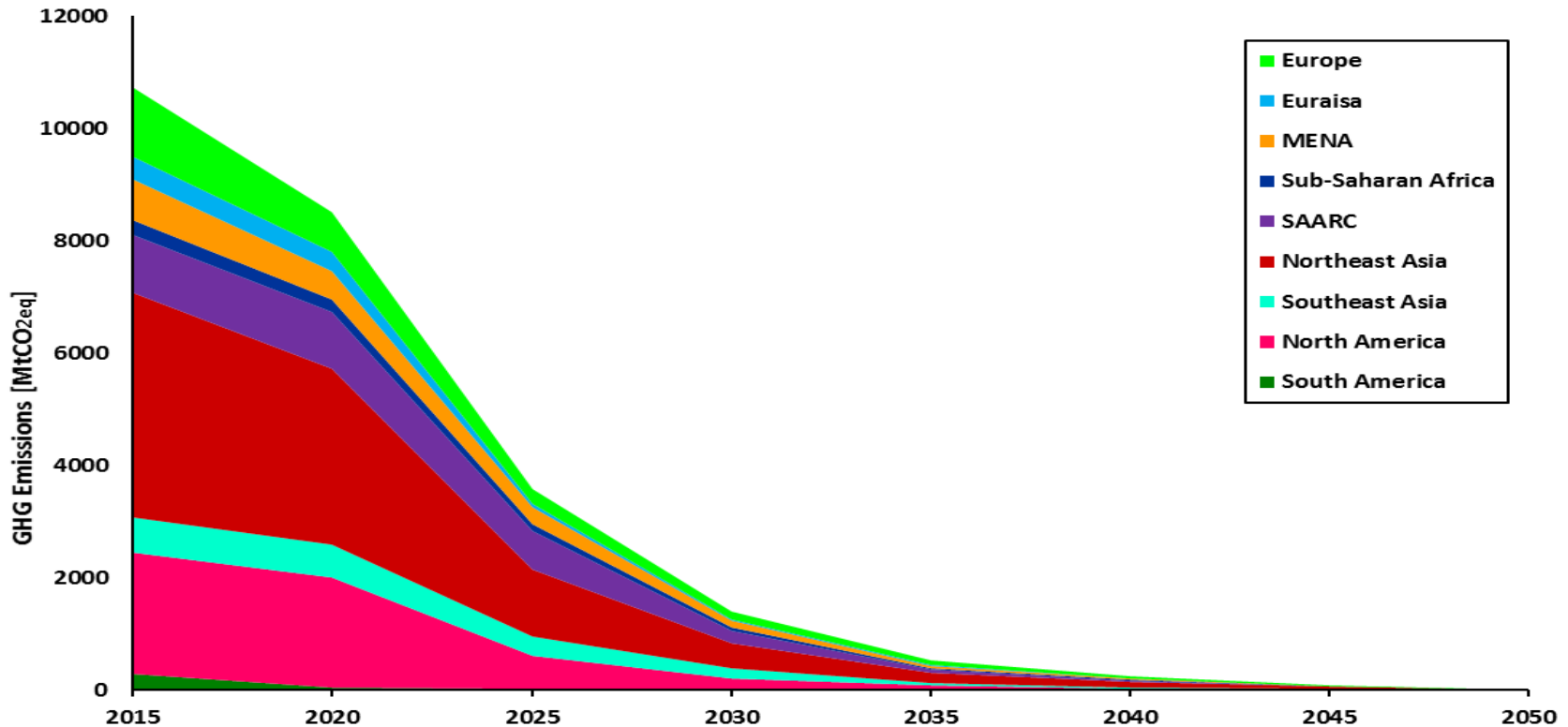
The total losses in a 100% renewable electricity system are around 26% of the total electricity demand, compared to the current system in which about 58% of the primary energy input is lost.

Employment



The global energy transition to a 100% renewable electricity system creates 36 million jobs by 2050 in comparison to 19 million jobs in the 2015 electricity system.

100% RE will reduce GHG to zero



Global greenhouse gas emissions significantly reduce in power sector from about 11 GtCO_{2eq} in 2015 to zero emissions by 2050 or earlier, as the total LCOE of the power system declines.

Policy Recommendations

- Instruments, enabling direct private investments in renewable energy and other zero- emission technologies.
 - The German Renewable Energy Sources Act (EEG) with a fixed feed-in-tariff
 - Hybrid renewable power plant remuneration
 - Tenders only for capacities above 40MW
- Phasing-out all state subsidies to fossil fuel and nuclear energy generation
- Tax exemptions for investments in renewable energy
- Replacement of emission trading system with carbon & radioactivity taxes
- Research and education

Leonardo di Caprio 17.4.2017 in Shanghai at Presentation of new BYD E-cars Global Cooling by 1° C



***Thank You Very
Much for Your
Attention!***

www.hans-josef-fell.de

www.energywatchgroup.org