



Patent Landscape Report on Recycling Technologies for End- of Life ICT Equipment

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Sustainable life-cycle management of ICT Equipment and Intellectual Property Rights (IPR)

- Fact: Innovation and IP protection are directly linked to the development of new ICT technologies and Equipment
- Question: What is the role of technology, innovation and IP in the life-cycle management of ICT Equipment?
- WIPO Patent Landscape Report looks at the IP perspective of Recycling End-of Life ICT Equipment



Background of the Report

■ **WIPO Patent Landscape Reports (PLR):**

- Development Agenda Project « Developing Tools for Access to Patent Information » launched in 2010 (since 2014: regular WIPO activity)
- Patent-based analysis of various technological areas and topics of interest for developing countries
- Information on innovation trends and patenting patterns over time, globally or in specific geographical area, profile of major players

Background of the Report (2)

■ **Basel Convention:**

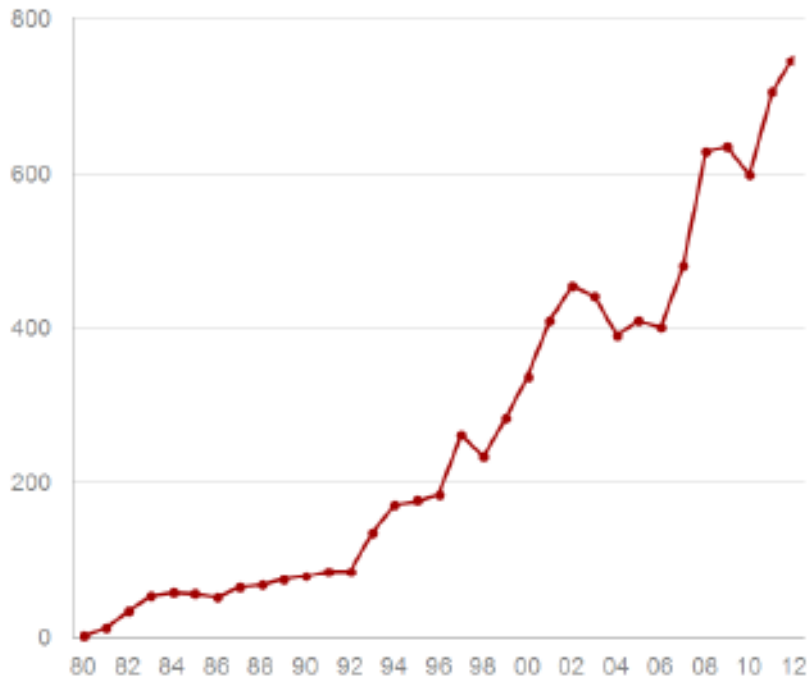
- Mobile Phone Initiative (MPPI) and Partnership for Action on Computing Equipment (PACE)

- In the MPPI and PACE framework, 2 Technical Guidelines:
 - Guideline on Material Recovery and Recycling of End-of-Life Mobile Phones (MPPI)
 - Guideline on Environmentally Sound Material Recovery and Recycling of End-of-Life Computing Equipment (PACE)

Content and usefulness of the PLR

- Patent-based data on:
 - **Technical solutions** related to recycling technologies for end of life ICT Equipment
 - **Innovation trends**
 - Profile analysis of the major **key players**
 - Related **market interest and potential**
- **Support tool for interdisciplinary discussions and informed decisions** on
 - sustainable life-cycle management of ICT Equipment
 - national potential for R&D, technology transfer, local manufacturing and trade collaborations

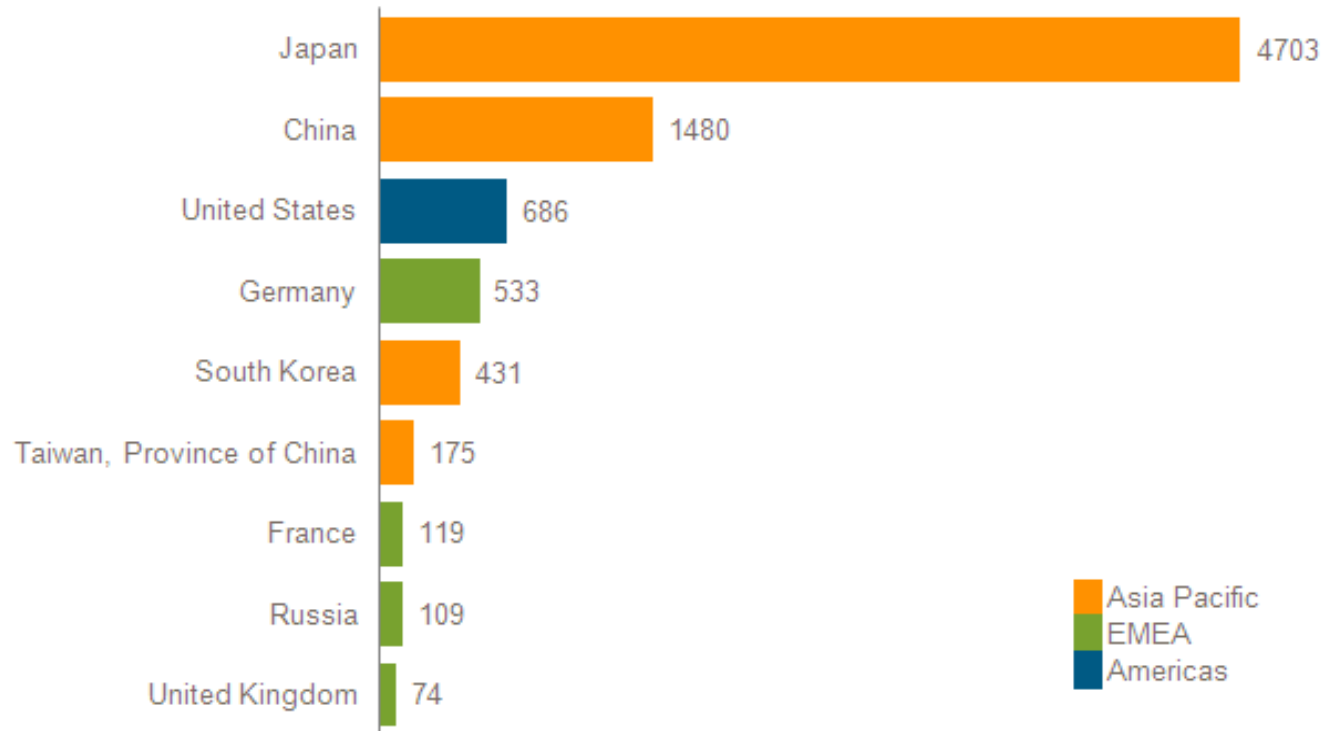
Key findings of the Patent Landscape Report



Number of patent families over time

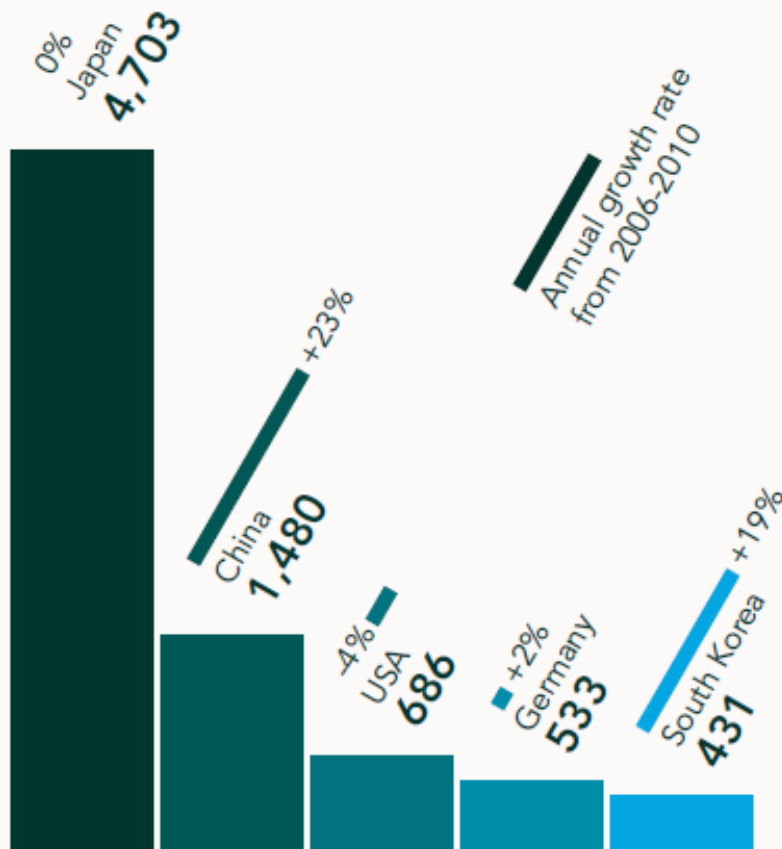
- General trend: Rapidly growing interest in E-Waste Recycling Technologies:
- Nearly 9000 identified patent families
- 30% of the patenting activity: last 5 years

Geographical distribution of the patent protection



Overall number of patent families per major office of first filing since 1980

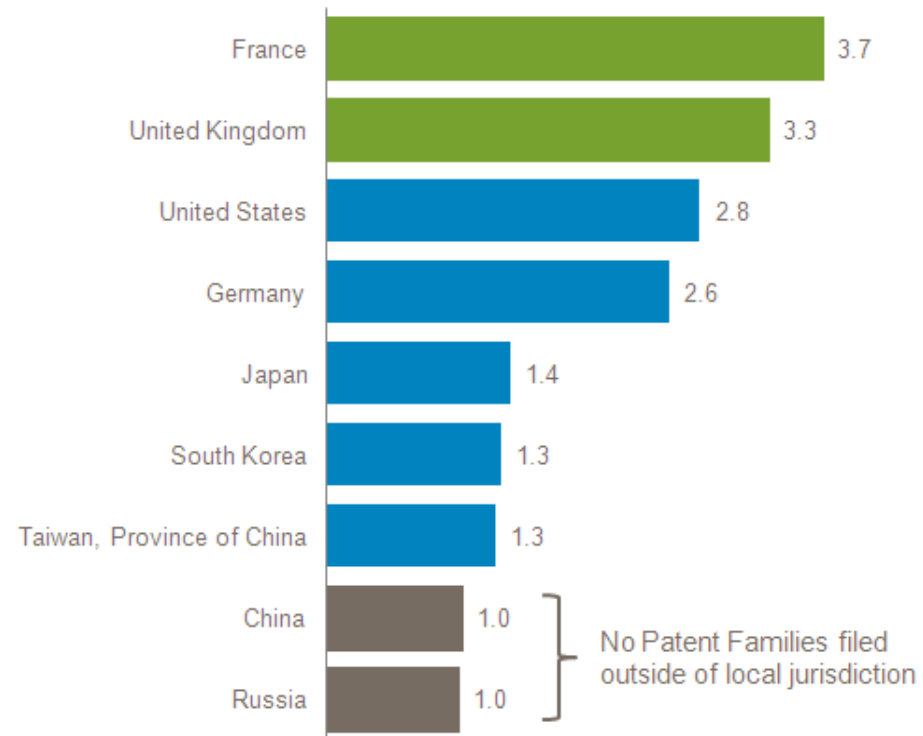
Top 5 offices of first filing vs. annual growth rate from 2006-2010



- Emergence of China and South Korea (23% and 19% compound annual growth rate, respectively)
- Plateau of Japan
- Other OFF:
 - Latin America represented only by Brazil (26 patent applications in the dataset) and Mexico (4)
 - Africa represented by South Africa (4 applications)

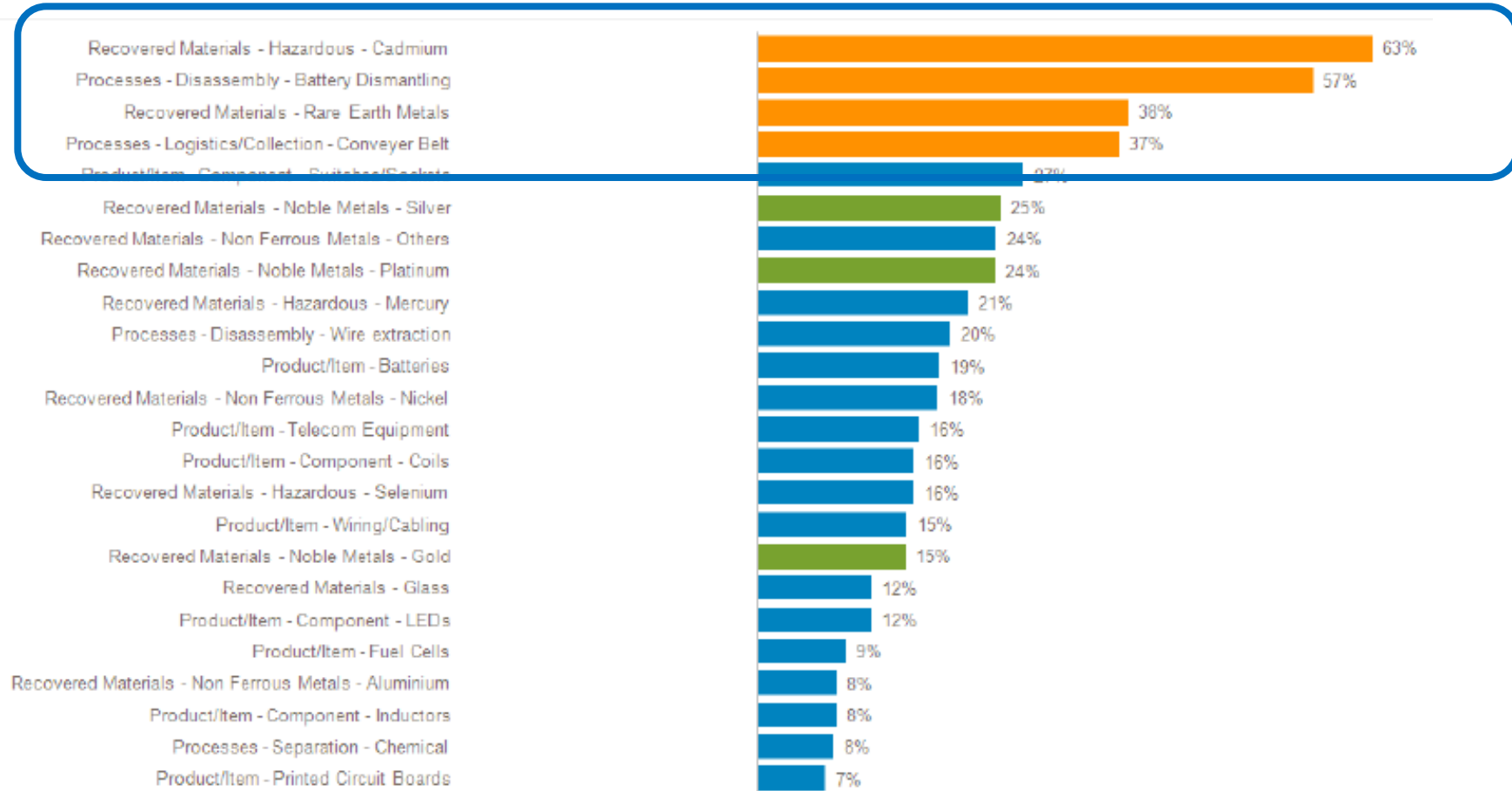
Subsequent patent filings – a strategic choice

- Patent filing in each jurisdiction: additional costs
- Filing in multiple jurisdictions: investment and indication of interest in certain areas/markets
- Trends:
 - France and UK: most extroverted patenting behaviour
 - China, Russia, Japan, but also Brazil: patent mainly locally only



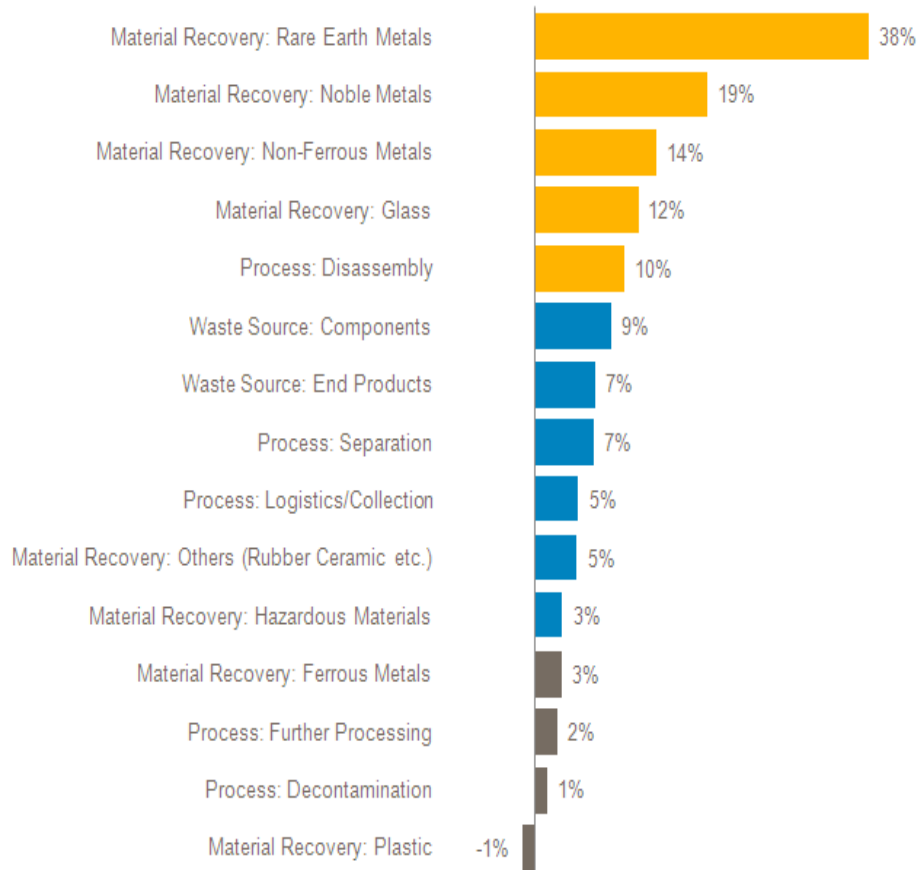
Average family size per Office of First Filing (OFF)

Technology trends in E-Waste Recycling



Categories with >100 Patent Families; Annual Growth 2006 to 2010

Emerging trends reflecting market needs and regulatory frameworks



■ Clear trend: increased interest in **rare earth** (neodymium, lanthanum etc) and **noble metals material** (gold, silver*, platinum) **recovery**

■ Rare earth scarcity (90% of primary rare earth extraction in CN)

* Particular interest in silver, maybe due to EU solder regulations banning the use of lead

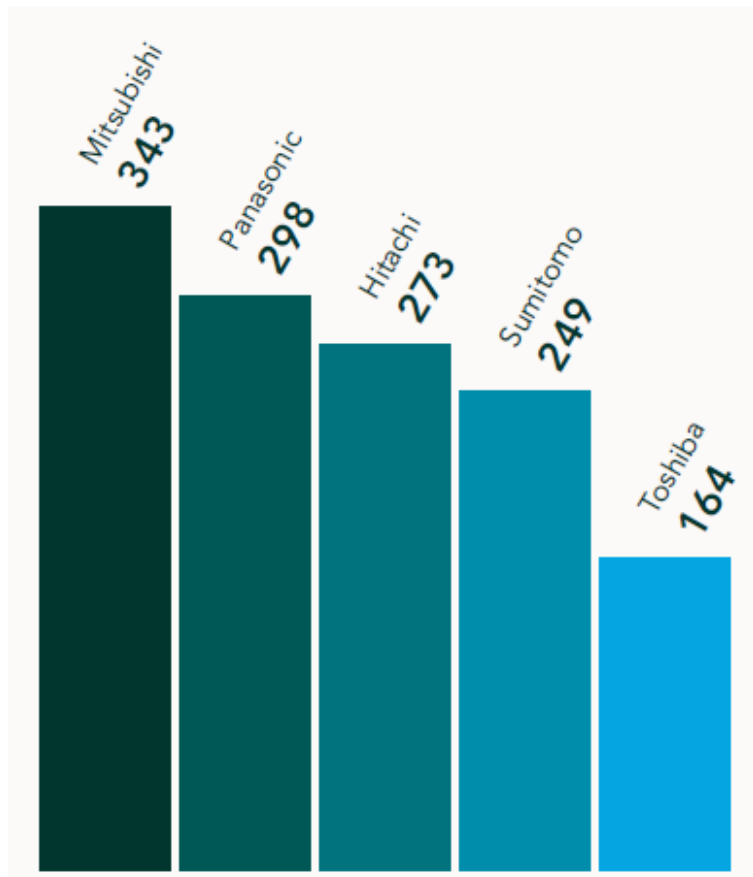
Compound Annual Growth or Decline
between 2006 and 2010 by Subject Matter

Areas of special interest by country

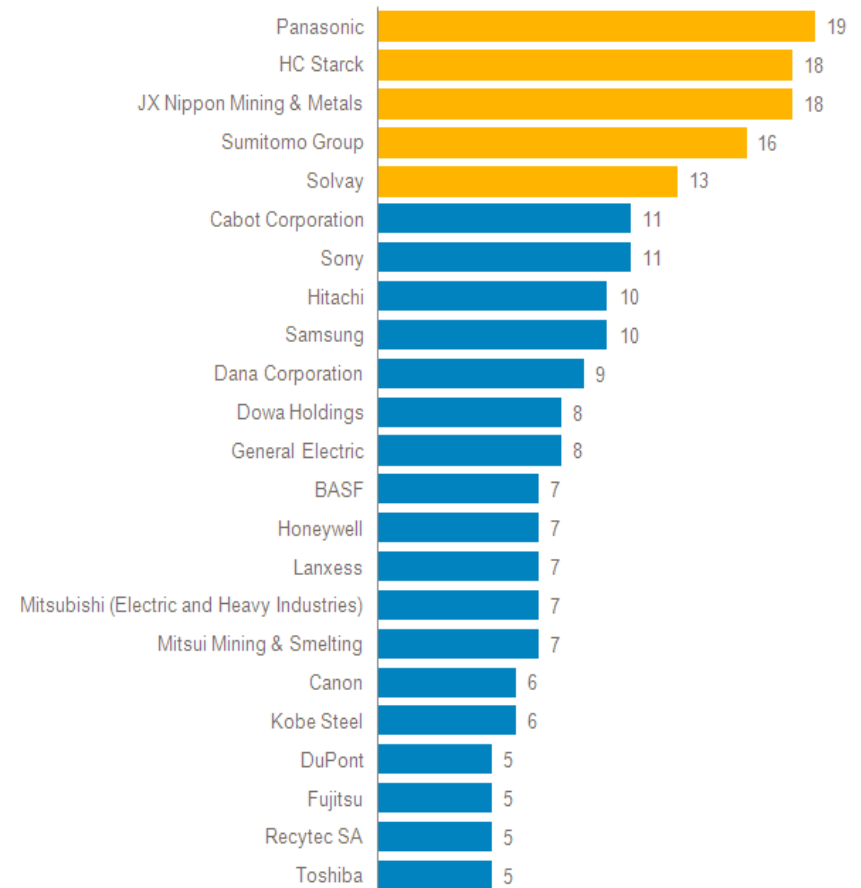
- CN focus: mainly on component level. Indication that once arriving in CN, E-waste already dismantled
- US focus: rare earth extraction. US in this field top applicant
- Taiwan, Province of China: decontamination of e-waste
- Russia: extraction of non-ferrous (lead, copper and nickel)
- UK: disassembly

Key players in E-Waste patenting activity

Top applicants from Asia Pacific



Top applicants with filings in at least 5 jurisdictions



Dedicated Patent Landscape Report website

The screenshot shows the WIPO website header with the logo and navigation menu. The main content area features the title 'Patent Landscape Report on E-Waste Recycling Technologies' and a descriptive paragraph. A thumbnail image of the report cover is displayed on the right, along with the title and year '2013'.

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Patent Landscape Report on E-Waste Recycling Technologies

This report was prepared in the context of collaboration of WIPO with the Secretariat of the [Basel Convention](#) on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (SBC), which is administered by the United Nations Environment Programme (UNEP).

The report aims at providing patent based evidence on the available technologies and the patenting trends in the area of electronic waste (E-waste) recycling and material recovery, while it is intended to provide background and supporting information to the Partnership for Action on Computing Equipment under the [Basel Convention](#) and complement the

Patent Landscape Report on E-Waste Recycling Technologies
2013

Report and related documents

Full report [PDF](#)

Database of patent families [XLS](#)

Infographic



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

Thank you!
Feedback, questions, suggestions?

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