



Tools to support patent valuation and information gathering:

Patent Landscaping/Mapping

**Athens
20 March 2014**

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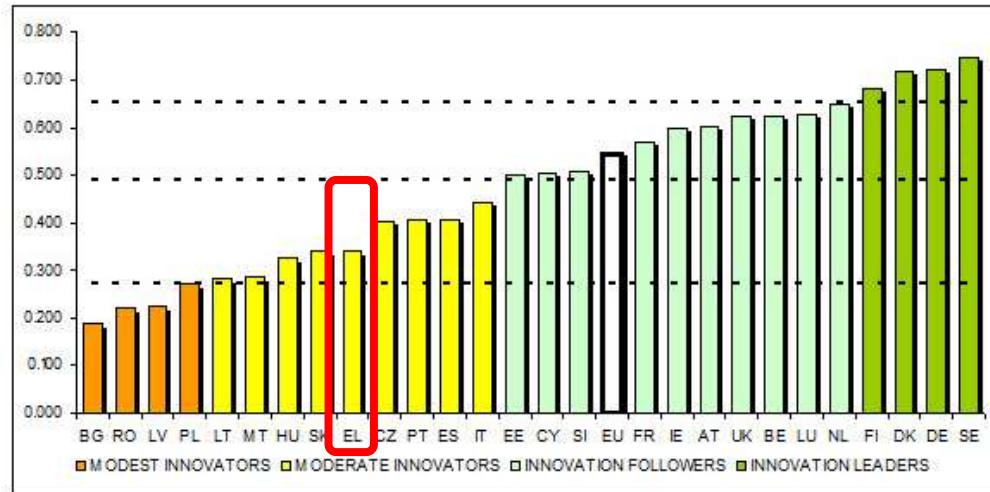
Project Officer, Patent Information Section, Access to Information
and Knowledge Division

WIPO patent valuation/commercialization support tools and services

- Manuals on IP Valuation:
 - “Practical Guide for Valuing Intangible Assets for R&D Institutions” (mainly on qualitative IP valuation in IPR management framework)
 - “IP Valuation Training Kit for Academic Institutions” (mainly on quantitative IP valuation for IP collaboration or commercialization (assignment /licensing of IP rights, or establishment of start – ups).
- IP valuation training (3 day workshop – covering both, qualitative and quantitative approaches).
- WIPO Academy Distance Learning Course “IP Management” (DL-450)
- Patent Landscape Reports

How innovative are EU Member States?

EU Member States' innovation performance

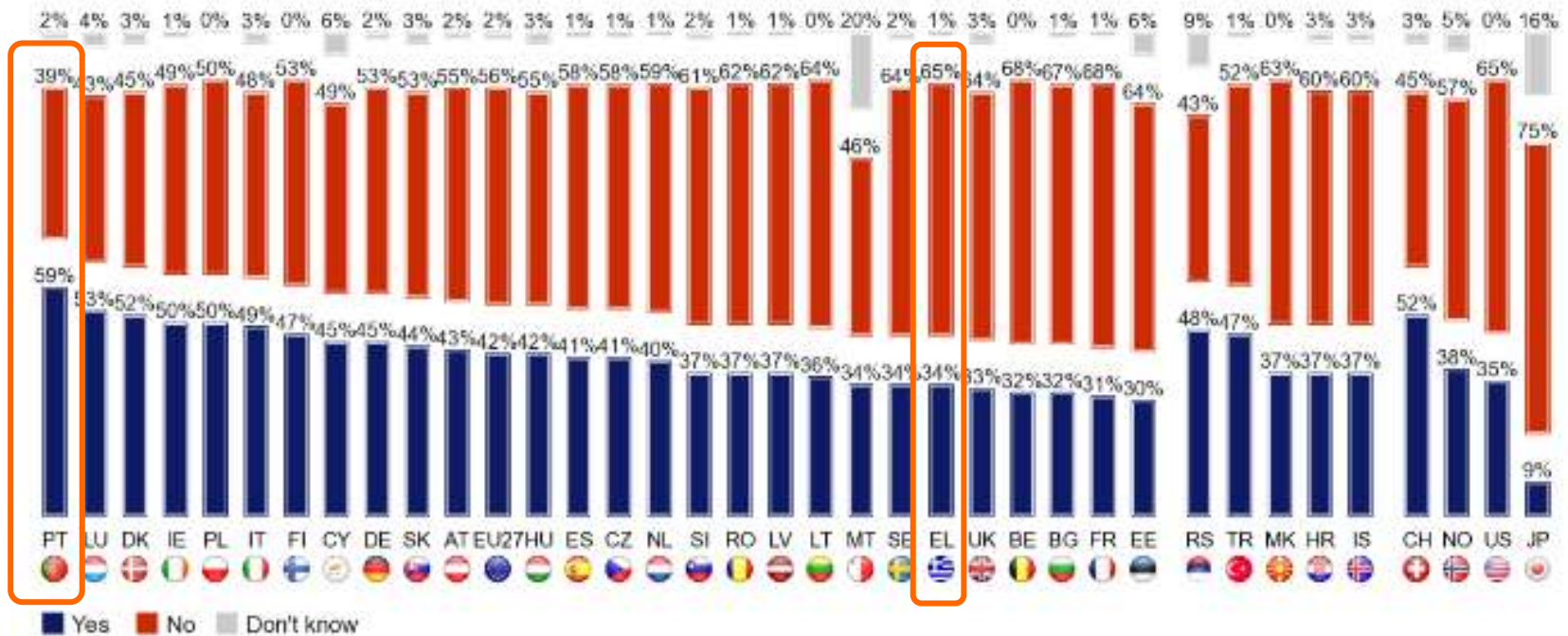


IUS 2013 performance groups	Policy mix group
Innovation leaders	2 – Science-collaboration focused: Finland, Germany, Sweden 4 – Business R&D and innovation: Denmark
Innovation followers	1 – Science-competitive R&D focused: Ireland, Slovenia 2 – Science-collaboration focused: Estonia 3 – Commercialisation-driven: France, Netherlands, UK 4 – Business R&D and innovation: Austria, Belgium 5 – Science and business RDI focused: Cyprus, Luxembourg
Moderate innovators	1 – Science-competitive R&D focused: Malta 2 – Science-collaboration focused: Greece 3 – Commercialisation-driven: Italy 4 – Business R&D and innovation: Czech Republic, Hungary, Spain, Portugal 5 – Science and business RDI focused: Slovakia, Lithuania
Modest innovators	1 – Science-competitive R&D focused: Poland 2 – Science-collaboration focused: Latvia 5 – Science and business RDI focused: Bulgaria, Romania

EU companies' innovation policy in 2009-2011

Q9.1. Between 2009 and 2011, did your company introduce any innovations, such as ...?

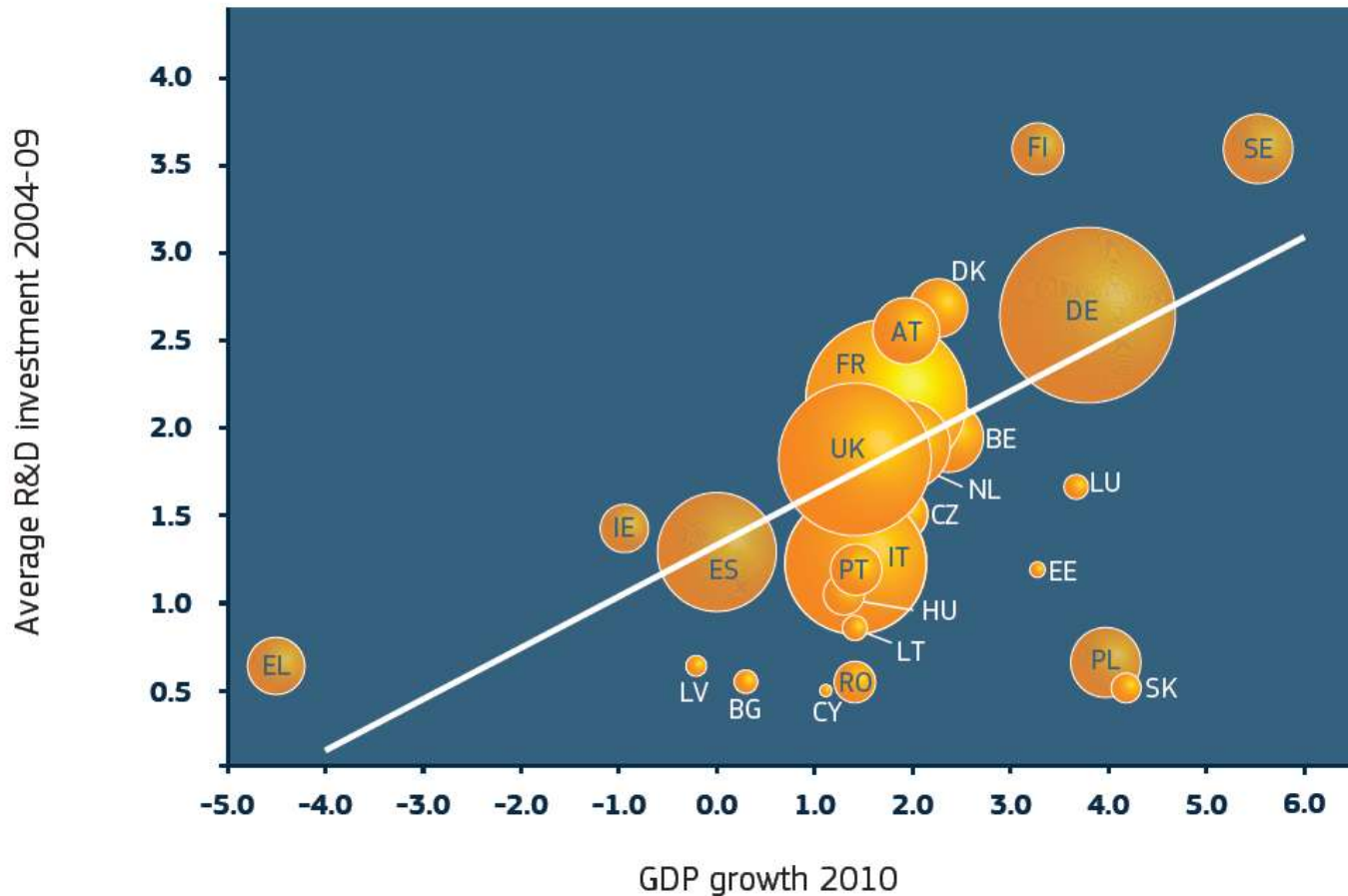
New or significantly improved products, services or processes



Base: All respondents = 8715 (EU27)

Source: Innobarometer 2013: Investing in intangibles: Economic assets and innovation drivers for growth

R&D investment linked to faster economic recovery from the crisis

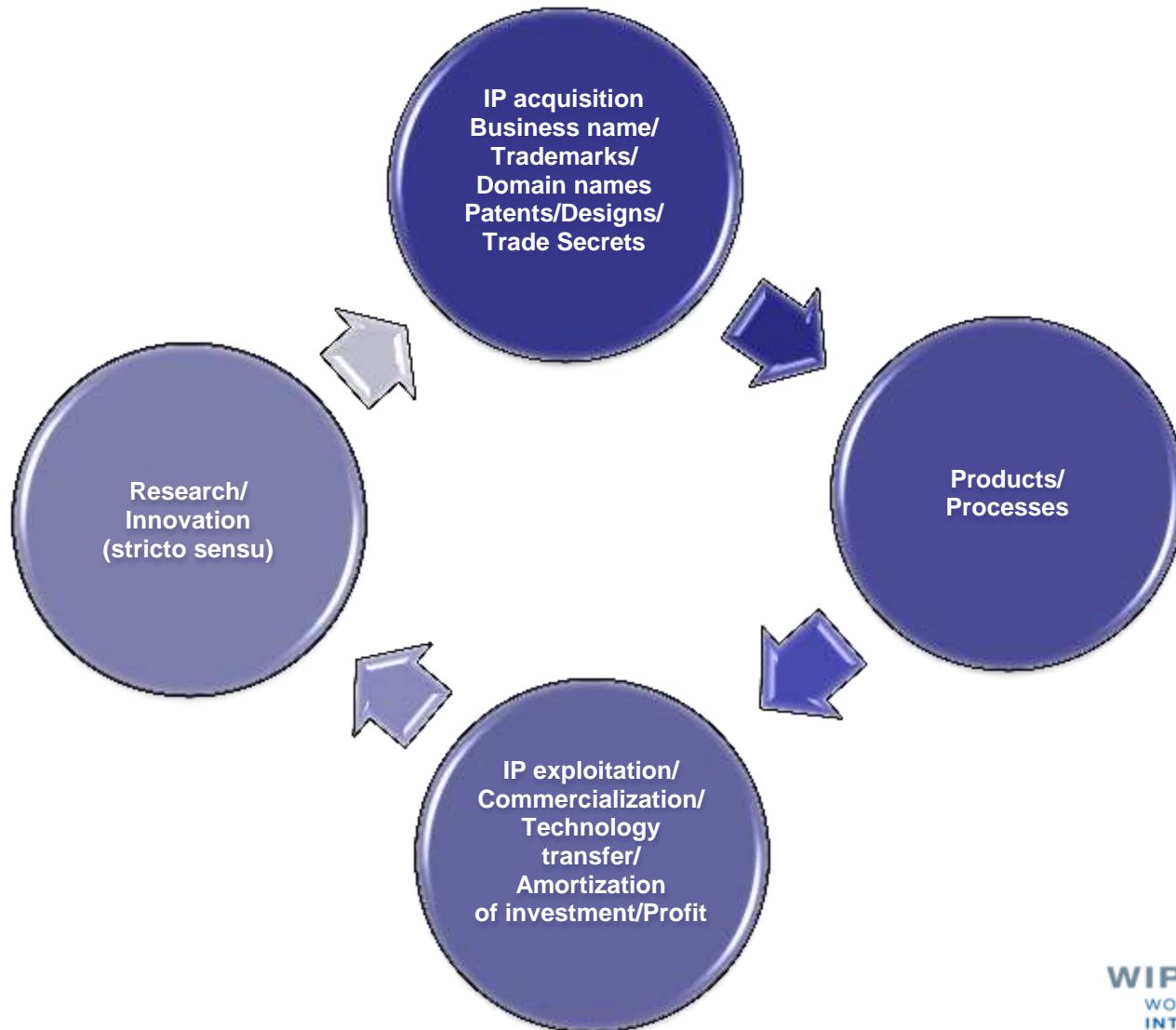


Source: Innovation Union, *A pocket guide on a Europe 2020 initiative*, 2013

Innovation Policy Trends in Europe: From Innovative Union to Innovation Union

- Innovation Union initiative: part of Europe 2020 strategy
- Innovation Policy in 2012, Inno-Policy Trend Chart (European Commission, DG Enterprise and Industry):
 - 2011-2012 period: Budgetary constraints and challenges, but also preparation/launch new policies
 - **“Internationalization”**: key challenge for innovation policy – initiatives, e.g. Danish Innovation Centre in Shanghai “From Made in China to Made with China”
 - Increased focus on **applied and pre-competitive research** and **science and industry linkages**

Innovation cycle and IP management



Decisions throughout the innovation cycle

Decision types

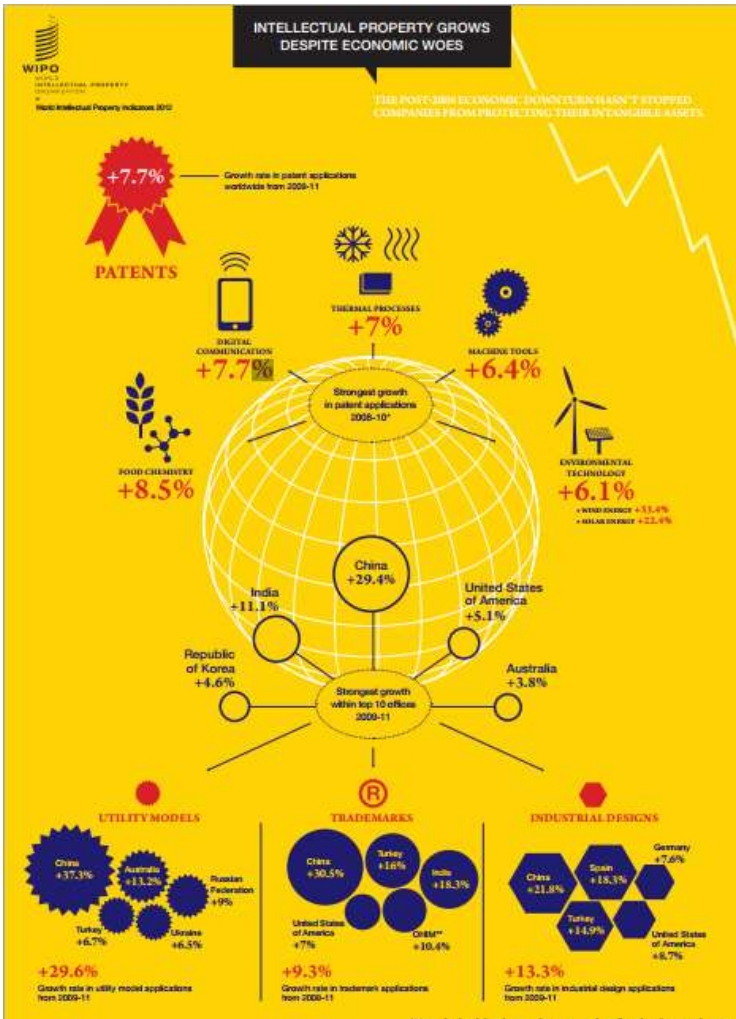
- Areas of research (emerging/saturated technologies, whitespaces)
- R&D investment
- Research collaborations?
- Acquisition of IPR (publication/trade secrets vs. patenting)? Which IPR?
- Commercialization of the product/process?
- IP assets Management (keep/abandon/sell/acquire/license IP rights)

Profile of decision makers

- Policy Makers → Government – Innovation Policy
- R&D
- Academia
- Start-ups/spin-offs
- SMEs
- IP Managers in industry

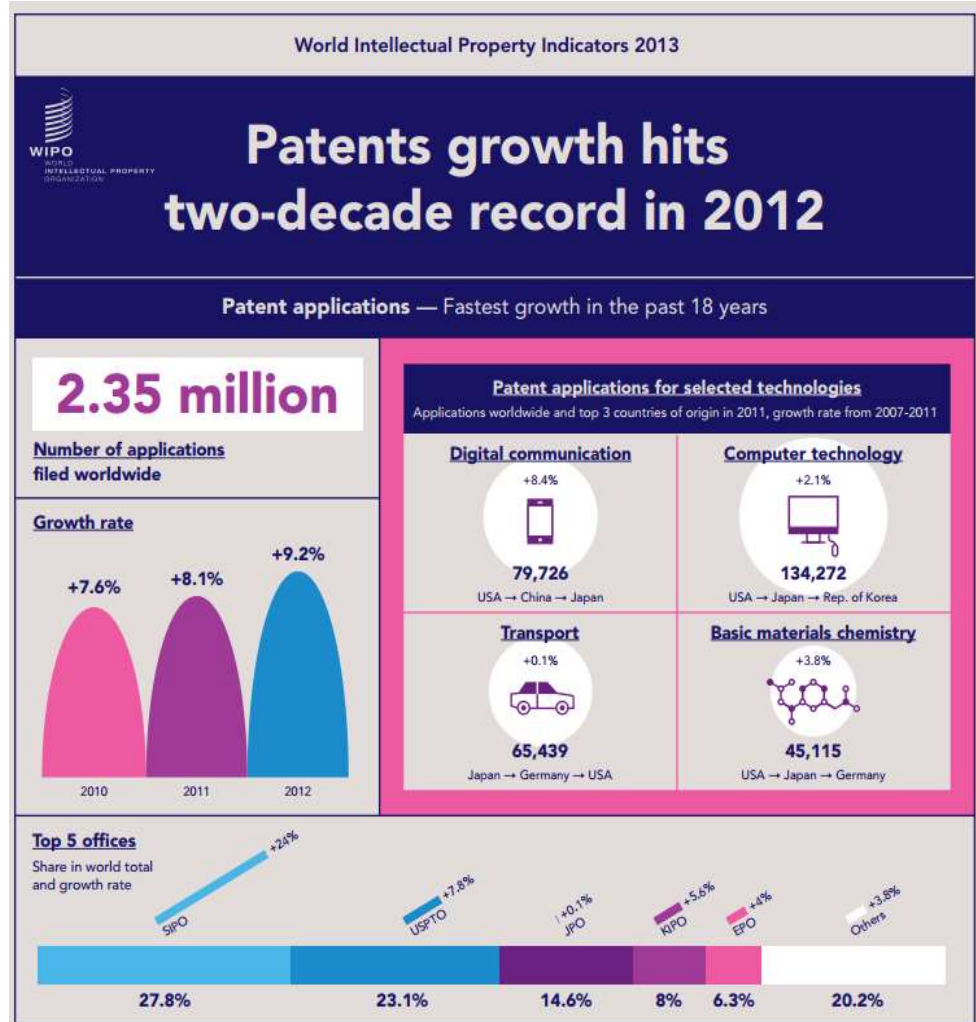
Despite economic woes....

Global IP Growth in 2009-11



Source: WIPO IP Statistics

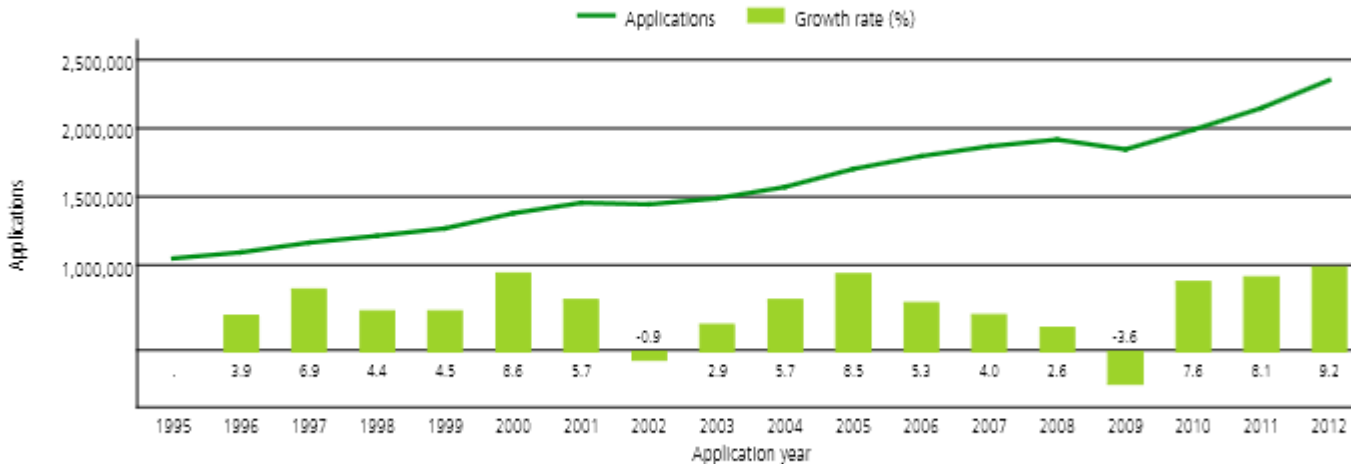
Patent growth rate in 2012



Source: World IP Indicators 2013

Growing importance of patent information

Figure A.1.1.1 Trend in patent applications worldwide



Note: World totals are WIPO estimates using data covering approximately 130 patent offices (see Data Description). These estimates include direct applications and PCT national phase entry data.

Source: *World IP Indicators - 2013 Edition - WIPO*

- Growth in patent filings worldwide
- Growth in volume of patent information
- Increased interest and challenges in retrieval
- Ocean of patent information: Patentscope: 32,5 mio patent documents

How are decisions taken and how does patent information help?

- Cross sectoral/discipline effort: many aspects taken into account (Science/Policy/Economics/Business/Marketing)
 - Policy/prioritization issues
 - Relevant market definition and analysis
 - Competitors activity and analysis
 - Economic/financial aspect
 - Risk
- Patent Information → important source of information
 - Technical
 - Business data
 - Legal

Retrieving information from patent publications

Caryatids Laser rejuvenation at the Acropolis Museum:



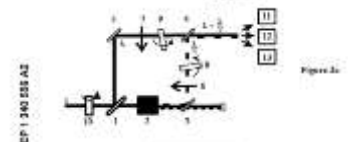
An innovative laser operating at two wavelengths simultaneously, developed by FORTH (Crete) allows safe removal of thick pollution accumulation and rejuvenation of the Caryatids

(19) 	Europäisches Patentamt European Patent Office Office européen des brevets	 (11) EP 1 340 556 A2
(12) EUROPEAN PATENT APPLICATION		
(43) Date of publication: 03.09.2003 Bulletin 2003/36	(51) Int. Cl.7: B08B 7/00, B23K 26/14	
(21) Application number: 03386004.0		
(22) Date of filing: 03.03.2003		
(84) Designated Contracting States: AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR Designated Extension States: AL LT LV MK (30) Priority: 01.03.2002 GR 2002100116 (71) Applicants: <ul style="list-style-type: none"> • Foundation for Research and Technology-Hellas (FO.R.T.H.), Institute of Electronic Structure and Laser 711 10 Heraklion (Crete) (GR) 	<ul style="list-style-type: none"> • Zafiropulos, Vassilis 71201 Heraklion, Crete (GR) (72) Inventors: <ul style="list-style-type: none"> • Zafiropulos, Vassilis 71201 Heraklion, Crete (GR) • Poulli, Paraskevi 71110 Heraklion, Crete (GR) • Eglezis, Apostolis 71110 Heraklion, Crete (GR) • Petrakis, Aristides 71110 Heraklion, Crete (GR) 	

(54) **A method and device for cleaning surfaces using temporarily coincidental laser pulses of two different wavelengths**

(57) The present invention relates to a method and a device for removal of any kind of superficial encrustation from surfaces, by the synchronous use of the fundamental and one of the harmonic frequencies of a short-pulse laser system (in the order of 1 - 40 ns). This is embodied by temporal and spatial overlapping of the two beams in various ratios of energy density values between them. The present invention relates to a problem of major concern, related to the cleaning of stone-sculpt-

façades, metallic surfaces, glass, paper, wood etc. as well as in other applications of industrial or medical interest, such as the removal of radioactive residues from any type of surfaces or the removal of deposits from any kind of animal tissues. The success of this method is based on the combined action of two discrete mechanisms for the removal of surface deposits, embodied by the use of laser pulses of two different wavelengths simultaneously. The suggested device is based on the



Added Value of Patent Information

- **Technical Information:** complementary or unique to scientific publications. Through citations and international search report additional resources available. Additional Public Domain information (alternative technical solutions, basis for further research)
- **Business Information:** applicants/inventors contact information, affiliation of researchers/inventors to research institutes/universities and/or industry, key players...

Added Value of Patent Information

- **Business Information (2):** ... public and private sector participation in innovation, cooperation of industry with academia/R&D, innovation trends, research prioritization of other countries/research institutes, market choices and analysis
- **Legal information:** Patent owners and inventors information, priority information (relevant to similar applications), duration of patent protection (foremost through legal status information), territoriality of patent protection.

What is a Patent Landscape?



« Patent map »

Source: WIPO PLR on Electronic Waste Recycling

- Fuzzy term, often expressed in different ways, e.g.:
 - Patent Map, Patent Cartography
 - Business Intelligence, Competitive Intelligence
- Various definition approaches:
 - from very narrow (just a graphical representation)
 - to very broad (Freedom to Operate)

What is a Patent Landscape Report (PLR)?

- Research and analysis of innovation patterns and patenting trends in a specific technological field/geographical area using patent information
- Transformation of **raw patent data** through **patent search** (patent databases) into **comprehensive for non-experts patent analysis** (breakdown and analysis of the results, visualization, conclusions)



- Facilitates dialogue between various stakeholders, creating easily understood by non-experts data

What kind of questions does a PLR answer?



(The Answer to The Ultimate Question of Life, the Universe, and Everything, The Hitchhiker's Guide to the Galaxy, Douglas Adams)

- Which technology trends exist in which geographical areas and how have they developed over time?
- Is it the investment in the development of a particular technology worth, or are there already solutions for our technical problem ?
- Are there any gaps or white spaces, i.e. areas with little patent protection, that permit business opportunities ?
 - What further applications or uses are possible ?
 - Which further adaptations or embodiments could be explored ?
 - What is not yet covered by patent claims ?

What kind of questions does a PLR answer?

- Which players are the most active in a said technical area?
- Which other patents are relevant for a company's activities or a product development?
 - Infringement, licensing-in, collaborations
- Is there freedom to operate when launching a product in the market?
- Which patents are about to expire ? Which technologies move in the public domain and provide business opportunities ?
- What is the patent portfolio of competitors and what is the impact on the company's portfolio and activities?
- Who acquired or sold IP rights ?
- What is the value of a patent portfolio ?
 - Preparing merger and acquisitions

Who is using Patent Landscape Reports?

■ Industry:

- standard tool included in decision making mechanism (patent portfolio management, R&D investment and prioritization, technology transfer, commercialization etc)
- Part of Business Intelligence/Competitive Intelligence

■ Public sector:

- Providers: National Patent Offices/research institutes preparing reports in areas of general interest/specific need or providing landscaping services to the public
- Users: awareness raising phase – more and more public institutions seeking ways to facilitate their policy discussions and similar to the private sector decisions

Getting the most out of a Landscape Report

- **Careful definition of the questions** to be addressed → the answers can only be as good as the questions
- **Definition of the scope of the search** → broader or narrower? What should be included and excluded?
- **Good methodology** → take into account the particularities of the area you are searching
- **Selection of analysis types** → some information requires crossing data
- **Choice of appropriate visualizations**
- **Easily digestible narrative for non-experts** (decision makers)
- **Appropriate presentation of results and recommendations**

WIPO Patent Landscape Reports

■ Background:

- Launched in April 2010 as a Development Agenda Project
- Since January 2014: WIPO regular activity

■ Expected output: Preparation of Patent Landscape Reports in the areas of:

- Public Health
- Food and Agriculture
- Environment and Climate Change
- Disabilities



PLR Project: How it works

- Request from a WIPO Member State or an IGO/NGO on a specific topic
- Development of Terms of Reference (methodology, specific questions to be addressed, types of analysis etc)
- Public procurement procedure → evaluation of offers → contracting
- Review of various contractor's deliverables by WIPO with collaboration partner, refinement of questions etc.
- Publication of PLR
- Evaluation of the usefulness and usability of the reports to the cooperation partner and to further users of the report

WIPO's cooperation partners



WIPO's cooperation output – the PLRs



WIPO has been mandated to prepare patent landscape reports in areas of particular interest to developing and least developed countries, such as public health, food security, climate change and environment. For that purpose, WIPO is developing in cooperation with interested external partners, such as institutions from member States, intergovernmental or non-governmental organizations, the scope of each report. The author of each report is selected in a tendering process based on specific terms of reference.

The following Patent Landscape Reports are currently in preparation within the framework of the Development Agenda project “Developing Tools for Access to Patent Information” (document CDIP/4/6).

Area	Topic	Status	Cooperation partner
Public Health	Ritonavir	Completed	Medicines Patent Pool, UNITAID
Public Health	Ritonavir update	Ongoing	
Public Health	Atazanavir	Completed	Medicines Patent Pool, UNITAID
Public Health	Vaccines for Selected Infectious Diseases	Completed PDF	World Health Organization - Cluster on Innovation, Information, Evidence and Research (IER)
Public Health	Selected Neglected Diseases	Ongoing	DNDi
Climate Change/Energy	Particle accelerator technologies and their industrial and medical use	Ongoing PDF	CERN
Climate Change/Energy	Electronic waste (E-Waste) recycling and material recovery technologies	Completed PDF	UNEP, Secretariat of the Basel Convention (SBC)
Climate Change/Energy	Solar Cooking	Completed	
Climate Change/Energy	Solar Cooling	Completed	
Climate Change/Energy	Desalination Technologies and Use of Alternative Energies for Desalination Report	Completed	IRENA, GIWEH
Food & Agriculture	Membrane Filtration and UV Water Treatment	Completed	GIWEH
Food & Agriculture	Plant Salinity Tolerance	Ongoing PDF	FAO, ISF, AATF
Disabilities	Assistive devices and technologies for visually and hearing impaired persons	Ongoing PDF	

http://www.wipo.int/patentscope/en/programs/patent_landscapes/reports/

Additional resources: Compilation of published PLR



Published Patent Landscape Reports

Patent landscape reports on various topics have been published by international organizations, national intellectual property offices, non-governmental organizations and private sector entities. WIPO has compiled a list of such reports that are freely available or can be obtained upon request, either free of charge or for a fee. Please note that this compilation is not exhaustive and that WIPO wishes to extend it. For that purpose, if you wish your report to be included or happen to know of other such reports, please contact us.

The patent landscape reports of this compilation have been grouped according to the following categories:

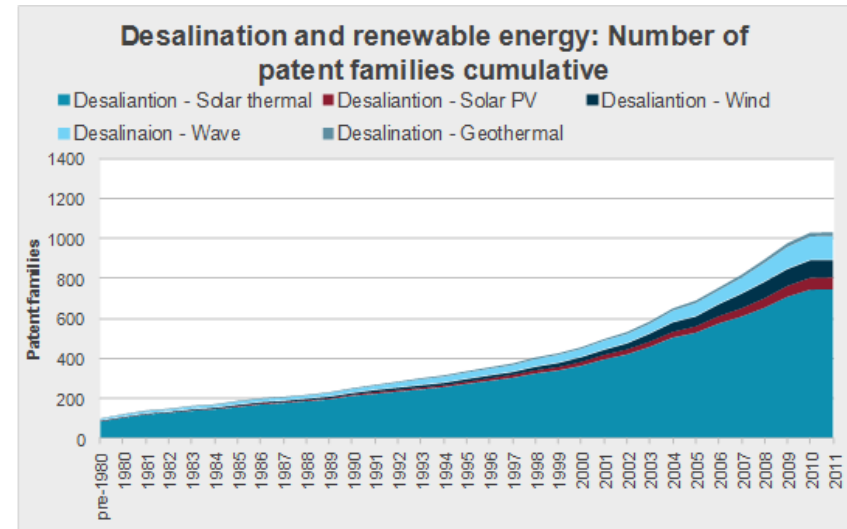
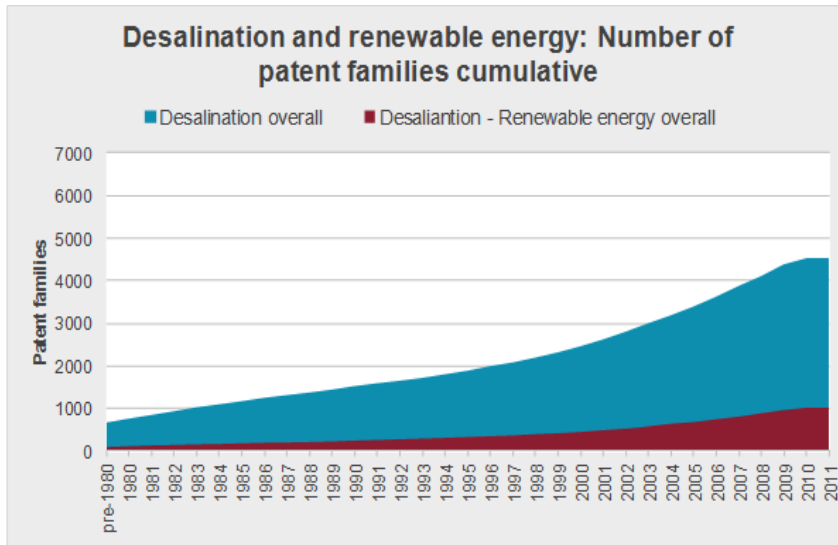
- Public Health / Life Sciences
- Climate Change / Energy
- Food and Agriculture
- Other Areas of Technology
- Larger Patent Landscape Collections, Technology Bulletins and Other Relevant Links

Climate Change/Energy

Title	Author	Date	Language
Tecnología en la atención y prevención de inundaciones (Technologies for facing and preventing floods)	Banco de Patentes, Superintendencia de Industria y Comercio, Colombia	2013	Spanish
Patents and clean energy technologies in Africa PDF	EPO/UNEP	2013	English
Current and Future Trends in Wind Turbine Technology PDF (Summary available. Complete report fee-based)	Totaro & Associates	2013	English
Patent Applications on Conversion and Electrochemical Energy Storage Technologies using Nanotechnology (Patent applications published between 2001 and 2010)	National Institute of Industrial Property of Brazil	2012	Portuguese
(Pedidos de Patente de Tecnologias de Conversão e Armazenamento Eletroquímico de Energia Usando Nanotecnologia (Pedidos publicados entre 2001 e 2010) PDF			
Graphene: An analysis of worldwide patent filings relating to Graphene PDF	UK IPO	2012	English
Patent Landscape Pre-diagnostics on wind turbines PDF	Portuguese National Institute of Industrial Property	2011	Portuguese
Desalination Technologies and the Use of Alternative Energies for Desalination PDF	WIPO/Cambridge IP	2011	English
Patents and Clean Energy PDF	UNEP/ICTSD/EPO	2010	English

What information can be included in a PLR
and how is it visualized?

General trends vs. trends in subsectors



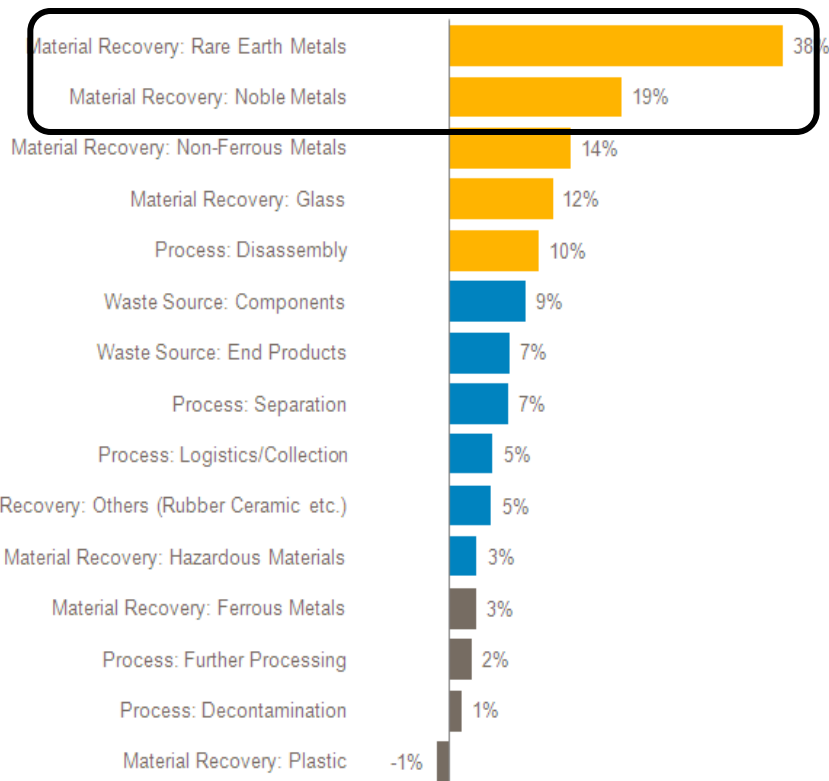
Source: WIPO PLR on Water desalination and the use of renewable energies

Prominent and promising areas of technology – the E-Waste Recycling Example



Thematic Concept of E-Waste Landscape

The E-Waste example: Growth rate in patenting reflecting market needs/regulatory changes

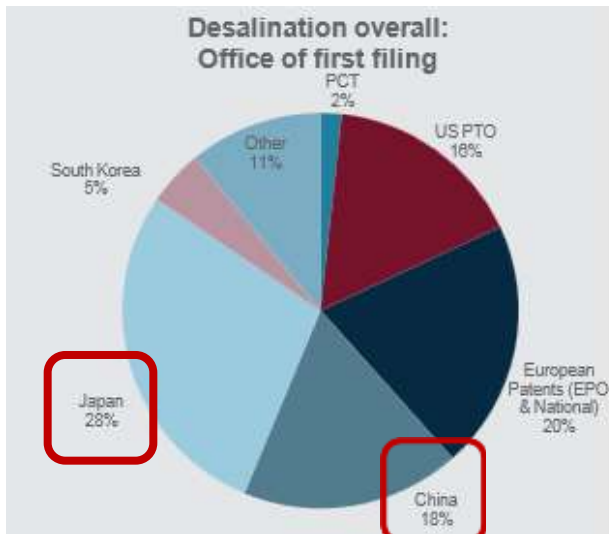


- Rare Earth Metals: 90% primary extraction in CN – not an open commodity
- Focus on Rare Earth recovery due to importance for electric consumer goods
- Growth in patenting activity related to silver: change of EU solder regulation (replacement of lead by silver and copper)

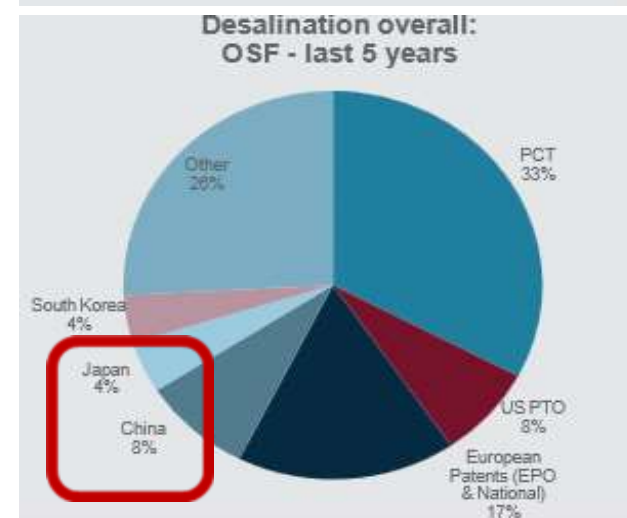
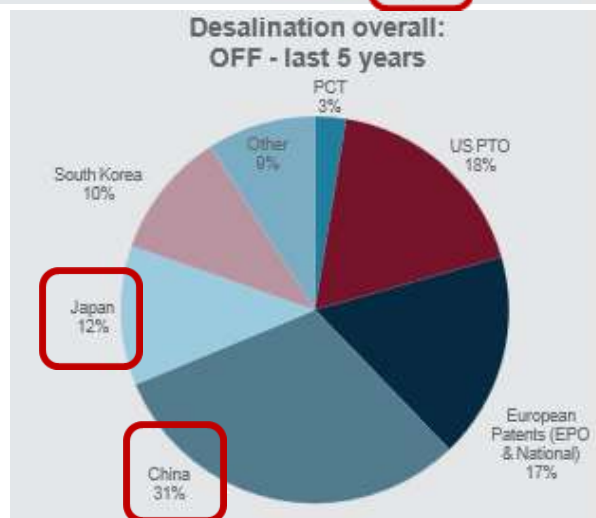
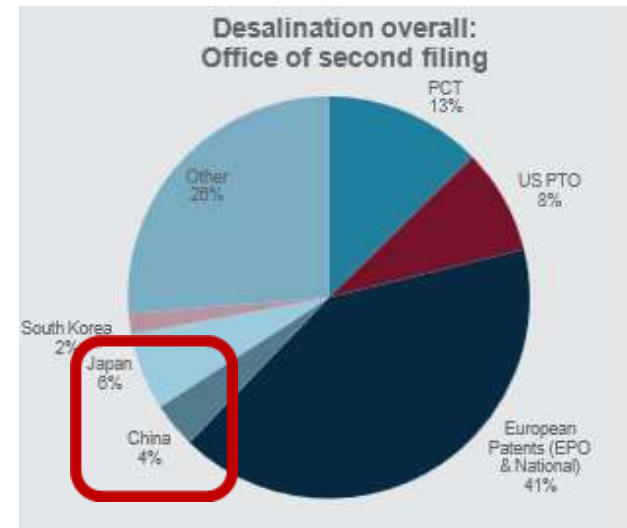
Patenting Activity Trends in E-waste by Subject Matter; Annual Growth/Decline 2006-2010 (based on Earliest Year of First Filing)

Geographical distribution of patent protection

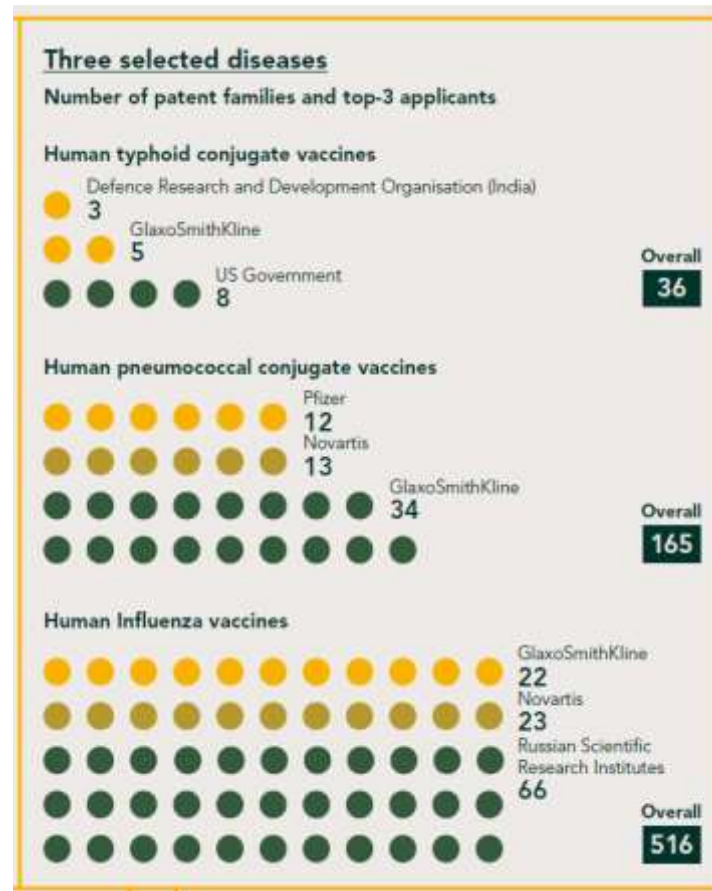
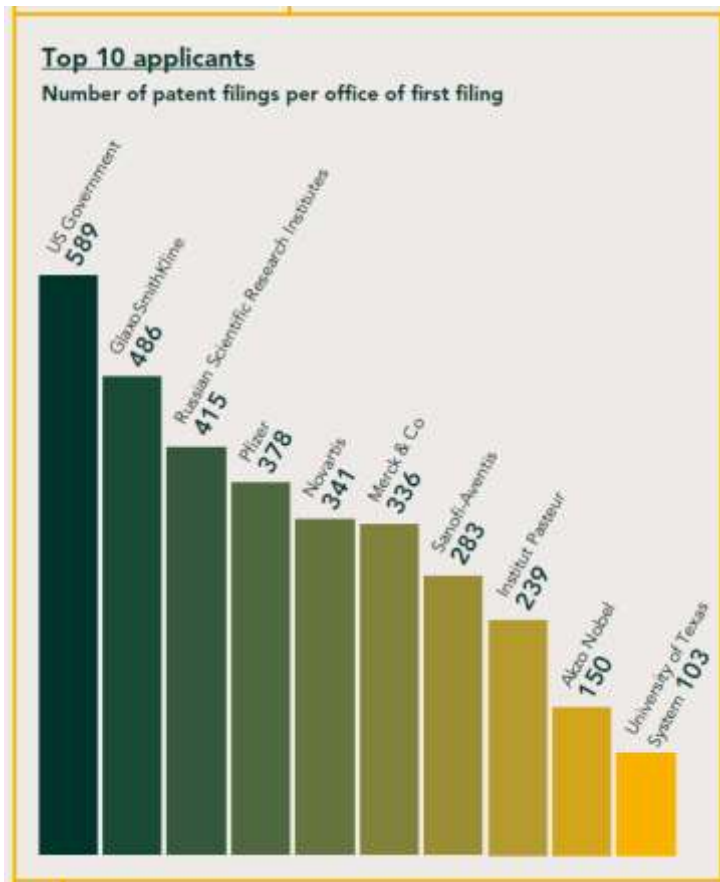
**Office of first filing (OFF) –
indicator of innovation**



**Office of second filing (OSF) –
choice of strategic importance**



Major players in a specific area – Variations in subsectors

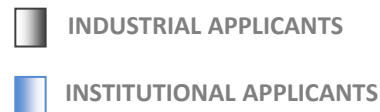
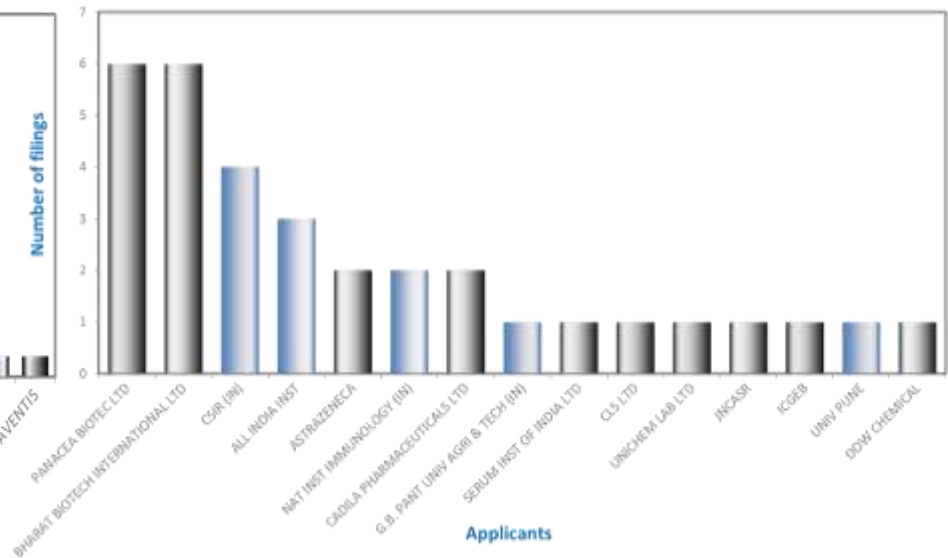
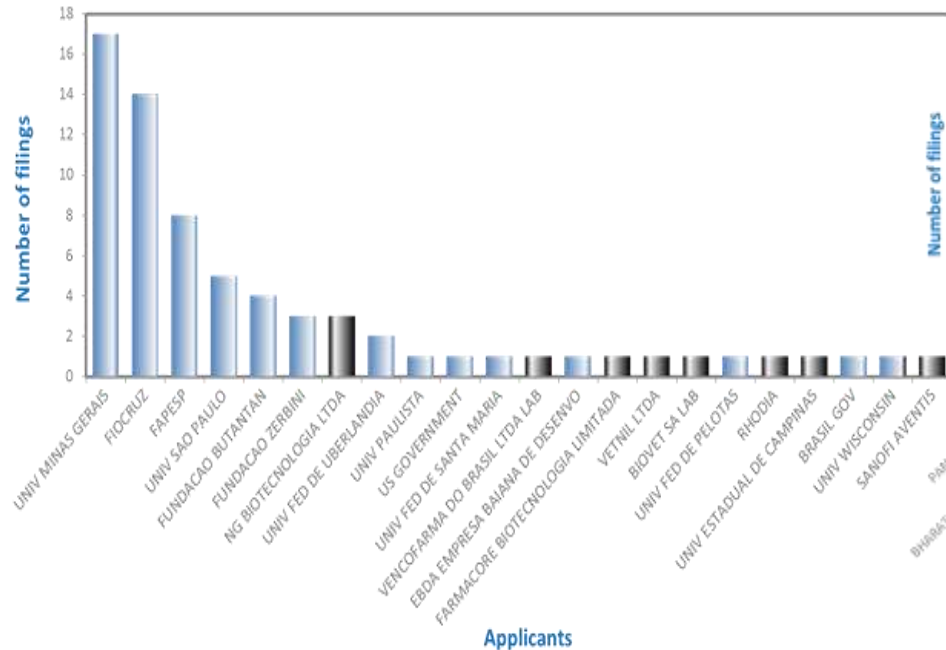


Overall activity in the area of vaccines vs. patenting activity in specific diseases – different research areas/patent portfolios

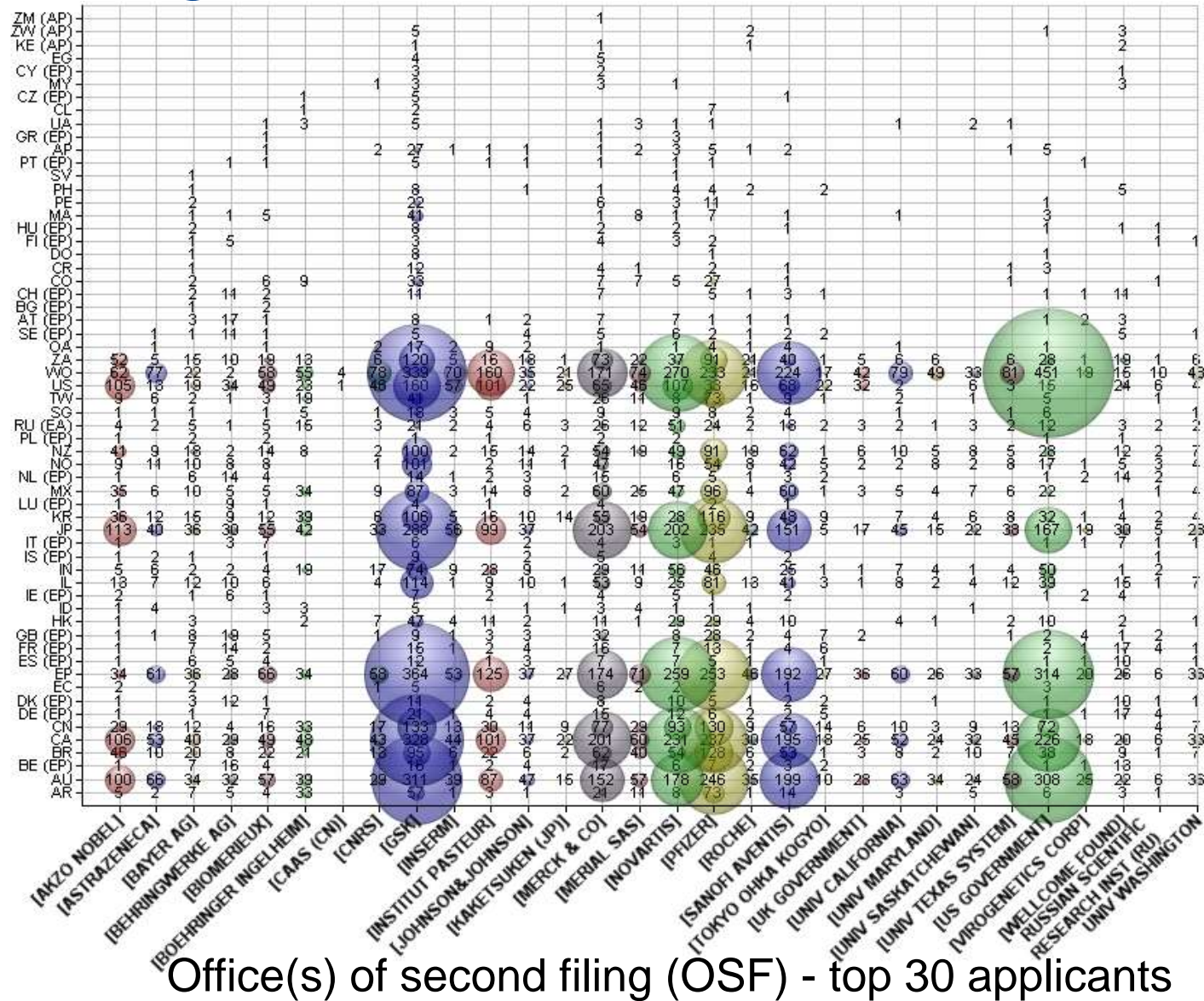
Top players profile: public vs. private sector

Vaccines – Top applicants in Brazil

Vaccines – Top applicants in India

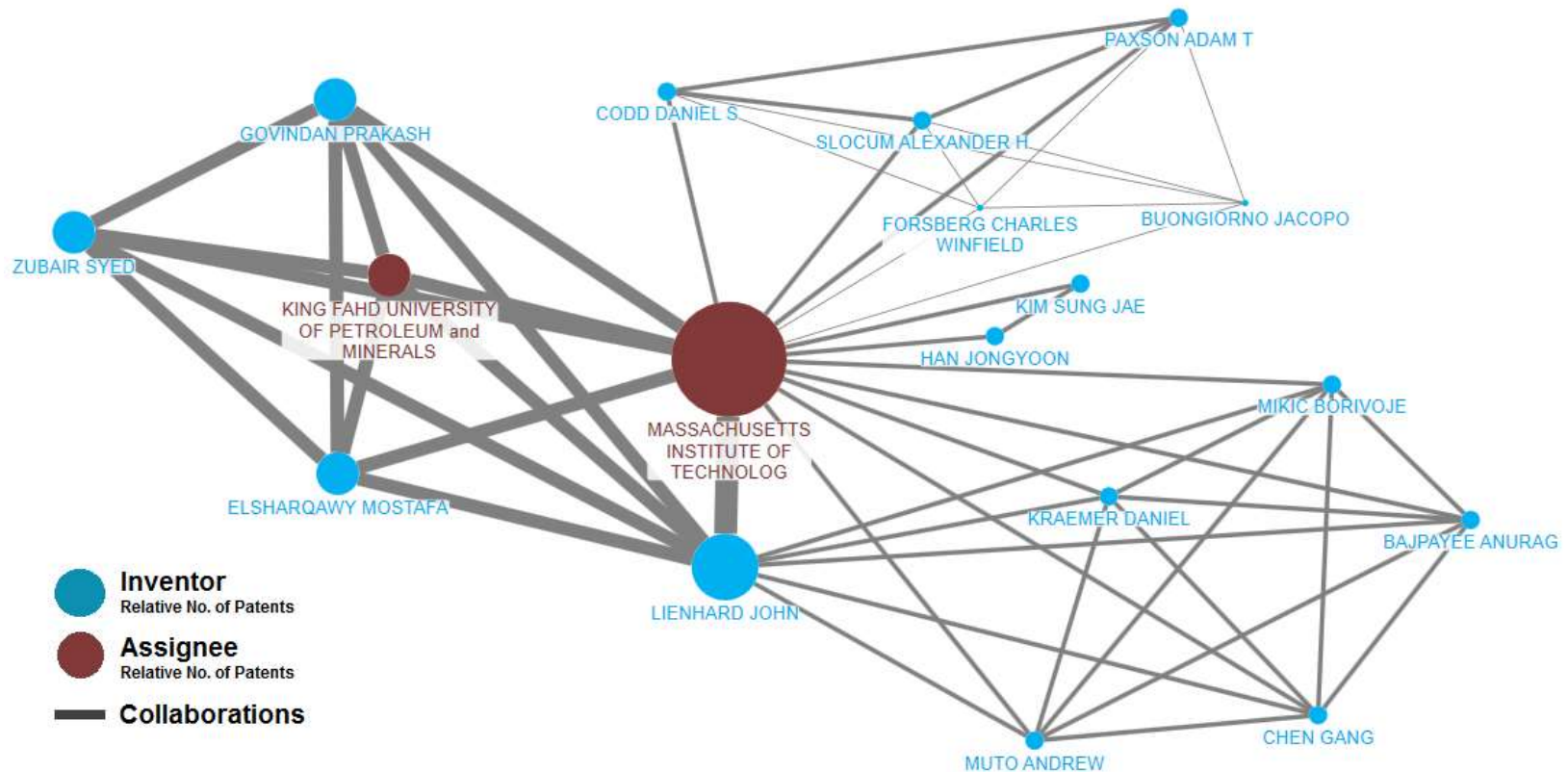


Geographical distribution of patent protection



Choice of patent protection area by key players → Indirect market analysis, whitespace areas

Applicant-inventor networks and co-assignments



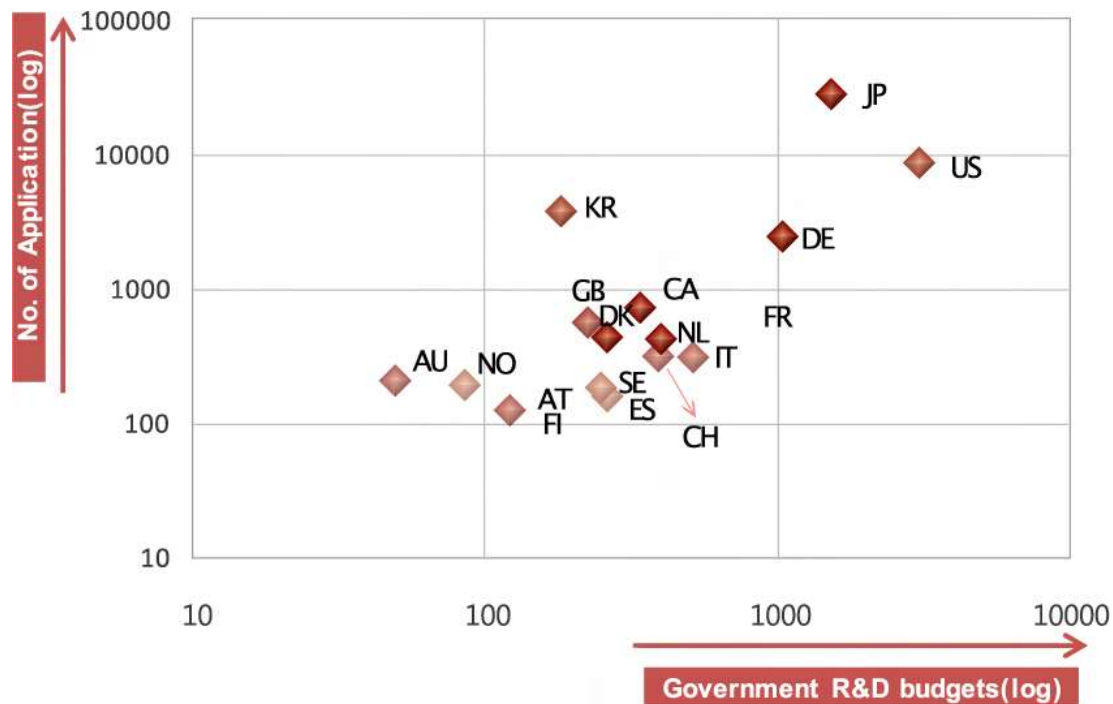
Source: WIPO Desalination Patent Landscape Report

Matching patents to products

Assignee / Inventor Name	SHI, YANG; (CN)
Patent / Publication Number	WO2010135909A1
Title	STEAM HEATING METHOD USING SOLAR ENERGY AND SOLAR STEAM COOKER
Patent Image	Product Image
<p>图 10</p>	
Reference Link	http://jiadeshun.gmc.globalmarket.com/products/details/portable-solar-cooker-104919.html http://jiadeshun.gmc.globalmarket.com/products/details/portable-solar-cooker-104920.html

Source: WIPO PLR on Solar Cooking

Correlation between R&D investment and patenting activity



Source: IEA, *Energy Technology R&D Statistics 2007*

- R&D in- and output, patenting activity as indicator of innovation

Patent Landscape Reports - Recap

- Patent Landscape Reports not a standard product - tailored to specific needs. Possible content:
 - Patterns of patenting activity
 - Who is doing what (e.g. top applicants, inventors)? What is filed where? Market trends?
 - Patterns of innovation
 - Innovation trends/activities
 - Diversity of technologies
 - Collaborations
- What lies in the public domain? e.g. FTO analysis
 - Evaluation of legal status information required
- Additional, non patent-data completing the picture, e.g. portfolio or market analysis, case studies, licensing information etc.

Patent Landscape Reports – Recap (2)

- Patent based analysis and IP management support tool:
 - More focused approach, more informed, evidence-based decisions
 - Important components and perspectives of a technology landscape, facilitating policy discussions and strategic planning
 - Avoidance of duplication of work, waste of resources and infringement of 3rd party IP rights
 - Contribution to optimized use of resources and national potential
 - Identification of trends, promising and saturated areas of technology, potential markets for commercialization and technology transfer possibilities
 - Facilitation of local and international cooperation and identification of potential for synergies

Σας ευχαριστώ πολύ!
Thank you!

Questions? Comments?
Irene.Kitsara@wipo.int

References

- World IP Indicators – Edition 2013, WIPO: <http://www.wipo.int/ipstats/en/wipi/>
- WIPO Patent Landscape Reports: http://www.wipo.int/patentscope/en/programs/patent_landscapes/index.html
- WIPO Academy IP Management Distance Learning Course: http://www.wipo.int/academy/en/courses/distance_learning/dl450.html
- Innovation Union Scoreboard 2013: http://ec.europa.eu/enterprise/policies/innovation/files/ius-2013_en.pdf
- Innovation Union Competitiveness Report 2013: http://ec.europa.eu/research/innovation-union/pdf/competitiveness_report_2013.pdf
- Innobarometer 2013: Investing in intangibles: economic assets and innovation drivers for growth: http://ec.europa.eu/public_opinion/flash/fl_369_en.pdf
- Innovation Union: A pocket guide on a Europe 2020 initiative
- http://ec.europa.eu/agriculture/eip/pdf/innovation-pocket-book_en.pdf
- Innovation Policy in 2012: Challenges, trends and responses http://ec.europa.eu/enterprise/policies/innovation/files/inno-policy-trends_en.pdf
- Danish Innovation Centre in Shanghai: <http://icdk.um.dk/en/about-us/innovationcentres/shanghai>