



Patents and climate change mitigation technologies: evidence to support policy

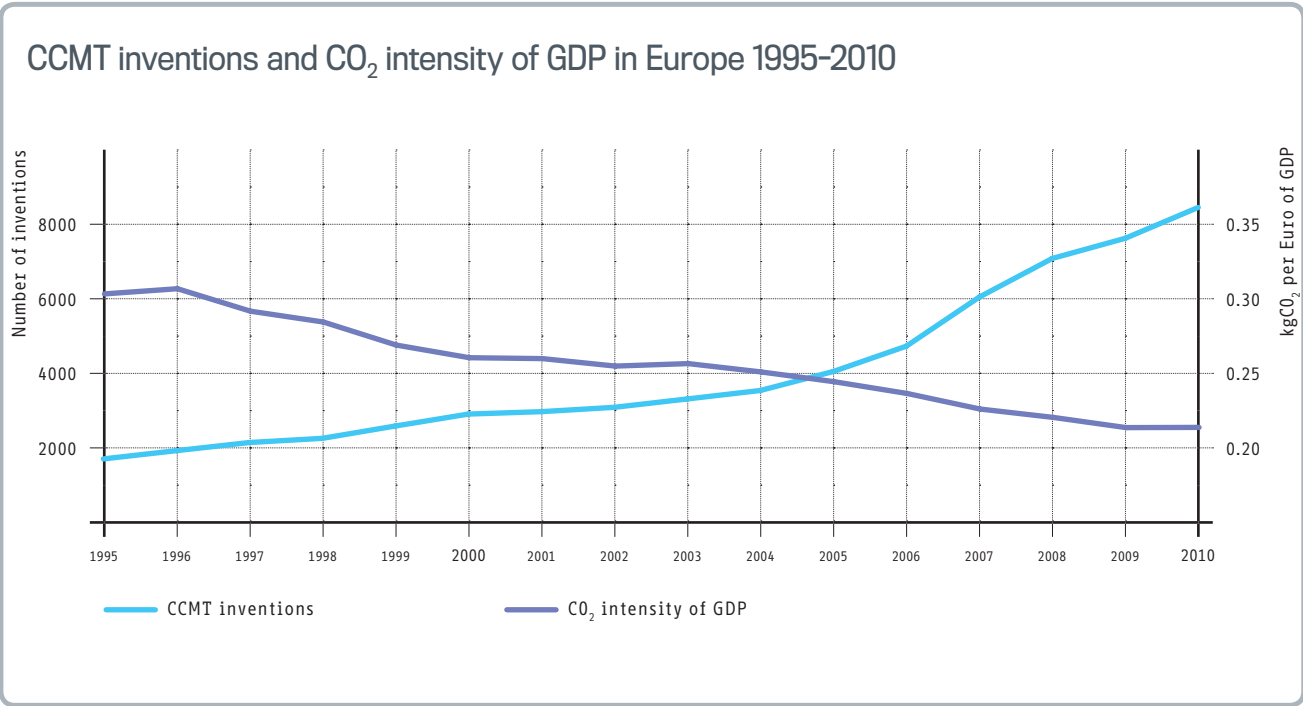
Technology development and dissemination is considered to play a crucial role in tackling the climate change challenge. In particular, enhancing technology transfer has been an integral part of the global climate change regime since the inception of the United Nations Framework Convention on Climate Change (UNFCCC). The 16th Conference of the Parties (COP) in Cancun in 2010 reaffirmed its importance by establishing the Technology Mechanism to facilitate enhanced action on technology development and transfer to support action on mitigation and adaptation.

The role of patent rights in the transfer of climate change mitigation (CCMTs) and adaptation technologies has been the subject of much debate. Against this background, the United Nations Environment Programme (UNEP), the European Patent Office (EPO), and the International Centre for Trade and Sustainable Development (ICTSD) agreed to undertake a series of empirical studies on the role of patents in the development and dissemination of CCMTs. The main objective is to provide evidence to support future policy-making. The following provides a brief summary of the evidence produced to date.

The impact of policy

Patenting rates in CCMTs have continued to accelerate since the Kyoto Protocol in 1997, suggesting that political decisions setting adequate frameworks are important for stimulationg their development. The data also suggests that public policies have been successful in encouraging the development of CCMTs

in Europe. Probably as a consequence of these policies and of the induced inventive response, the carbon intensity of Europe’s GDP has fallen by 30% in the last decades (see figure) and has remained the world’s lowest since 2000.



CCMTs in Europe: evidence from patent and economic data

A joint EPO-UNEP study (2015) used both patent and economic data on CCMTs in Europe. In addition to the results shown in the figure, this showed:

- The share of worldwide inventions that are CCMTs has risen from 2% to 6% over 1995-2011.
- Europe is responsible for 18% of worldwide CCMT inventions, and 40% of the world’s “high value” inventions, defined as those filed in more than one jurisdiction (OECD definition).
- Europe is the world’s biggest importer of CCMT goods; and in CCMT exports, is second only to China.
- Cross-border patent filings appear to go hand in hand with trade and foreign investment in CCMTs.

Full report at: www.epo.org/climate-europe



Patents and CCMTs in Latin America and the Caribbean

A previous study (2014) focussing on Latin America and the Caribbean (1995-2010) showed:

- Less than 3% of all patent applications related to CCMTs have been filed in Latin America and the Caribbean (LAC).
- CCMT patent first filings with LAC inventors increase at 16% per year, against 12% worldwide.
- Brazil dominates inventive activity with 73% of filings, followed by Argentina and Mexico, together making a total of 93%.

Full report at: www.epo.org/LAC



Patents and CETs in Africa

Another study (2013) focussing on patents and Clean Energy Technologies (CETs) in Africa included the following key results:

- Less than 1% of all patent applications related to CETs have been filed in Africa.
- CET patent filings with African inventors grew at a rate of 9% against 5% worldwide.
- South Africa is responsible for 84% of filings.
- 23% of African inventions in CCMTs involve co-invention with the US, UK, Belgium, Germany, Sweden, France and Canada.

Full report at: www.epo.org/clean-energy-africa



Dissemination of technical knowledge through the patent information system

Whereas a very low percentage of CCMTs are currently protected in developing countries, very large numbers of patent documents disclosing technical information on CCMTs are published and made available via the internet free of charge by patent offices.

Approximately 2,8 million documents related to CCMTs have been tagged in a dedicated scheme termed Y02/Y04S by the EPO, freely available via the EPO online database Espacenet. The aim is to increase the transparency of the patent system and enhance the accessibility to these technologies.

EPO's Y02/Y04S tagging scheme for CCMTs

The Y02/Y04S scheme covers

- Y02B – CCMTs relating to buildings
- Y02C – Greenhouse gas capture and storage
- Y02E – Energy generation, storage and distribution
- Y02P – CCMTs in production
- Y02T – CCMTs relating to transport
- Y02W – CCMTs in waste treatment
- Y04S – Smart Grids

Considering the low level of patenting in CCMTs in developing countries, the patent system may have an important but largely under-utilised role to play in fostering technology transfer to those regions. In addition, a variety of factors should be taken into account to promote the innovation and dissemination of CCMTs.

Notably these include the level of scientific infrastructure, human capital, market conditions, and investment climates, as shown in the UNEP-EPO-ICTSD survey on conditions for licensing to developing countries within the 2010 study on patents and CETs.

More information: www.epo.org/clean-energy

The role of the global patent system in supporting innovation

In granting temporary exclusive rights in exchange for the disclosure of an invention, the patent system encourages R&D, and supports innovation by providing protection while an inventor or enterprise brings an invention to market. In addition, the patent system supports technology transfer by providing a framework for licensing and therefore technology transfer, both nationally and internationally.

The global dissemination of technical knowledge through the disclosures in patent documents also supports innovation by allowing further R&D to build upon already disclosed technologies, supported by the Y02/Y04S tagging scheme for CCMTs. Furthermore, the use of patent statistical tools like PATSTAT in combination with the Y02/Y04S scheme allow trends in the CCMT space to be derived, and evidence to be provided to support policy making.



For more information on finding sustainable technologies in patents and the Y02/Y04S scheme, please visit:

www.epo.org/y-classification