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Use of patent information for policy makers

IRENA Side Event

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The acceleration of climate change and mitigation technologies: Intellectual property trends in the renewable energy landscape

A REPORT BY CAMBRIDGEIP

1 minute read: key messages

- Patenting activity has increased in all four technology sectors analyzed (biofuels, solar thermal, solar PV,and wind).
- Innovation and patent filing rates in these technology sectors grew by 24% annually between 2006 and 2011 and outpaced the 6% global average increase in patent filings.
- The highest rate of technology investment is in the solar PV sector.
- China and the Republic of Korea have contributed most in recent years across all four technology areas.
- Over 30% of patents filed made use of the Patent Cooperation Treaty (PCT) system.
- Patent concentrations have decreased across three of the four patent landscapes (wind being the exception), reflecting greater globalization as well as higher competition between players from more countries.
- In solar PV, the top 20 technology owners are based in Asia.

The Role of Climate Change and Mitigation Technologies (CCMTs)

Climate change is one of the biggest challenges of our time. Global greenhouse gas emissions, a main driver of climate change, continue to rise rapidly with observed carbon dioxide (CO_2) concentration levels exceeding 400 parts per million as of May 2013, a record high in several hundred millennia.[1]

Since its inception, the United Nations Framework Convention on Climate Change (UNFCCC) has emphasized the key role of technology development and transfer in helping to stabilize greenhouse gas concentrations (Article 4.5 UNFCCC). For this to happen, a global adoption of climate change mitigation and adaptation technologies as well as policies that support the effective transfer of technologies are crucial. To this end, policy-makers and stakeholders need to be informed of the empirical evidence surrounding key CCMTs.

Patent publications around the world are an important source for structured and accurate information on inventors, technologies, innovation and technology ownership. Analysis of patent data relating to an industry or a specific technology can reveal important information about the origins of a technology, how a technology space is developing and how the composition of industry players has evolved. It can also identify the most important (commercially or scientifically) patent documents of a technology or industry space. The analysis of patent data can therefore inform both commercial decision-making and the formulation of effective public policy.

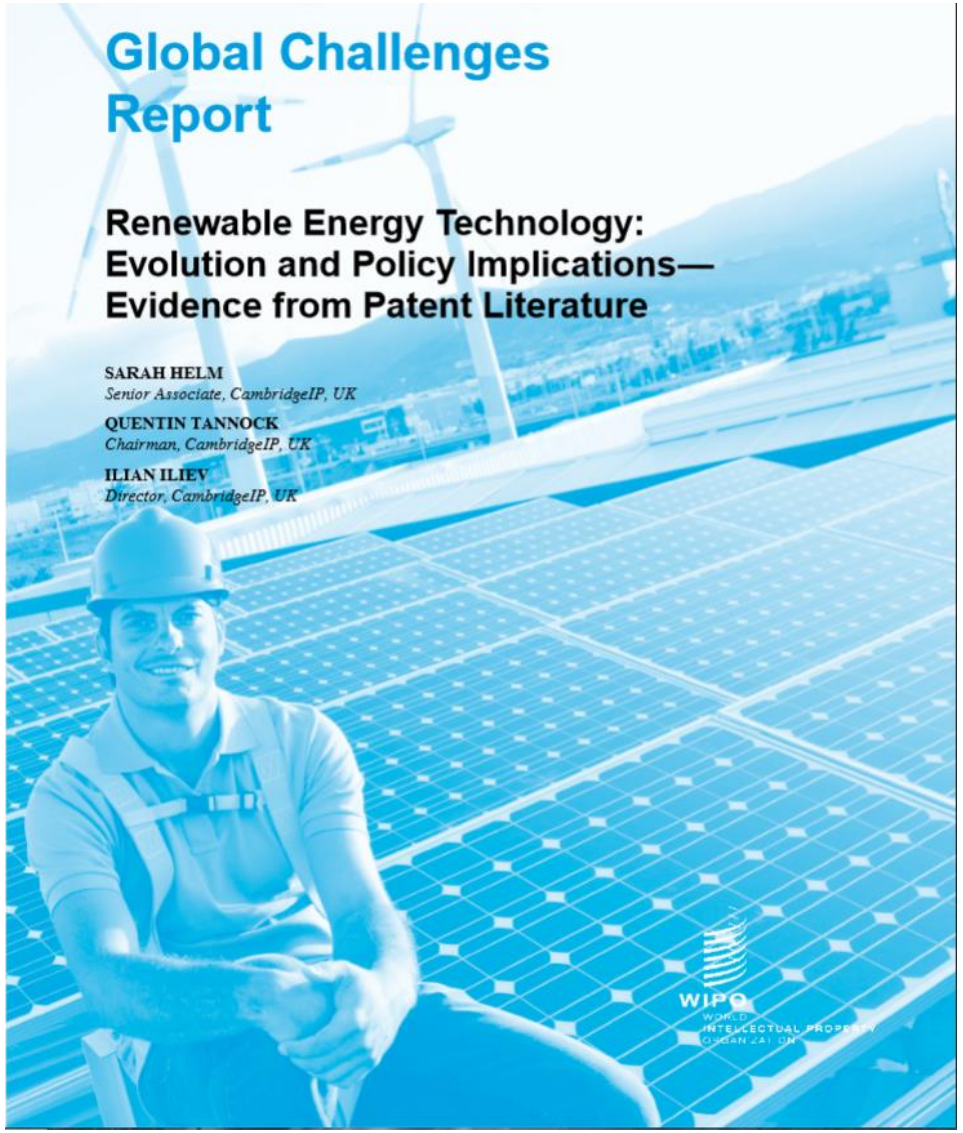

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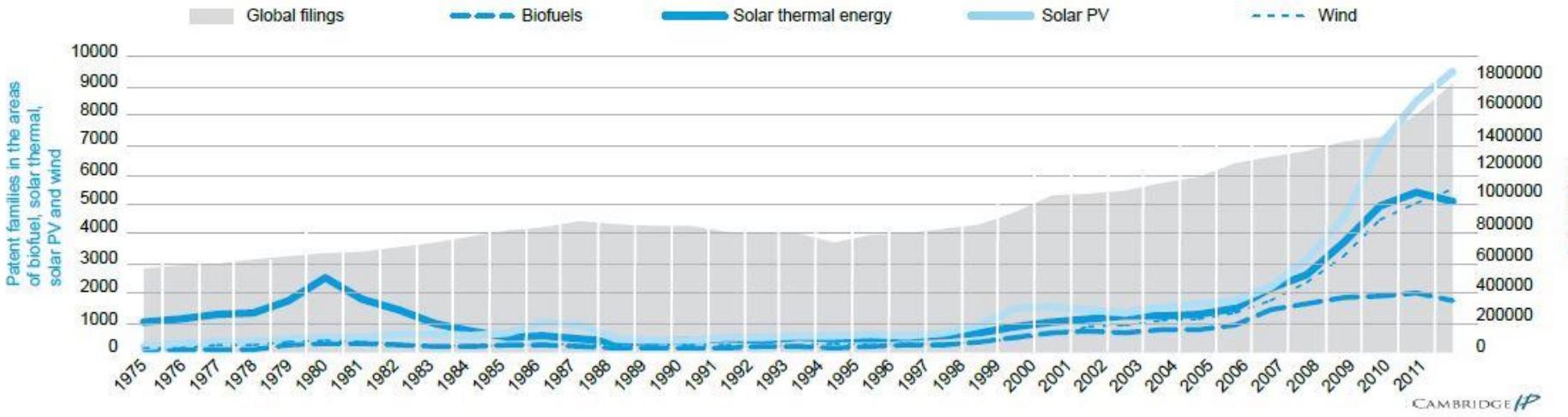
Figure 1: Global patent application trends for selected CCMTs: 1975 - 2011



Emerging Innovation: Technology Trends to Watch

BIOFUEL
Starter material fermentation and fermenters used in the production of biofuels; increased efficiency in production process; fuel-from waste; and algae-related applications.

SOLAR THERMAL
Coating, manufacturing and resilience of glass material (especially as they relate to heat exchange systems); the development of control systems relating to tracking; and energy storage technology integration.

SOLAR PV
Materials, manufacturing processes and design improvements of silicon based PV systems; flexible three-dimensional panels; and nano-materials.

WIND ENERGY
Turbine-based solutions in software and control systems; system integrators with other energy sources; offshore wind innovations focused on scaling up the size of turbines and increasing durability.

Table 1: Global Patent Filing Rates

(see Box for a description of the technology areas)

TECHNOLOGY CLASSIFICATION	AVERAGE ANNUAL GROWTH RATE 1975-2005	2006-2011
Biofuels	9%	13%
Solar thermal	3%	24%
Solar PV	10%	22%
Wind	9%	27%
Global patent filings	3%	6%

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