



Europäisches
Patentamt
European
Patent Office
Office européen
des brevets

The Value of Patent Information in Climate Change Mitigation Technologies



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Contents

- Introduction to patents and the EPO
- Patents as an innovation-support mechanism
- Patent information for business purposes and decision-making
- The Y02/Y04S tagging scheme for CCMTs
- Landscaping on CCMTs
- Power sector transformation and the role of software and computers

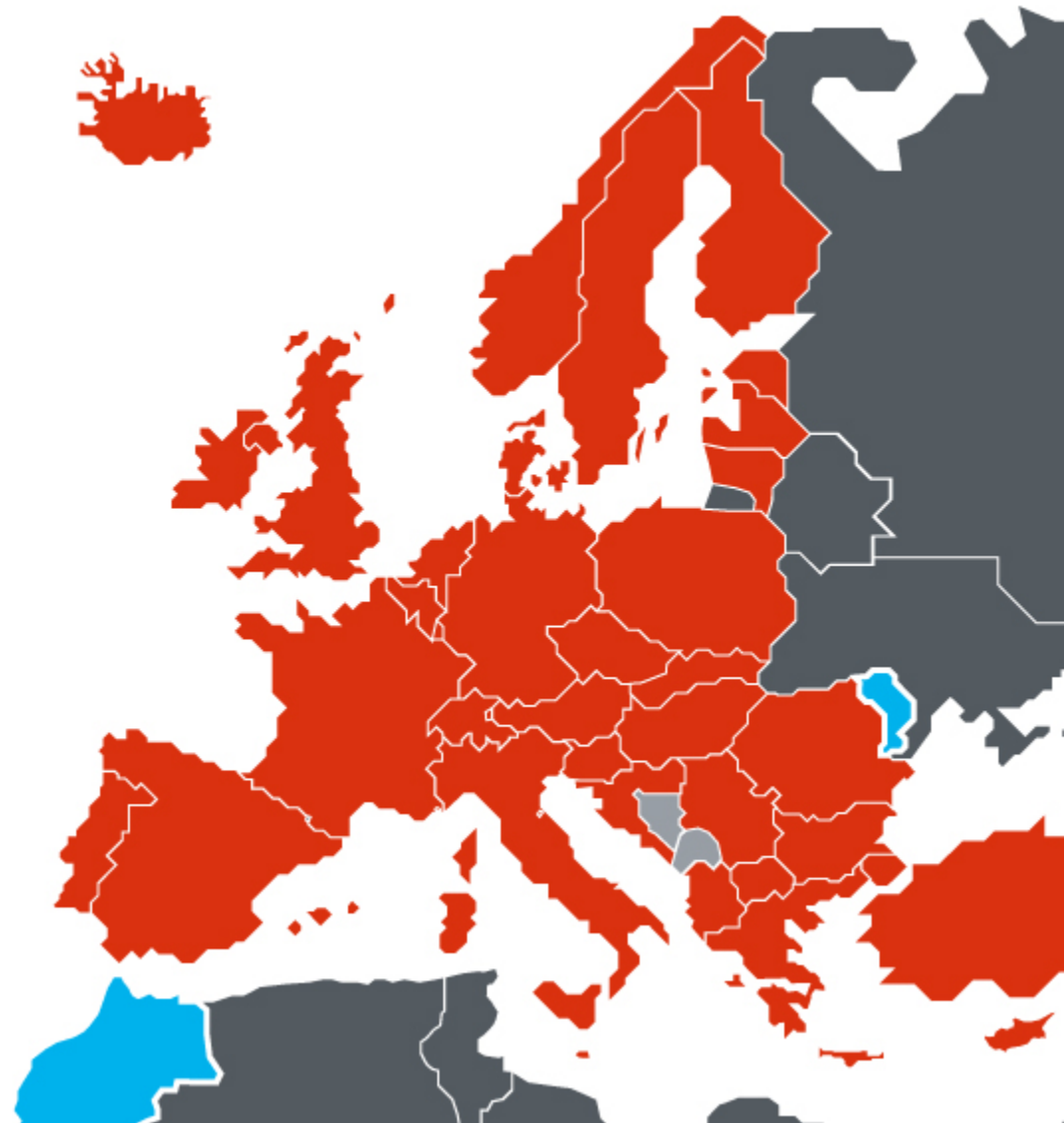
Patent protection in up to 42 countries

European Patent Organisation
Founded in 1973
Some 650 million inhabitants

European member states (38)

European extension states (2)

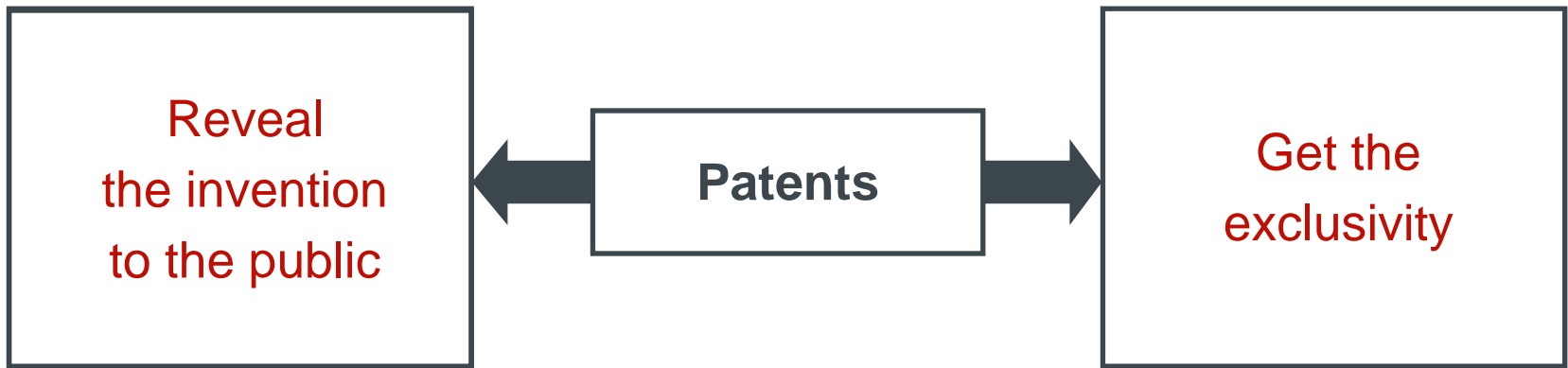
Validation states (2)
Republic of Moldova
Morocco



Key facts: the EPO at a glance

- **Second largest** intergovernmental institution in Europe
- 7000 employees, of which around **4200 highly qualified examiners**
- **Self-financing**: budget of EUR 2bn without any public funding
- **Core business**: searching and examining patent applications and provide patent protection, where appropriate, in up to 42 states
 - 160 022 applications received in 2015, +4.8%
- The EPO makes **all patent documents available to the public**
 - 90 million patent documents available online, free-of-charge

A simple contract




Remember:
Territoriality of patent protection!

What is patent information?

- Patent documents are a source of **technical** and **legal information**
- **Patent search**
 - To find existing solutions to a technical problem (e.g. licensing)
 - A tool for creative thinking
 - Freedom to operate (FTO)
- **Patent statistics**
 - Analyse patenting activity of a competitor
 - Track development of a sector/technology
 - Forecast a change in technology direction
 - Conduct Research & Policy development

EPO Patent Information services

Espacenet
Patent search

- **For learning technical solutions**
- Access to 90 million documents from 90 patent authorities worldwide
- Available free-of-charge
-  powered by EPO and Google
EN > 31 languages including CN, JP, KR, RU

PATSTAT

- **For technology mapping and statistics**
- 82 million patent applications from over 100 patent authorities
- 40% of users are in governmental research/policy-making

Identifying CCMTs in patent data

- **EPO** developed **Y02/Y04S** tagging scheme to search CCMTs in PATSTAT and Espacenet.
- The scheme contains over **1300 tags** and almost **3 million documents**

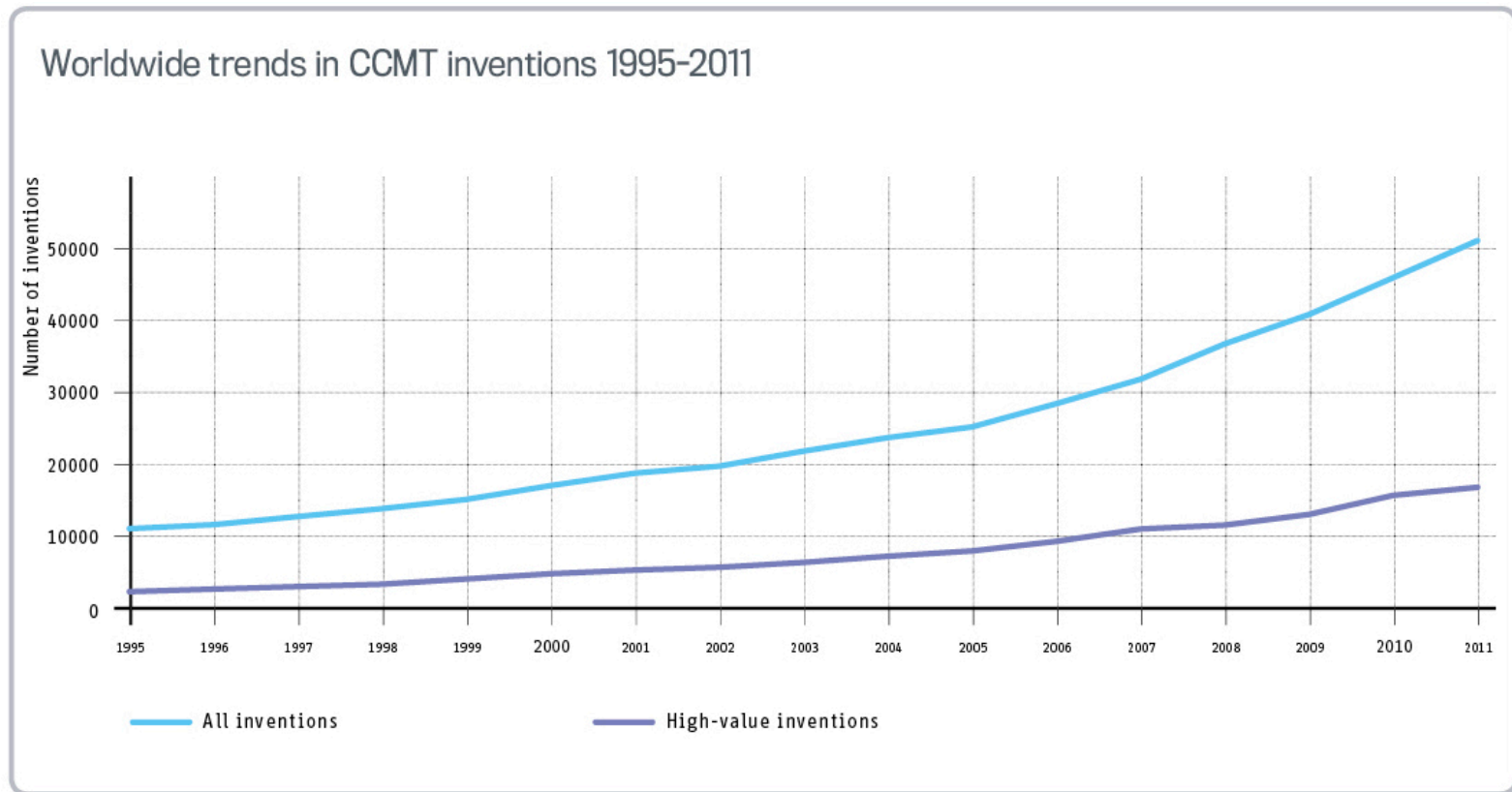
- **Y02C** Carbon Capture
- **Y02E** Energy
- **Y02B** Buildings
- **Y02P** Production
- **Y02T** Transportation
- **Y02W** Waste
- **Y04S** Smart Grids



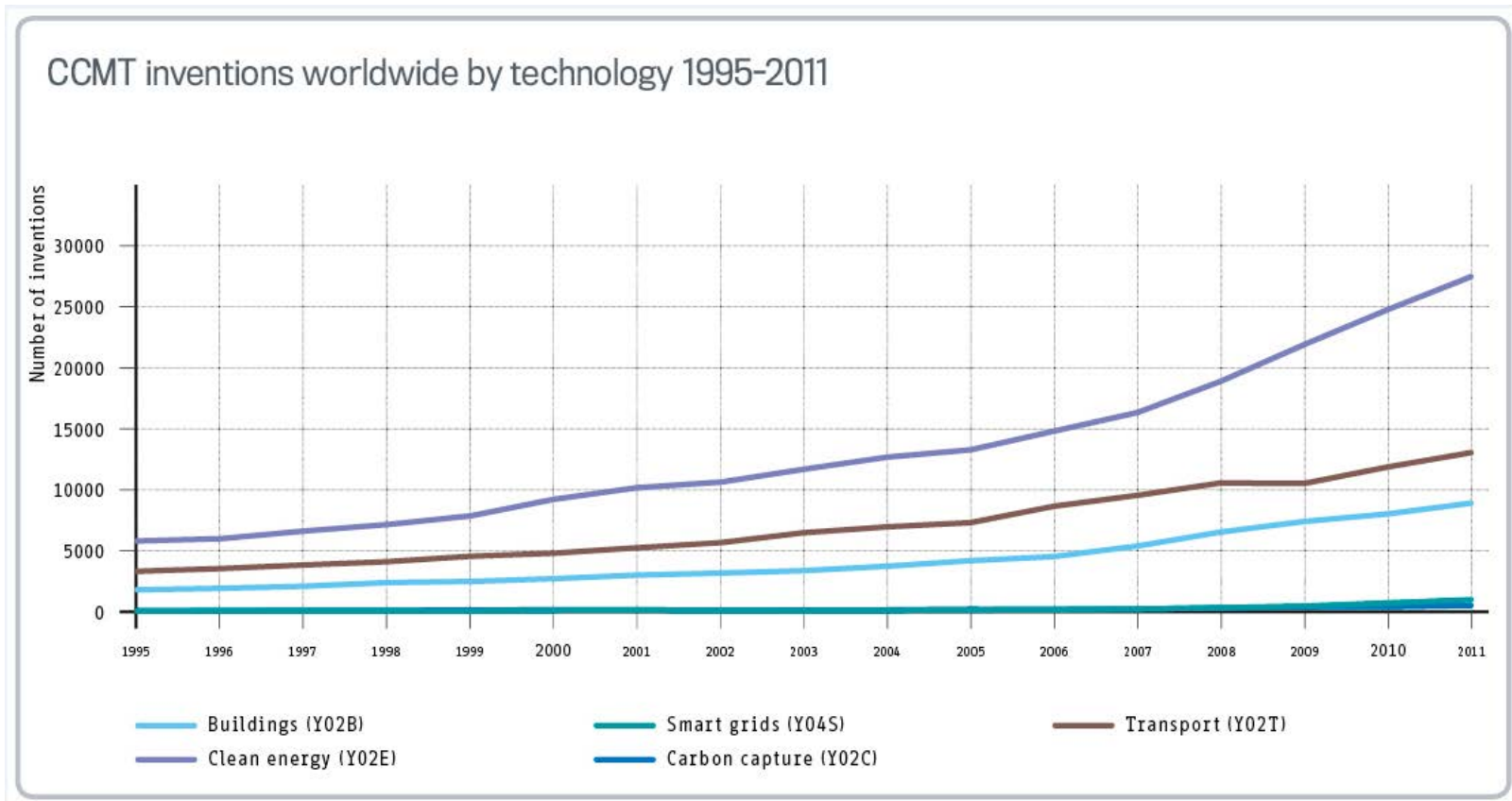
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Worldwide trends in inventive activity

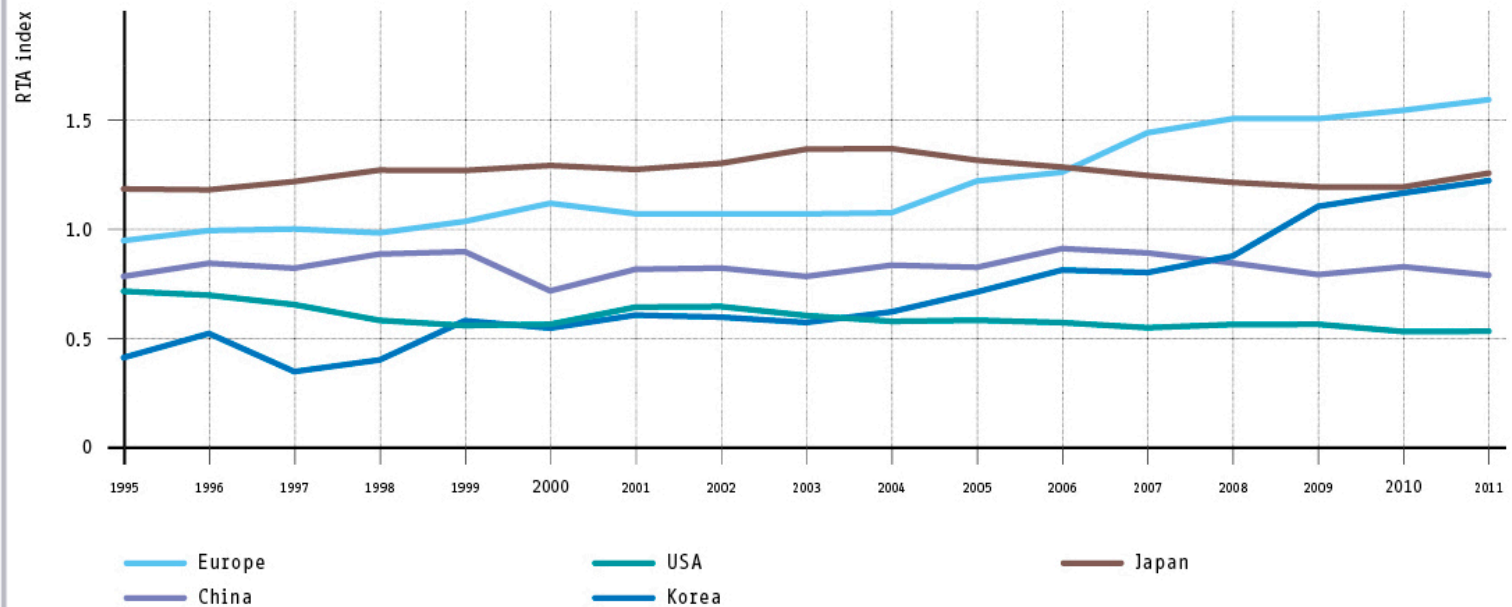


CCMT inventions worldwide by technology



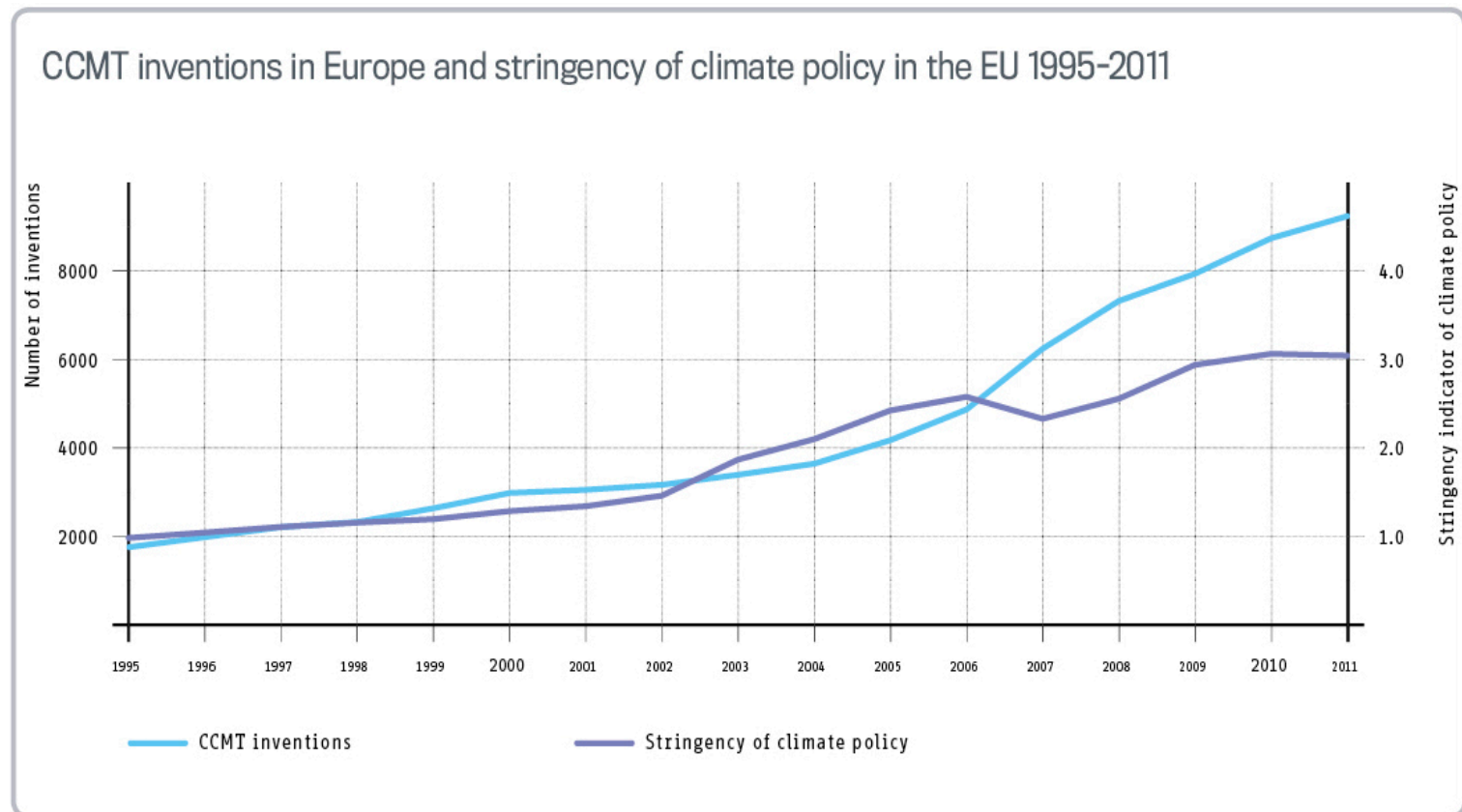
Specialisation in CCMTs

Relative technological advantage (RTA) of major innovation centres in CCMTs 1995-2011



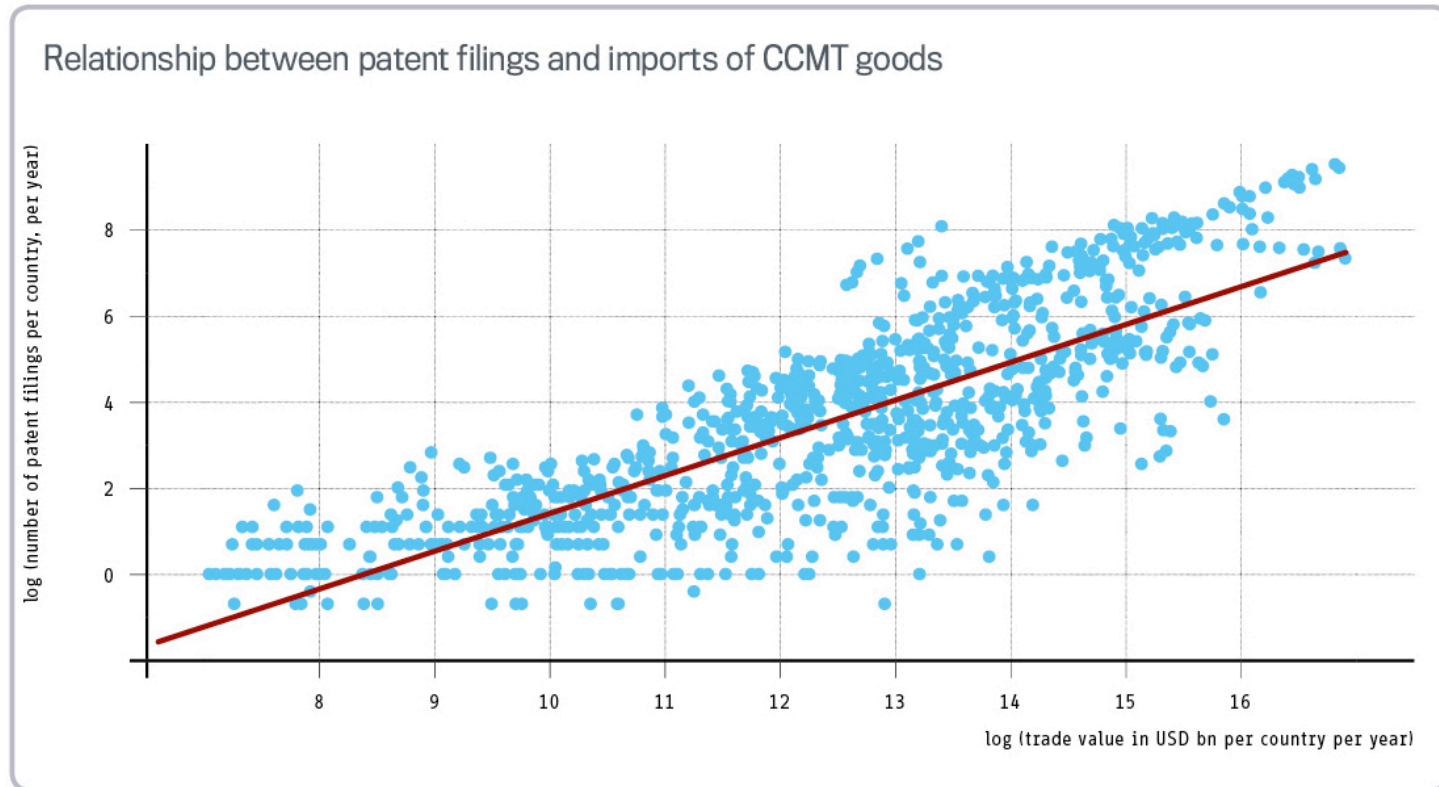
Stringency of climate policy and inventive activity

- Stringency has increased since 1995
- Increasing stringency major driver in CCMT inventions in Europe



Patents and technology transfer

- Clear and **strong positive correlation between number of patents filed by foreign inventors and value of imports** as well as between patent filings and volume of FDI

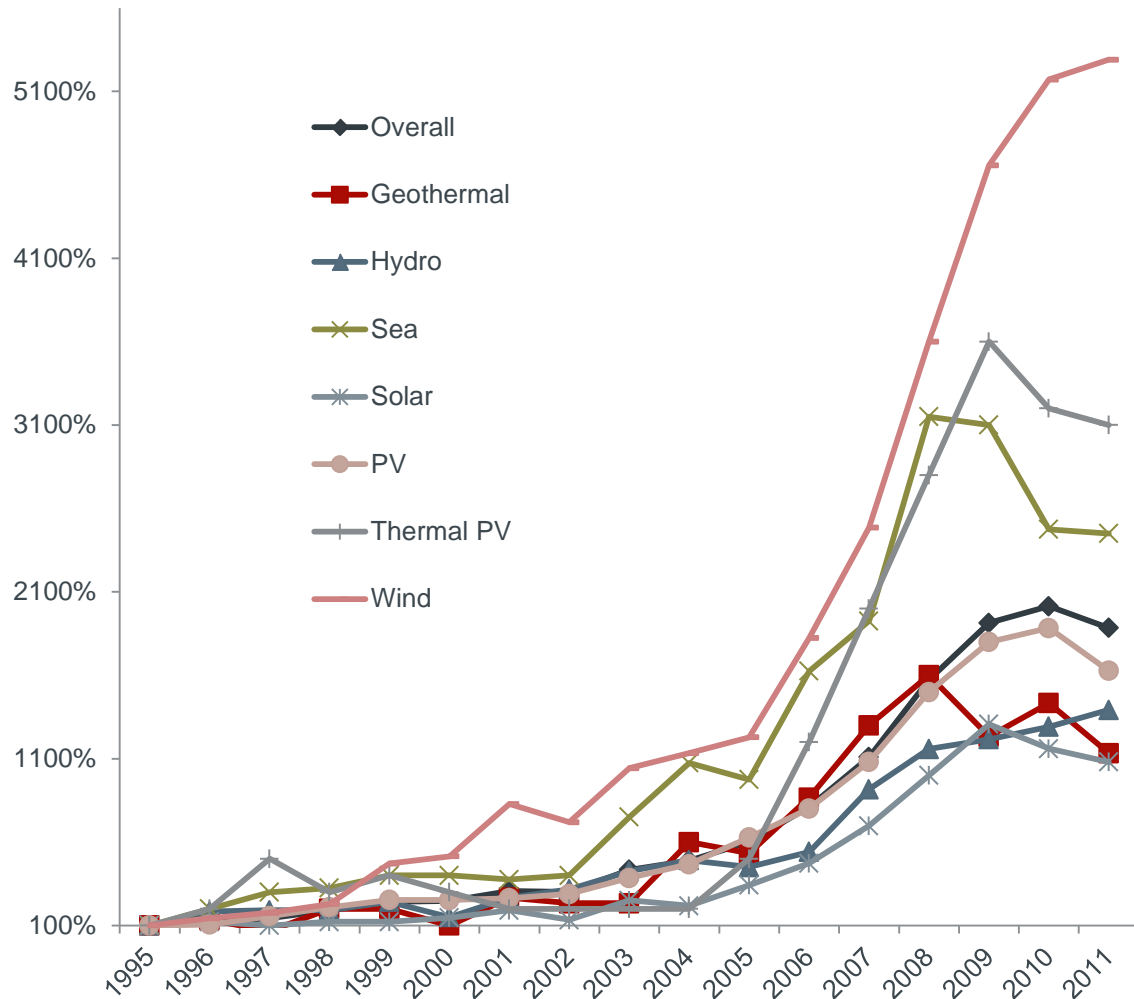
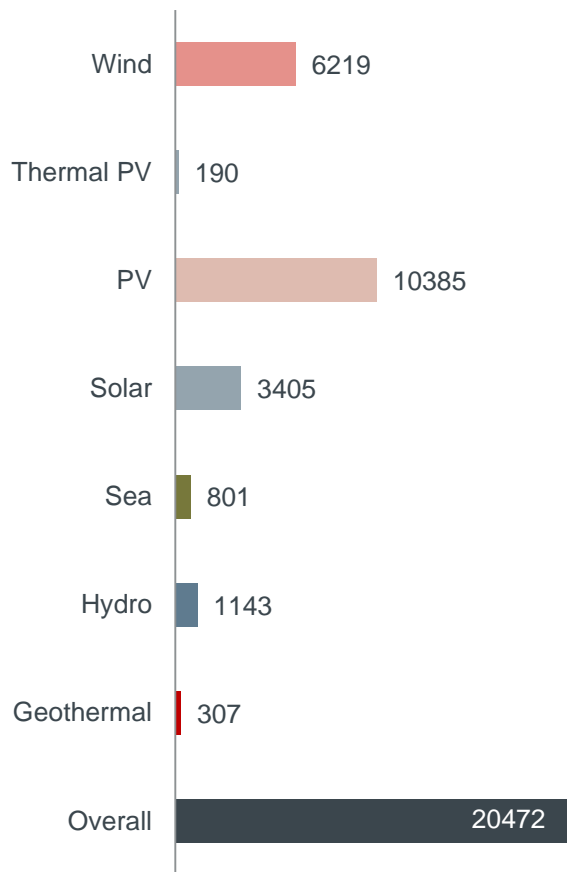


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Patenting trends in Renewable Energy 1

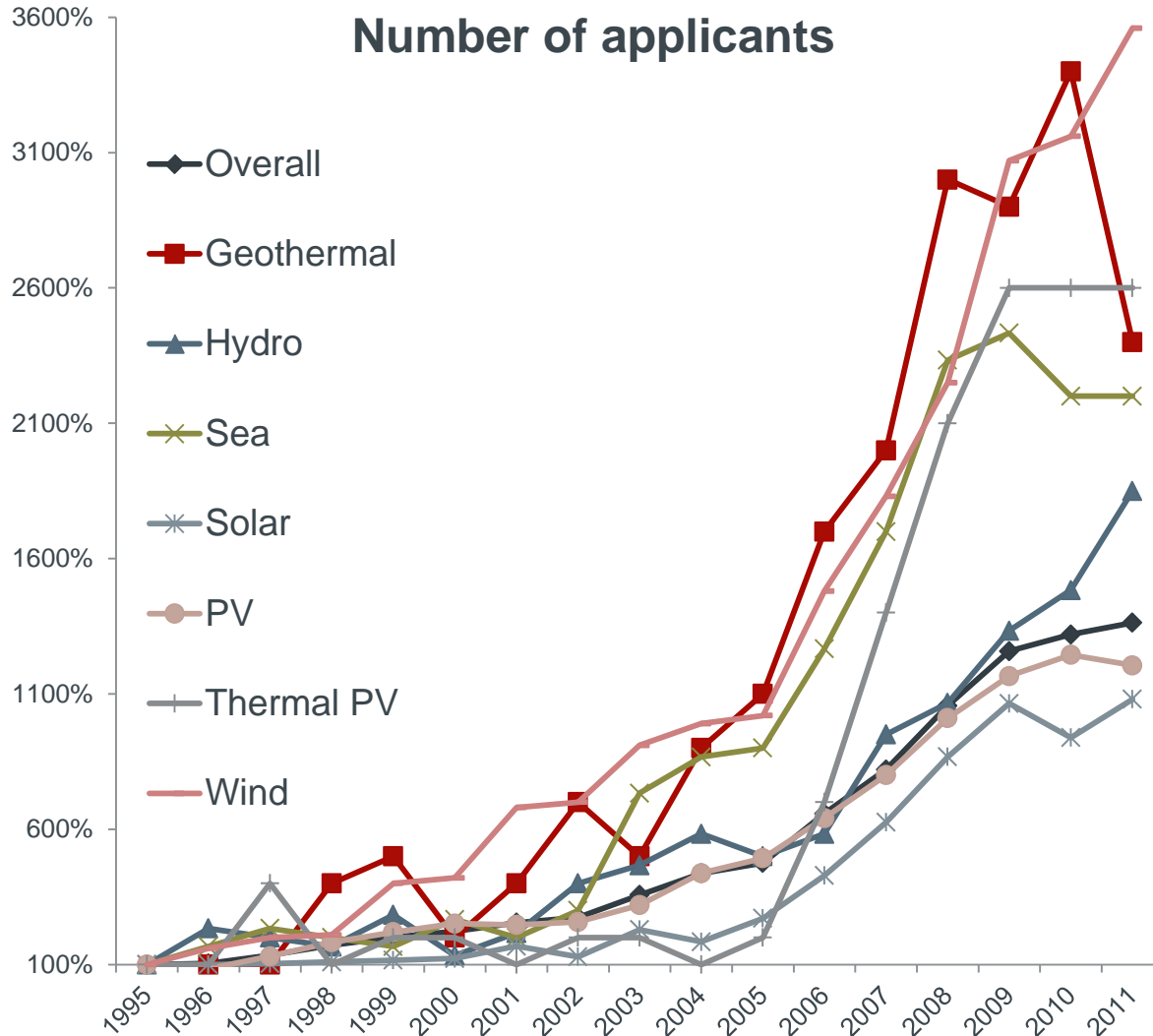
EP applications in RE (1995-2011)



based on own calculations using PATSTAT Fall 2015

Patenting trends in Renewable Energy 2

Number of applicants



MARKET CONCENTRATION

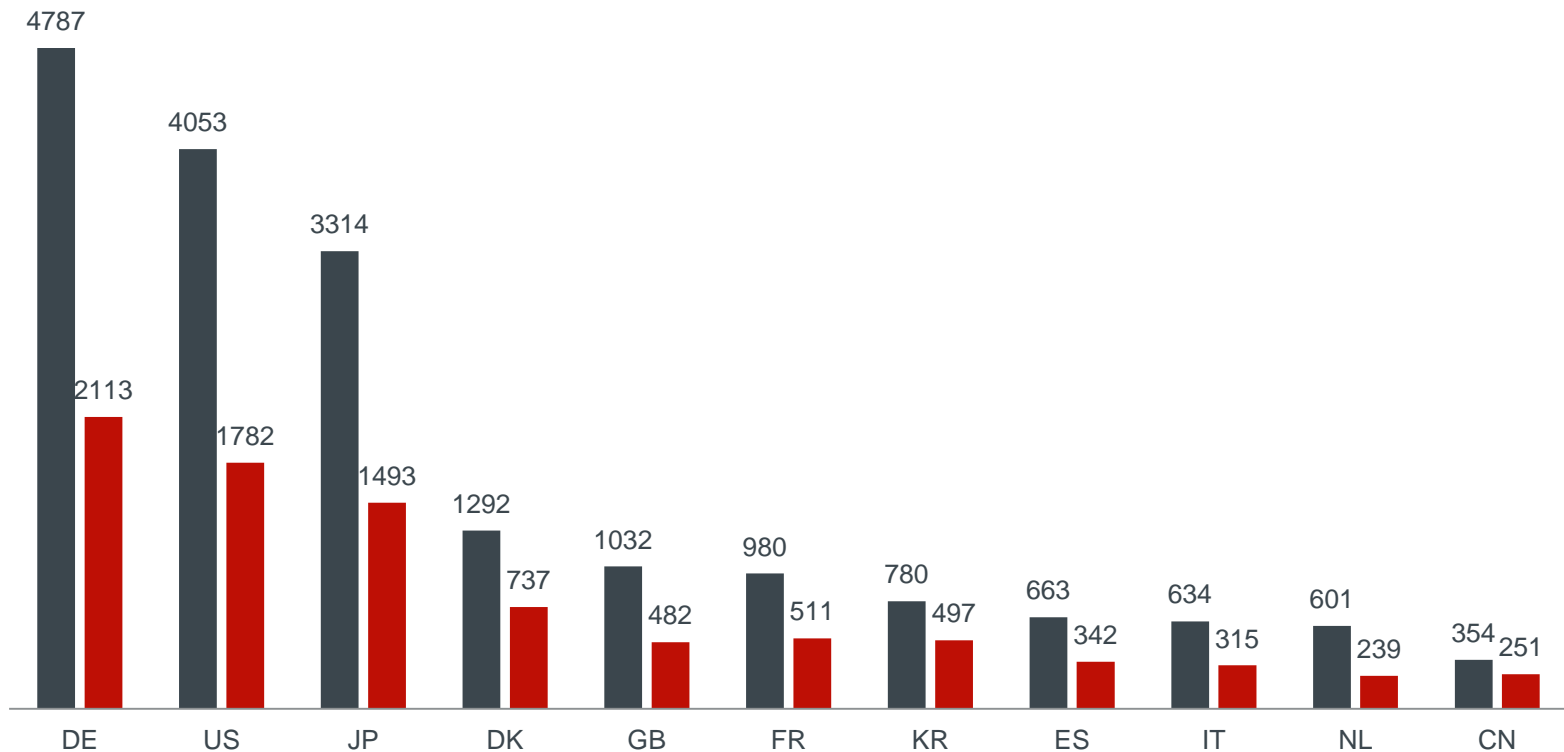
	TOP5 (2006-2008)	TOP5 (2009-2011)
All RE	13%	16%
Geothermal	16%	18%
Hydro	16%	13%
Sea	13%	16%
Solar	5%	8%
PV	11%	10%
Thermal PV	12%	12%
Wind	37%	42%

based on own calculations using PATSTAT Fall 2015

Patenting trends in Renewable Energy 3

Inventors - Renewable Energy

■ 1995-2011 ■ 2009-2011



based on own calculations using PATSTAT Fall 2015

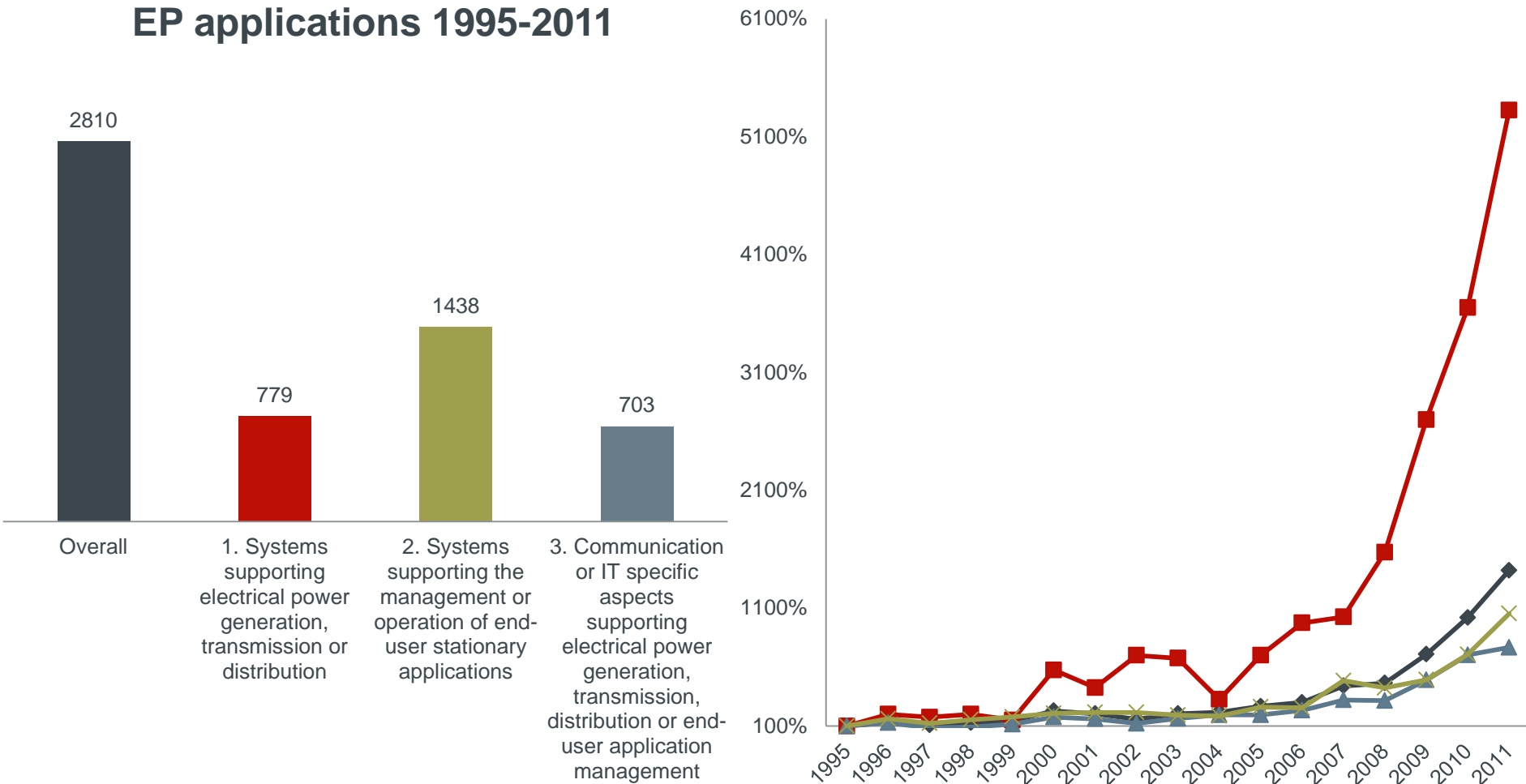
Importance of ICT in transforming the power sector

Create efficiencies in

- for the supply chain (**generation - transformation - distribution**)
 - for **consumers** of renewable energy
 - in the **integration** of energy
- ➔ A lot of data needs to be transferred and managed!

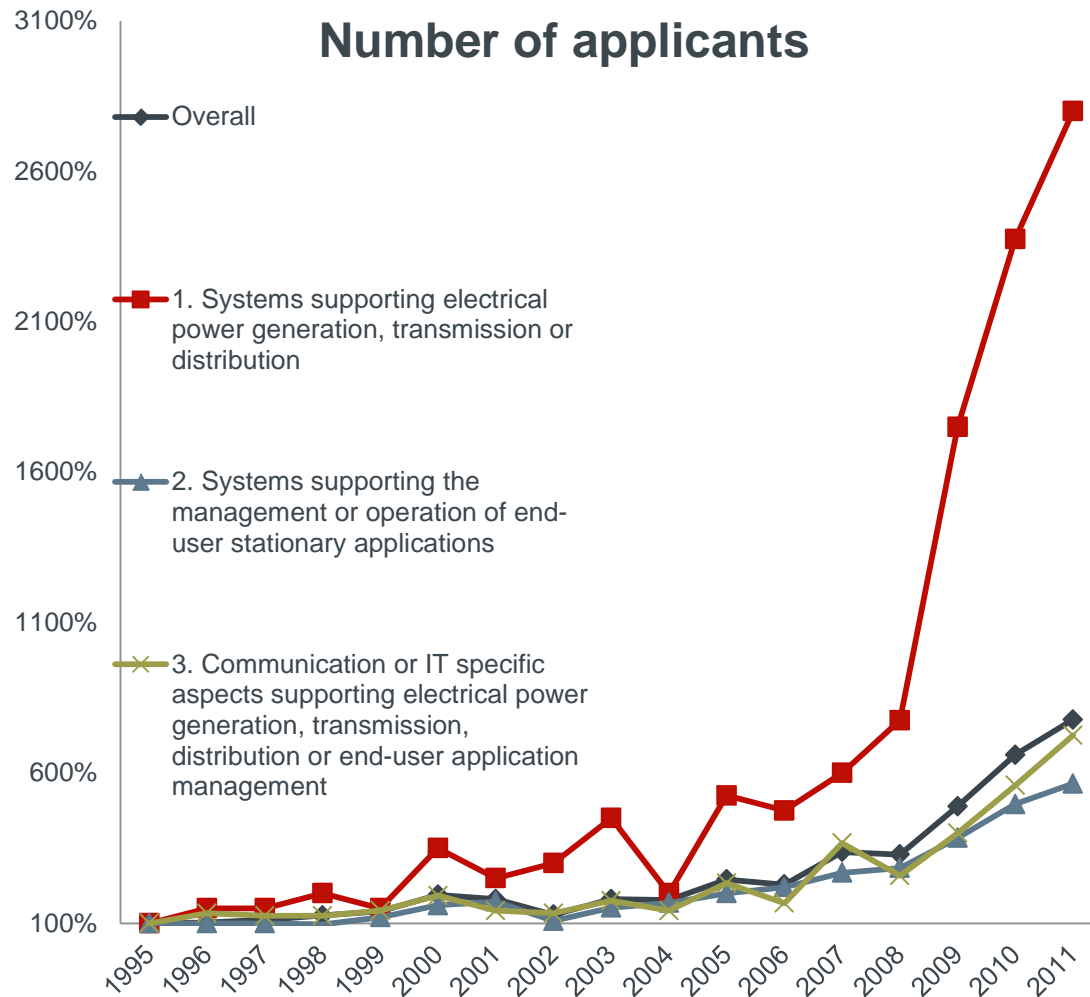
Patenting trends in Smart Grid Technologies 1

EP applications 1995-2011



based on own calculations using PATSTAT Fall 2015

Patenting trends in Smart Grid Technologies 2



TOP Applicants (1995-2011)

General Electric
Siemens
ABB
Panasonic
Toyota

Market Concentration

TOP5 (2006-2008) 23%

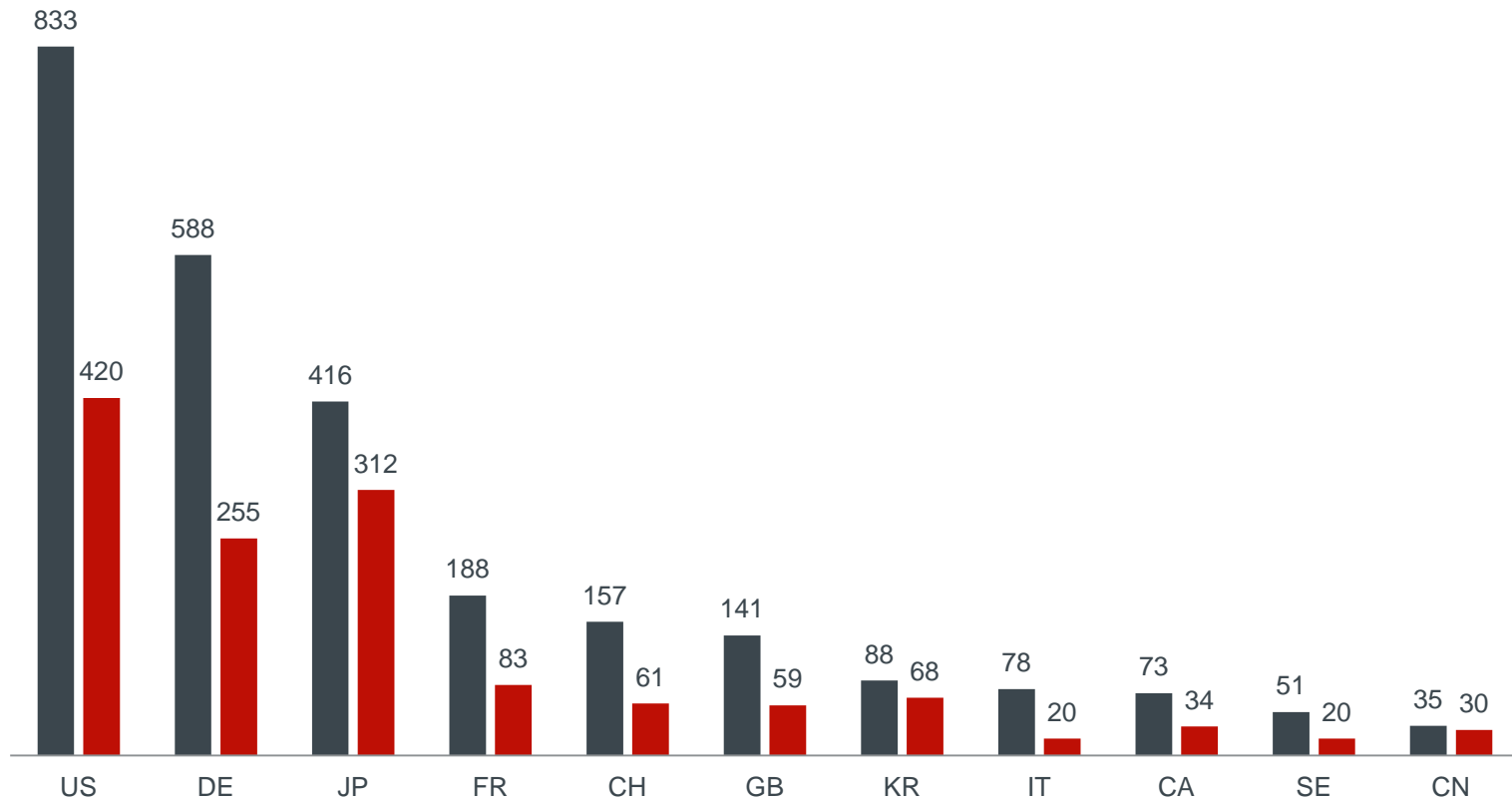
TOP5 (2009-2011) 21%

based on own calculations using PATSTAT Fall 2015

Patenting trends in Smart Grid Technologies 3

Inventors - Smart Grids

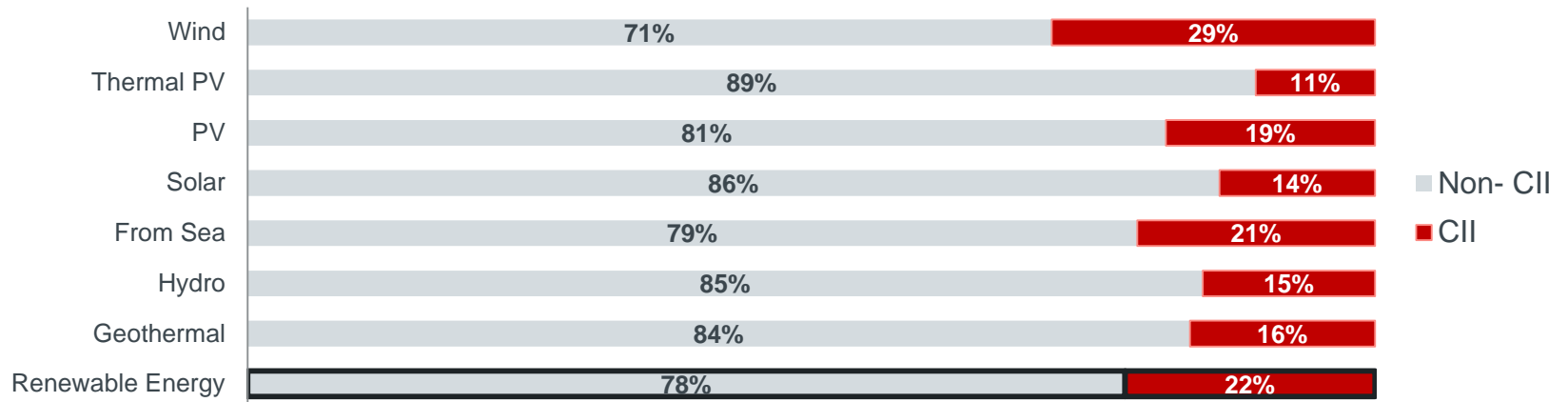
■ 1995-2011 ■ 2009-2011



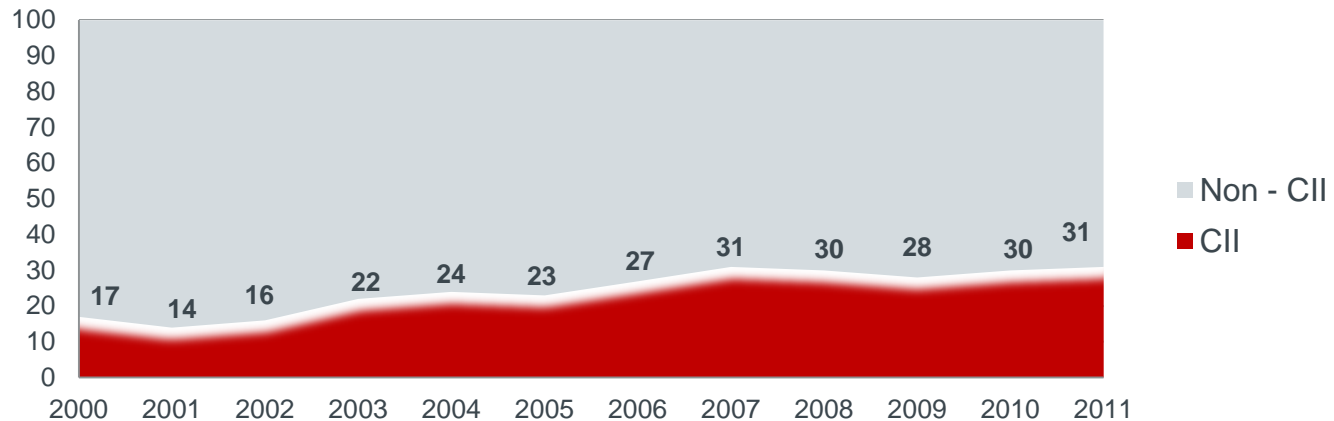
based on own calculations using PATSTAT Fall 2015

Computer-Implemented Inventions (CII) in RE

CII in Renewable Energy (2002-2011)



CII share in Wind Energy



based on own calculations using PATSTAT Fall 2015

Main messages

1. Patent information provides evidence for decision making
2. Strong growth in inventive activity in CCMTs, and REs in particular
3. Climate policy is an important driver of innovation in CCMTs
4. Patent protection supports technology transfer in CCMTs
5. Increasing role of ICT for RE technologies

THANK YOU!