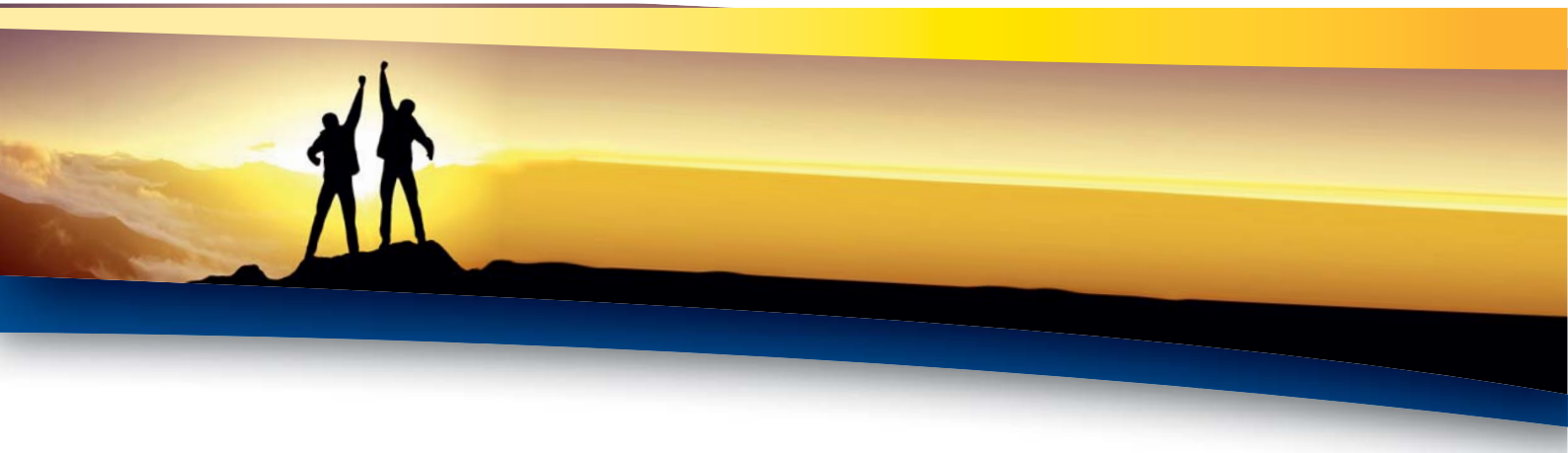

Photovoltaic Solar Energy: Big and Beyond

Sustainable energy to reach the 1.5 degrees climate target

Vision and claims of the

European Technology and Innovation Platform for Photovoltaics (ETIP PV)

PhotoVoltaic
EUROPEAN TECHNOLOGY & INNOVATION PLATFORM

A sustainable future with a clean European and global energy system

- **Photovoltaic solar electricity (Solar PV) has recently become the lowest cost source of electricity in most parts of the world**
- **Solar PV can be used in all geographic regions and its generating capacity can be installed rapidly and scaled up modularly**
- **Solar PV can drastically reduce GHG emissions from the power sector and in other sectors through electrification**
- **Solar PV supports a socially acceptable energy transition by offering employment, distributed generation and integrated applications as well as new business opportunities**
- **Solar PV, in combination with wind energy, storage and conversion ("power2X") is the cornerstone of the future sustainable energy system**
- **Solar PV needs to be deployed rapidly, massively, and globally including within Europe to limit global temperature rises to 1.5 degrees**
- **More PV component manufacturing and PV generating capacity are needed in Europe to seize economic opportunities and to reduce dependence on energy imports and on PV technology imports**

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The European Technology and Innovation Platform for Photovoltaics (ETIP PV) envisions a world with 100% renewable electricity supply where electricity is accessible to all and where electricity makes major inroads into satisfying final energy demand for living including communications, zero-emission transport and mobility, efficient heating and cooling, and even sustainable fuels, chemicals and materials. By applying Solar PV, buildings will increasingly become places of energy production and not only of energy consumption. Thanks to the abundant availability of sunlight, the technology's modularity, and continuous cost reductions, Solar PV can become the largest source of energy worldwide [Ram, 2017 and Breyer, 2017][1, 2]

Electricity Generation in 2015 and 2050

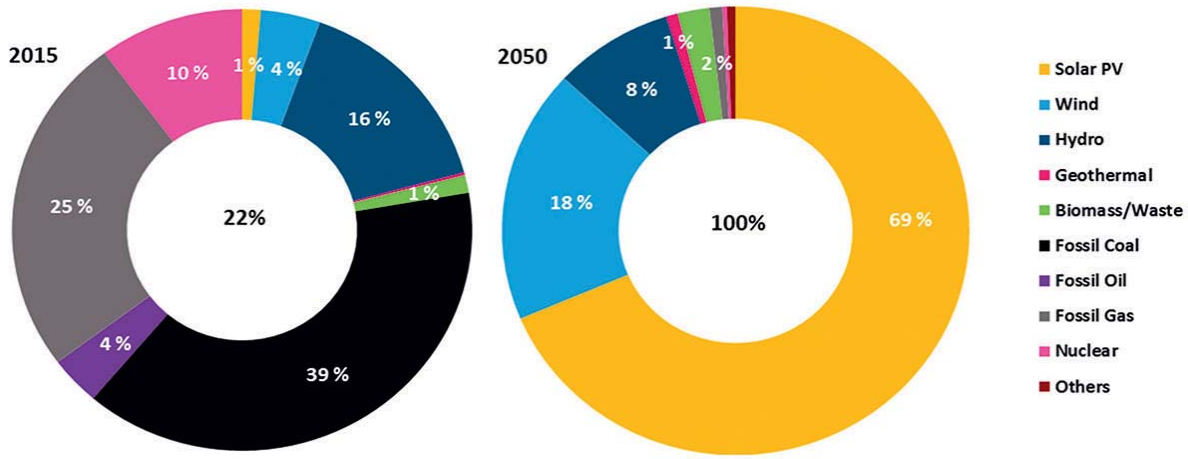


Figure 1 Researchers at LUT have shown that on the assumption that i) no nuclear-, coal-, or oil-based power plants are installed after 2015, and ii) the renewable energy capacity share increase does not exceed 4% per year (3% between 2015 and 2020), then the cost of consumed electricity is minimized worldwide in 2050 with the generation mix shown. Solar PV has a share of 69%.

Tackling climate change and seizing economic opportunities

ETIP PV aims to actively support achieving the European Union's green energy policy goals as well as the additional actions needed to limit global temperature rise to 1.5°C [IPCC, 2018][3]. The latter implies realising zero GHG emissions around 2050 and negative emissions thereafter. In the words of the European Parliament [EP,2017][4]:

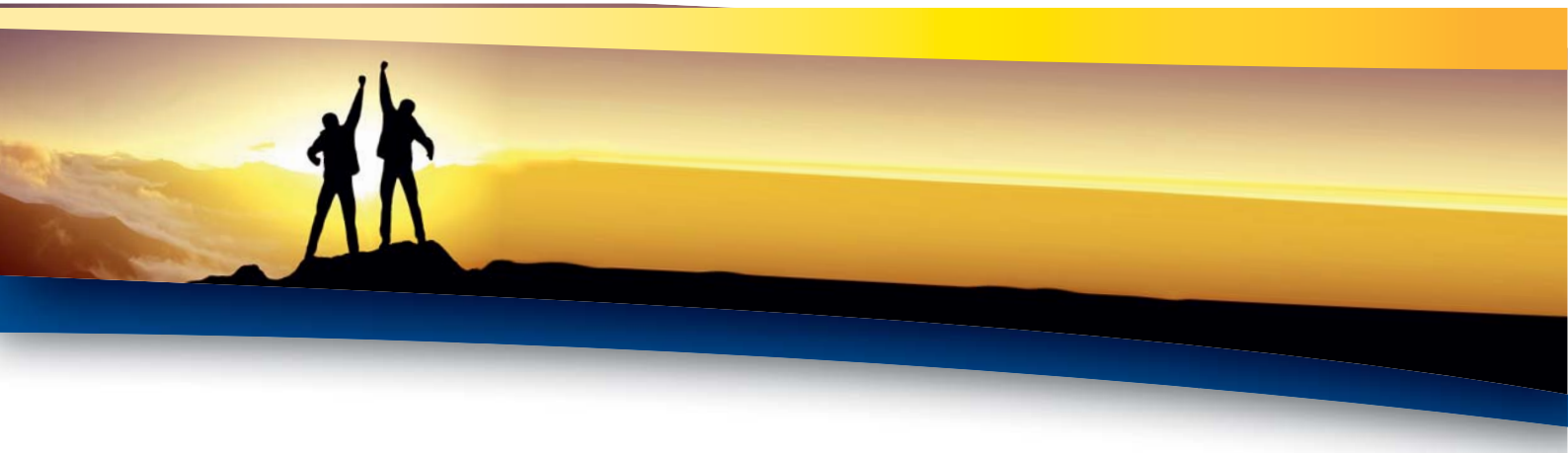
"In line with the aim of the Paris Agreement to achieve a balance between anthropogenic emissions by sources and removals of GHG by sinks in the second half of the 21st century, the EU should aim on an equitable basis, to reach net-zero emissions domestically by 2050, followed by a period of negative emissions."

[1] *Global energy system based on 100% renewable energy: power sector, Manish Ram, Dmitrii Bogdanov, Arman Aghahosseini, Solomon Oyewo, Ashish Gulagi, Michael Child, Hans-Josef Fell & Christian Breyer (2017).* ***http://energywatchgroup.org/wp-content/uploads/2017/11/Full-Study-100-Renewable-Energy-Worldwide-Power-Sector.pdf***

[2] *On the role of solar photovoltaics in global energy transition scenarios, Christian Breyer et al., Prog. Photovolt: Res. Appl. 2017; 25:727–745*

[3] *http://www.ipcc.ch/report/sr15/*

[4] *http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+REPORT+A8-2017-0402+0+DOC+XML+V0//EN&language=en*



Solar PV is able to meet the challenge of drastic decarbonisation and there is big potential for further improvements in all related technology with accelerated research, development and innovation (RD&I). Already today it provides a power generation solution which is more efficient and cheaper than conventional energy sources in most parts of the world. Thus Solar PV, which is competitive today, is the ideal foundation for an emission-free, sustainable power mix, especially in combination with wind energy, energy storage and secondary conversion of electricity into other forms of energy (power to heat, fuels, chemicals and materials; P2X). Moreover, the **growing Solar PV sector offers great business and economic opportunities over the entire span of the industry from materials and components to systems and services**. Europe should put itself at the forefront of large-scale deployment, ambitious technological development and advanced manufacturing (industry 4.0), sustainability of production, quality and efficiency of solar products and the development of business models that capture PV's value.

The importance of market growth, manufacturing and innovation

ETIP PV's position is that EU-based manufacturing industry must regroup and succeed in the extremely competitive global Solar PV sector, providing high-quality, technologically advanced products at scale. For this to happen, the EU must **ensure a large and growing market for Solar PV installations** that **values high-quality, highly sustainable products**. The EU led in PV installations until 2012 but had fallen to only 6% of the global PV market by 2017, with installations in Asia, the Americas and recently Africa now dominating. EU governments must stimulate the European PV market in order to reap the economic benefits that PV brings and give a boost to Europe's PV industry. Solar PV is a strategically important part of the coming sustainable energy system. Mastery of PV technology should not belong to one country or region. At the same time as barriers to the rapid uptake of centralized and decentralized PV installations are removed, policies to promote local manufacturing should be put in place, which is key to gaining local political backing.

Solar PV is transforming Europe's and the World's energy system and energy industry and ETIP PV is committed to actively support this to the benefit of climate and economy, as a contribution to the future of mankind and responding to the Sustainable Development Goals shown below.

Selected United Nation's Sustainable Development Goals

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