

WIPO Regional Forum Intellectual Property and Climate Change

Sri Lanka
29-30 May 2012

Anatole Krattiger
Director, Global Challenges Division

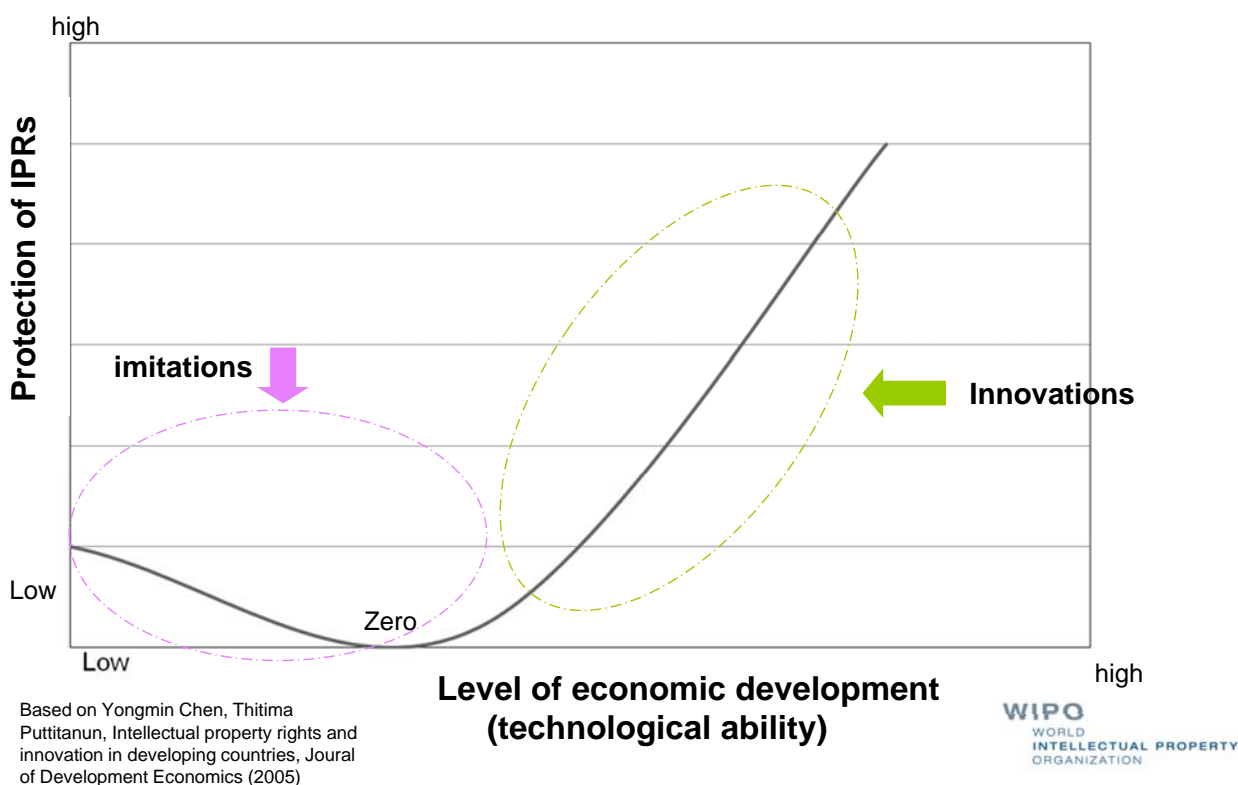
- Anja von der Ropp, Legal Officer
- Yesim Baykal, Consultant,
- Akiko Takano, Associate Officer

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Intellectual property

- Intellectual property (IP) refers to **creations of the mind**: inventions, literary and artistic works, and symbols, names, images, and designs used in commerce.
- Patents are relevant for green technologies. A patent provides **protection** for the invention to the **owner** of the patent. The protection is granted for a limited period, generally 20 years.

IP rights and innovation in developing countries



Data- Model IP rights and innovation

- A model is developed to illustrate the trade-off between imitating foreign technologies and encouraging domestic innovation in a developing countries' choice of IPRs.
- Empirical analysis, with a panel of data for 64 countries, confirms both the positive impact of IPRs on innovations in developing countries and the presence of a U-shaped relationship between IPRs and economic development (first decreasing and then increasing).

IPRs and development

- The benefit from IPRs to a developing country are actually much more than encouraging domestic innovation in the narrow sense.
- The lack of a functioning market system could be the biggest obstacle to the development of an economy.

Yongmin Chen, Thitima Puttitanun,
Intellectual property rights and innovation
in developing countries, Journal of
Development Economics (2005)

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Climate change

- **Climate Change:** A change in the state of the climate that can be identified by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. ***Climate change may be due to natural internal processes or external forcings, or to persistent anthropogenic changes in the composition of the atmosphere or in land use.***(IPCC)



- United Nations Framework Convention on Climate Change (UNFCCC), where climate change is defined as: ***“a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.”***

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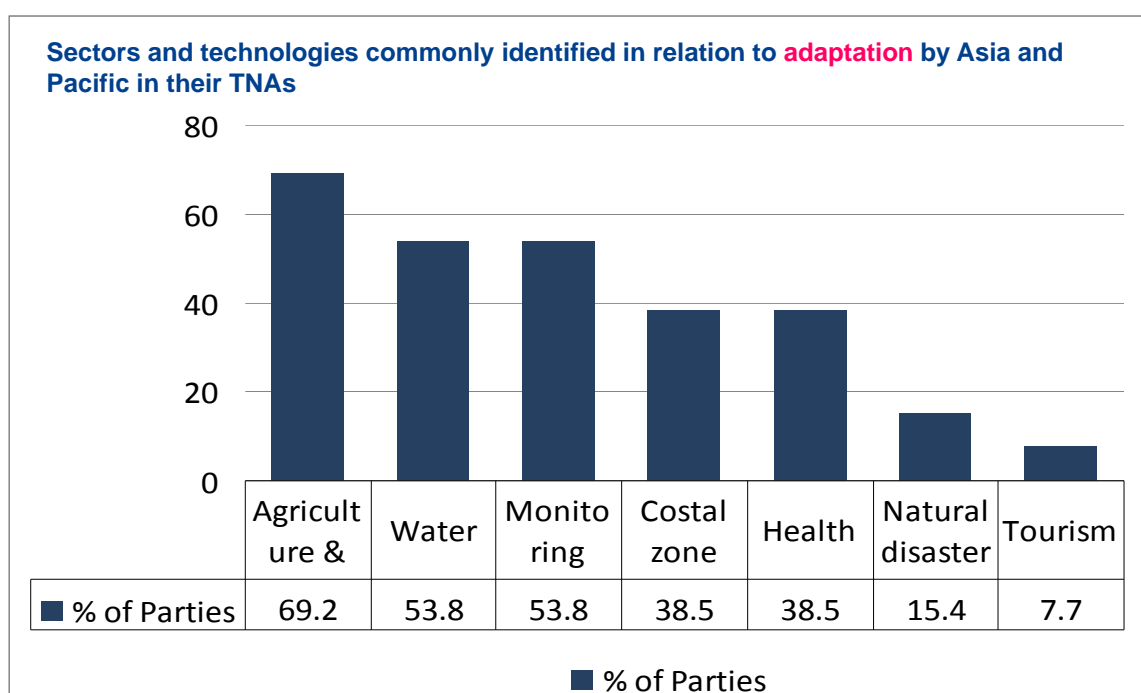
Specific challenges in Asia

- 60% of world's population lives in Asia and the Pacific.
- The region's population density is 1.5 times higher than global average.
- Ten of the World's 25 largest and fastest-growing cities are in Asia.
- Urban population is projected to increase by 44 million annually over the next 20 years.
- Air pollution in most cities exceeds the World Health Organization standard limits.
- Indoor air pollution is high in most cities.
- Net forest loss is 1.4 million hectares/year in the last 10 years.
- Deforestation and other land use changes are responsible for 75% of total GHG emission in Southeast Asia.

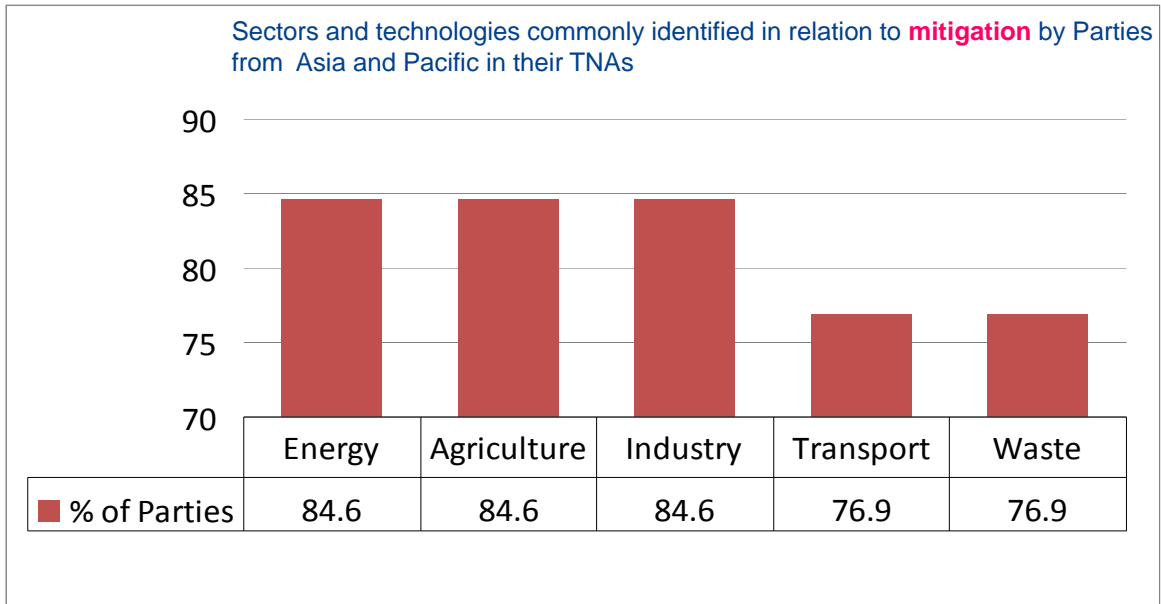
ADB, Report: Greening Growth in Asia and the Pacific, 20 September 2011

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Specific Needs in Asia and the Pacific



Specific Needs in Asia and the Pacific



<http://unfccc.int/ttclear/jsp/Regionalanalysis.jsp>



Capacity-building needs in Asia and the Pacific (TNAs)

Capacity-building needs	BTN	KHM	CHN	IDN	IRN	JOR	LAO	LBN	HIU	PHL	WSM	LKA	THA	VNM	
Information/awareness	14	●	●	●	●	●	●	●	●	●	●	●	●	●	
Human	6	●	●							●	●	●		●	
Institutional/organizational	9	●	●	●	●	●					●	●		●	
Technical	7		●		●	●	●				●	●		●	
Policy/Programme-related	9	●	●		●	●	●	●		●	●			●	
Regulatory	8		●	●	●	●	●	●				●		●	
Economic/market	8	●	●		●		●	●	●			●		●	
Infrastructure	1													●	
Others	4		●				●	●				●			
Total		5	3	8	2	6	7	6	5	2	3	5	7	1	8



<http://unfccc.int/ttclear/jsp/Regionalanalysis.jsp>

Where do IP and Climate change meet?

Green technologies

Chapter 34 Agenda 21

(The United Nations Programme of Action from Rio, 1992)

“[they] protect the environment, are less polluting, use all resources in a more sustainable manner, recycle more of their wastes and products, and handle residual wastes in a more acceptable manner than the technologies for which they were substitutes.”

These “include know-how, procedures, goods and services, and equipment as well as organizational and managerial procedures.”

Some facts on green technologies(1)

- Majority of patents in these fields are held by **multinational businesses**, and more and more **small and medium-sized businesses** are investing in these green technologies and submitting patents.

(J. Reichman, A. Rai, G. Newell and J. Wiener, *Intellectual Property and Alternatives : Strategies for Green Innovation*, report 08/03 Chatham House, December 2008, p. 17.)

Some facts on green technologies(2)



- **Private sector** drives around 70 percent of innovation around the world. In the area of green technology, this rises to 80 percent, which means that private companies fund 4 out of every 5 US dollars invested in R&D.

In this field, many patents have already fallen into the

public domain. (WIPO Magazine Pioneering Green Innovation: An interview with General Electric- January 2012)

For each product or technology, there are often alternative or **substitute technologies** available.

Some facts on green technologies(3)

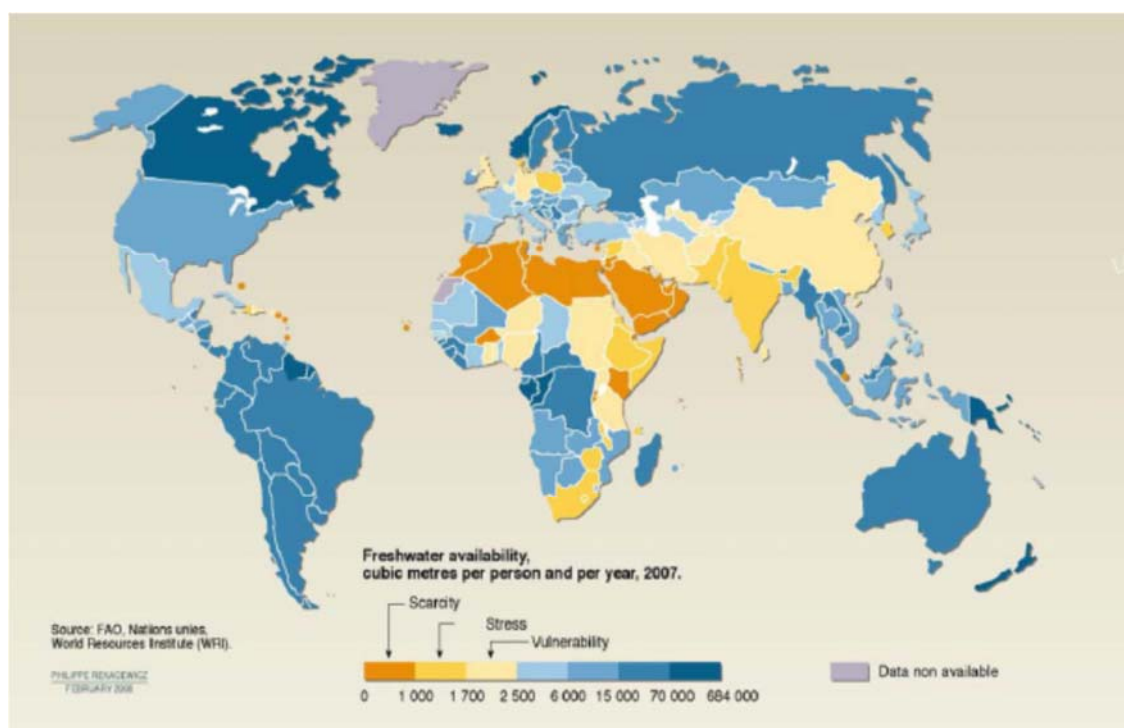
- Patent activities in green technologies have become a more **collaborative process**, as the increase in the number of partners in most recent years show universities account for 5% of total patent applications in green technologies. (OECD-REGPAT database)

- Australia, the United States, Republic of Korea and Great Britain have implemented **procedures for the acceleration** of green tech patent applications.

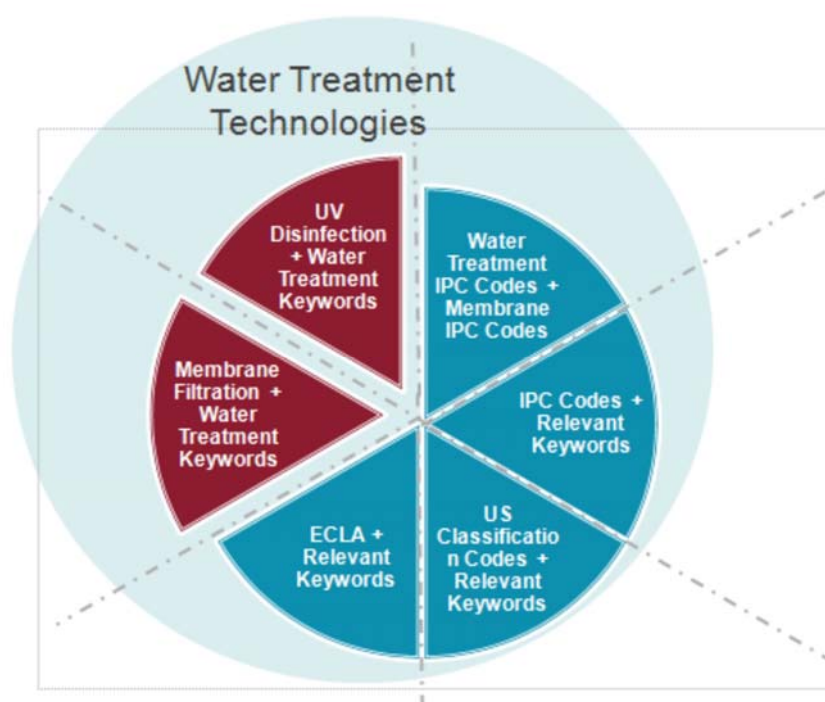
Some facts on green technologies(4)

- China's green tech industry ranked in \$63.9 billion in 2010, making **China** the world's **leading green technology** producer in terms of revenue.
- In 2011 the US outspent China in renewable investment, with \$55.9 billion to China's \$47.4 billion. (WWF study)
- In 2009, the International Energy Agency (IEA) calculated that in order to head off climate change's worst effects, a global investment of \$10.5 trillion would be needed in clean energy by 2030, amounts to about half a trillion (\$500 billion) a year for about 20 years.
- In 2010, the world invested \$187 billion in building renewable power sources, **less than** half the amount needed. (Bloomberg New Energy Finance)

Global fresh water availability (UNEP 2008)



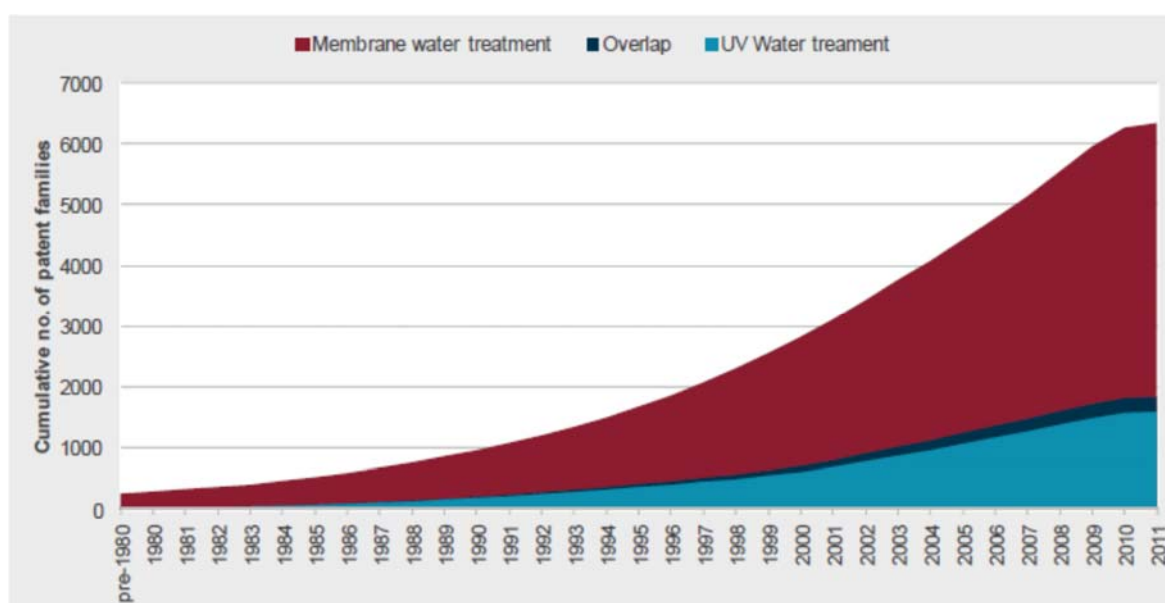
Water Treatment Technologies



WIPO, Patent Landscape Report on Membrane Filtration and UV Water Treatment (2012)

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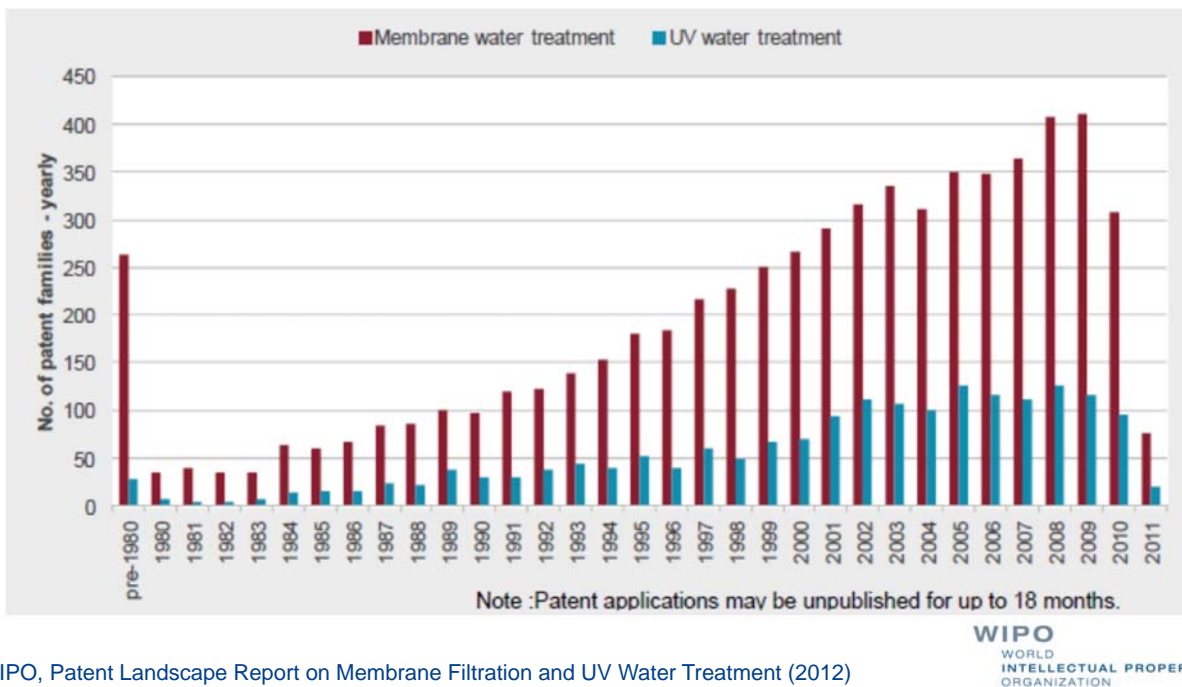
Patenting time trend –water



WIPO, Patent Landscape Report on Membrane Filtration and UV Water Treatment (2012)

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Annual patent application trends from membrane and UV water treatment

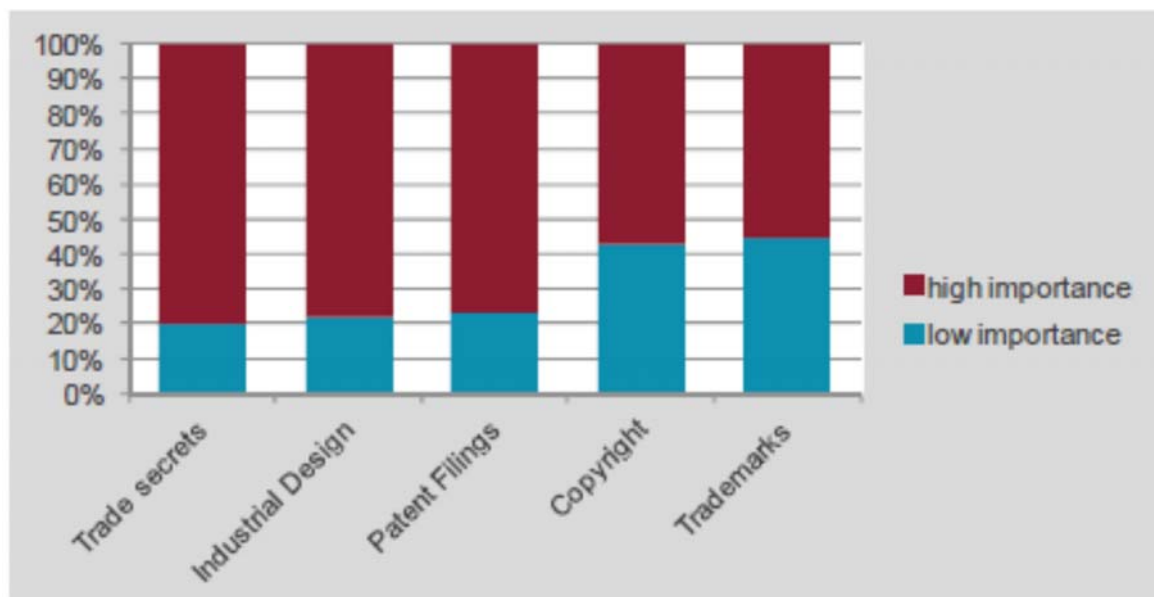


WIPO, Patent Landscape Report on Membrane Filtration and UV Water Treatment (2012)

Desalination technologies -patent shift

- Historically Japan has been a major patenting location in this space, but this has decreased considerably in the last 5 years with a considerable drop in patents from the Japanese companies.
- In contrast, companies like GE and Siemens have been very actively patenting in the last 5 years.
- In terms of countries, the major 'new' patenting locations in desalination are South Korea and China.
- Africa and the Middle East have not seen a very high number of desalination patents, even though they are some of the key potential markets for this technology.

Respondent views on the importance of IP in the water industry



WIPO, Patent Landscape Report on Membrane Filtration and UV Water Treatment (2012)

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Role of Intellectual property Friend or Foe? (1)

- IP is instrumental to **finding solutions** to challenges such as access to health, climate change and food security.
- “The role of Intellectual Property rights in the development of climate change mitigation and adaptation technologies, and especially their transfer to developing countries has emerged as a particularly **contentious issue**.”

'EPO-Patents and clean energy: bridging the gap between evidence and Policy-final report

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Friend or Foe? (2)

- IP has a role in stimulating innovation

Patent information offers **freely accessible source** of technological information on which others may build. Technology patented in developed and developing countries is becoming more and more accessible.

- IPRs are increasingly being **utilized in emerging markets** to stimulate domestic innovation, particularly for low-carbon technologies. For instance, of the 215,000 patents registered for low emissions technologies, between 1998-2009, 10 percent were registered in emerging countries. (IP rights and Innovation in developing countries-2005-Journal of Development Economics)

Friend or Foe? (3)

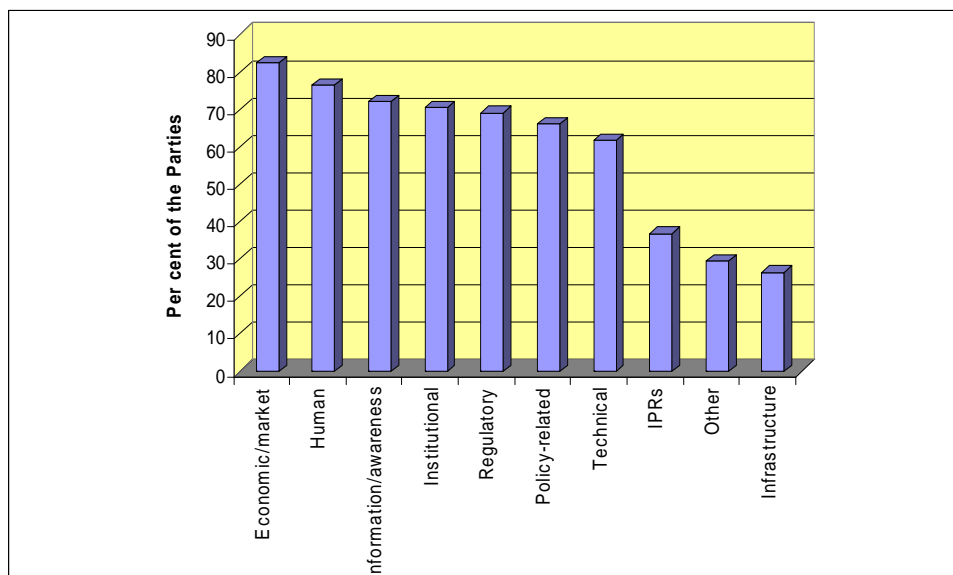
- IPR can be a driver in transfer of green technologies.

The discussion is usually based on the arguments IPR's **hinder** technology transfer or IPR's **promote** technology transfer. IPRs have an important effect on the **transfer** of green technologies. However, such effect is often complex and difficult to identify and assess and more research is needed.

Friend or Foe? (4)

Barriers to technology transfer

(UNFCCC report) The main barriers to technology transfer were **economic and market barriers**, followed by human capacity, information and awareness, institutional, policy related and regulatory barriers.



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Specific Barriers in Asia and the Pacific (TNAs)

Type of barriers		BTH	KHM	CHN	IDN	IRN	JOR	LAO	LBN	NIU	PHL	WSM	LKA	THA	VNM
Economic/market	13	●	●	●	●	●	●	●	●		●	●	●	●	●
Human	10	●	●	●	●	●	●		●				●	●	●
Information/awareness	9		●	●	●		●		●		●	●		●	●
Institutional	12	●	●	●	●	●	●	●	●		●	●	●		●
Regulatory	10	●	●	●	●		●	●	●			●		●	●
Policy	8	●	●	●	●		●	●				●			●
Technical	9	●	●	●	●	●	●		●			●		●	
Infrastructure	4	●	●					●				●			
Others	4	●		●				●					●		
Total		8	8	8	7	4	7	6	6	0	3	7	4	5	6

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Friend or Foe(5)

- How can IPRs be used **effectively** and practically to **promote** the successful transfer of green technologies?

Climate change discussions and IP(1)

- In 1992, the **United Nations Framework Convention on Climate Change** was adopted, to cooperatively consider what they could do to limit average global temperature increases and the resulting climate change, and to cope with whatever impacts were, by then, inevitable. 195 countries have ratified the Convention.
- Five years later, **Kyoto Protocol** was adopted. The Kyoto Protocol legally binds developed countries to emission reduction targets.

Climate change discussions and IP(2)

- IP issues come up in the context of **technology transfer** at the UNFCCC discussions.
- No agreement reached on the **role of the IP** in transfer of green technologies in the discussions.
- UNFCCC Article 4.5 requires developed countries to **take all practicable steps** to promote, facilitate and finance , as appropriate the transfer of or access to EST's and know how to other parties particularly developing country parties to enable them to implement the provisions of the Convention.

Climate change discussions and IP(3)

- In 2007 Bali Action Plan at the 13th Conference of the Parties the importance of the technology transfer and development was reaffirmed. **Technology transfer** and development was agreed to be one of the four **priority areas**.
- In 2010 in Cancun it was agreed to create a new **technology mechanism** to facilitate the transfer of green technologies especially to developing countries.

Technology Mechanism

The technology Mechanism is expected to play a key role in helping developing country Parties to:

- prepare **nationally** appropriate **mitigation** actions and **adaptation** plans
- **build technological capacity** within developing countries
- develop and strength regional network

What are the IP related solutions in climate change?

- Better availability of **patent information** on green technologies
- Facilitating **licensing conditions** for developing countries
- Procedures to expedite the examination of green patent applications
- **Capacity building** in the area of technology licensing agreements
- **Technology platforms** for green technologies

What is WIPO doing?(1)

- The Global Challenges Division was established in 2010 to deal with Climate Change, Public Health and Food Security.
- The objective is to emphasize the **positive relationship** between innovation and intellectual property, and show how IP can best be used for economic and social development.

What is WIPO doing?(2)

- WIPO participates as an observer at the **UNFCCC meetings** and organizes side events on IP related issues.
- WIPO is a **forum for discussion** - In July 2011 WIPO organized the Conference on Innovation and Climate Change in Geneva
- Reports-Global Challenges report on Intellectual Property and the Transfer of Environmentally Sound Technologies



Innovation & Climate Change:

Stimulating Innovation
Accelerating Technology Transfer & Diffusion
Enabling Global Solutions

An International Conference hosted by WIPO

in-no-va-tion [i-nə-'və-shən]
Function: noun
I: The introduction of something new that solves problems and adds value. e.g., WIPO's engagement in innovation & climate change

- 11 & 12 July 2011
- CICG, Geneva

Global Challenges Briefs



When policy meets evidence: What's next in the discussion on intellectual property, technology transfer & the environment?

MIRIAM PEREZ PUGATCH¹ *University of Haifa, Israel*

1 minute read: key messages

- Discrimination and uptake of environmentally sound technologies (ESTs) are critical components of the global response to climate change.
- Public and private investment in ESTs is increasing steadily.
- EST transfer is occurring on a very large scale as part of an active multilateral process.
- Evidence indicates that effective intellectual property (IP) protection contributes to the speed of EST transfer as one of a number of complementary factors.
- Policymakers can significantly influence the transfer process (e.g. by developing comprehensive approaches for EST adoption and diffusion).
- Ultimately, the question is: How can appropriate scientific, technological and IP frameworks be used effectively to promote successful assimilation and use of ESTs around the world?

Why Do ESTs Matter?

The importance of the effective dissemination and use of environmentally sound technologies (ESTs) is increasingly evident, due to the growing emphasis in global politics on the need for climate change mitigation, and to expectations that global energy consumption will continue to increase dramatically in the coming decades.

ESTs are sources and methods for producing energy that reduce the emission of greenhouse gases (GHG). Their effective dissemination, adoption and use by entities in all countries are considered integral to managing climate change, for which GHG emissions are recognized as a major contributing factor.

There are many types and fields of ESTs, all of which are in different phases of development. For instance, solar heating/cooling systems and biomass are at or nearing the commercialization stage, while many electricity storage technologies are still in the development stage. Public and private investment in renewable sources of energy – including wind, biomass, solar geothermal and wave – began in the 1970s and, since the 1990s, has continued to steadily increase. Together with other products and technologies that contribute to the reduction of GHG, these so-called “renewables” are types of ESTs. Major developed and developing country economies have committed to significant future investments in renewable fields including: the United States, on the basis of the 2005 Energy Policy Act and the 2009 economic stimulus bill; the European Union (EU), as part of its “20 by 2020” program of action; and China, on the basis of its 2006 Renewable Energy Law and 2008 economic stimulus package.



What is WIPO doing?(3)

- WIPO provides **patent information**. WIPO GOLD is a free public resource which provides a one-stop gateway to WIPO's global collections of searchable IP data. It aims to facilitate universal access to IP information.
- WIPO Patent **landscape reports** on Climate change and energy.
 - 1) Desalination Technologies and the Use of Alternative Energies for Desalination
 - 2) Patent-based Technology Analysis Report – Alternative Energy Technology
 - 3) Solar Cooking

What is WIPO doing?(4)

- IPC Green Inventory- The “IPC Green Inventory” was developed by the IPC Committee of Experts in order to **facilitate searches** for patent information relating to so-called Environmentally Sound Technologies (ESTs), as listed by the United Nations Framework Convention on Climate Change (UNFCCC).

TOPIC	IPC	PATENTSCOPE
<input type="checkbox"/> ALTERNATIVE ENERGY PRODUCTION		
<input type="checkbox"/> Bio-fuels		
Integrated gasification combined cycle (IGCC)	C10L 3/00 F02C 3/28	C10L 3/00 F02C 3/28
<input type="checkbox"/> Fuel cells	H01M 4/86-4/98, 8/00-8/24, 12/00-12/09	H01M 4/86-4/98, 8/00-8/24, 12/00-12/09
Pyrolysis or gasification of biomass	C10B 53/00 C10J	C10B 53/00 C10J
<input type="checkbox"/> Harnessing energy from manmade waste		
<input type="checkbox"/> Hydro energy		
Ocean thermal energy conversion (OTEC)	F03G 7/05	F03G 7/05
<input type="checkbox"/> Wind energy	F03D	F03D
<input type="checkbox"/> Solar energy		
<input type="checkbox"/> Geothermal energy		

What is WIPO doing?(5)

- WIPO provides **capacity building** support for the management and transfer of green technologies, including assisting in drafting IP clauses in technology transfer agreements.
- Technology and Innovation Support Centers (TISC) are established to provide innovators in **developing countries** with access to locally based, high quality technology information services and other related services.

What is WIPO doing?(6)

- Technology platform- **wipo green**

The screenshot shows the WIPO GREEN website. The header includes the WIPO logo and 'WIPO GREEN The Sustainable Technology Marketplace'. Navigation links include 'Create account', 'Login', and 'Contact us'. The main content area is titled 'WIPO GREEN - The Sustainable Technology Marketplace' and describes the platform's mission to facilitate the adoption of green technologies. It lists several key services: connecting partners, enabling technology packages, matching needs with providers, and providing training and consulting. A 'Recently Added Resources' section highlights a 'Vertical Green Biobed' technology for pesticide degradation.

THANK YOU VERY MUCH.