

# ■ Green Technology: Challenges, Trends, and Opportunities from an IP Perspective

Amy Dieterich, Director  
Global Challenges Division

February, 2020

# Part 1: Challenges and Trends

- Global risks
- Green tech growth outlook
- Trends in patenting and collaboration
- IP Rights in low-carbon technologies

# Trends: WEF Global Risk Landscape

Figure I: The Evolving Risks Landscape, 2007–2020

## Top 5 Global Risks in Terms of Likelihood



## Top 5 Global Risks in Terms of Impact



■ Economic
 ■ Environmental
 ■ Geopolitical
 ■ Societal
 ■ Technological

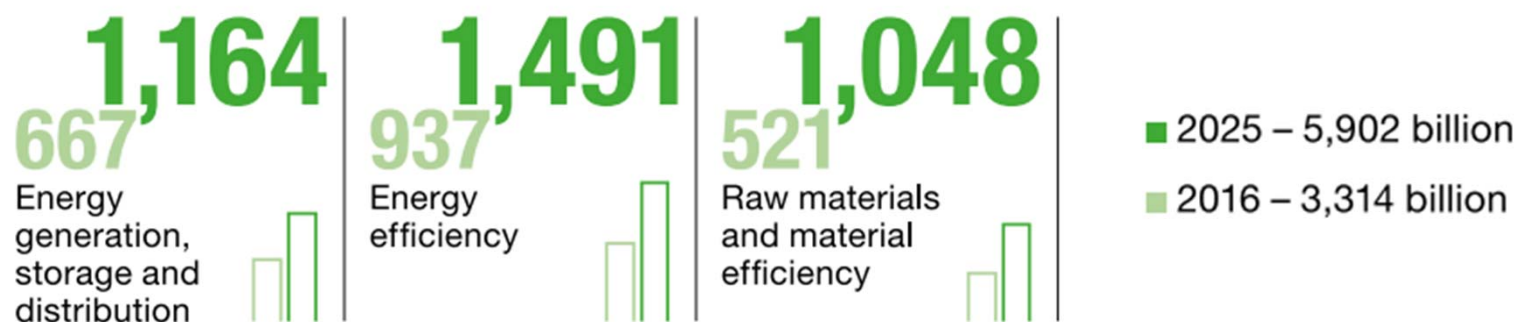
The Marketplace for Sustainable Technology

Source: World Economic Forum 2007–2020, *Global Risks Reports*.

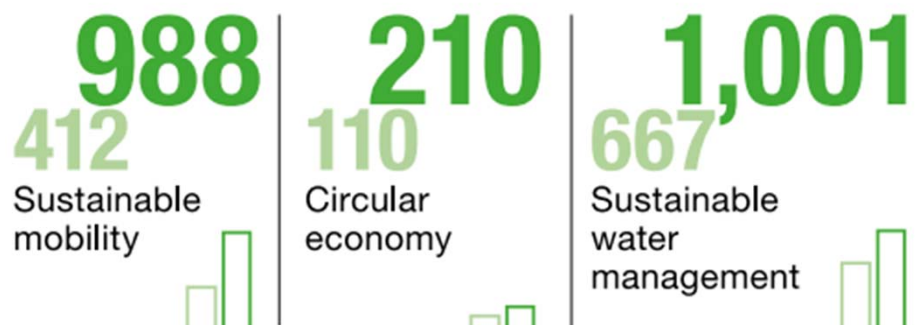
Note: Global risks may not be strictly comparable across years, as definitions and the set of global risks have evolved with new issues emerging on the 10-year horizon. For example, cyberattacks, income disparity and unemployment entered the set of global risks in 2012. Some global risks have been reclassified: water crises and income disparity were recategorized as societal risks in the 2015 and 2014 *Global Risks Reports*, respectively.

# Trends: Green technology growth outlook

(in billion euros)



Demand for green technology is expected to grow by **6.9 percent** annually to **5,902 billion euro** in 2025

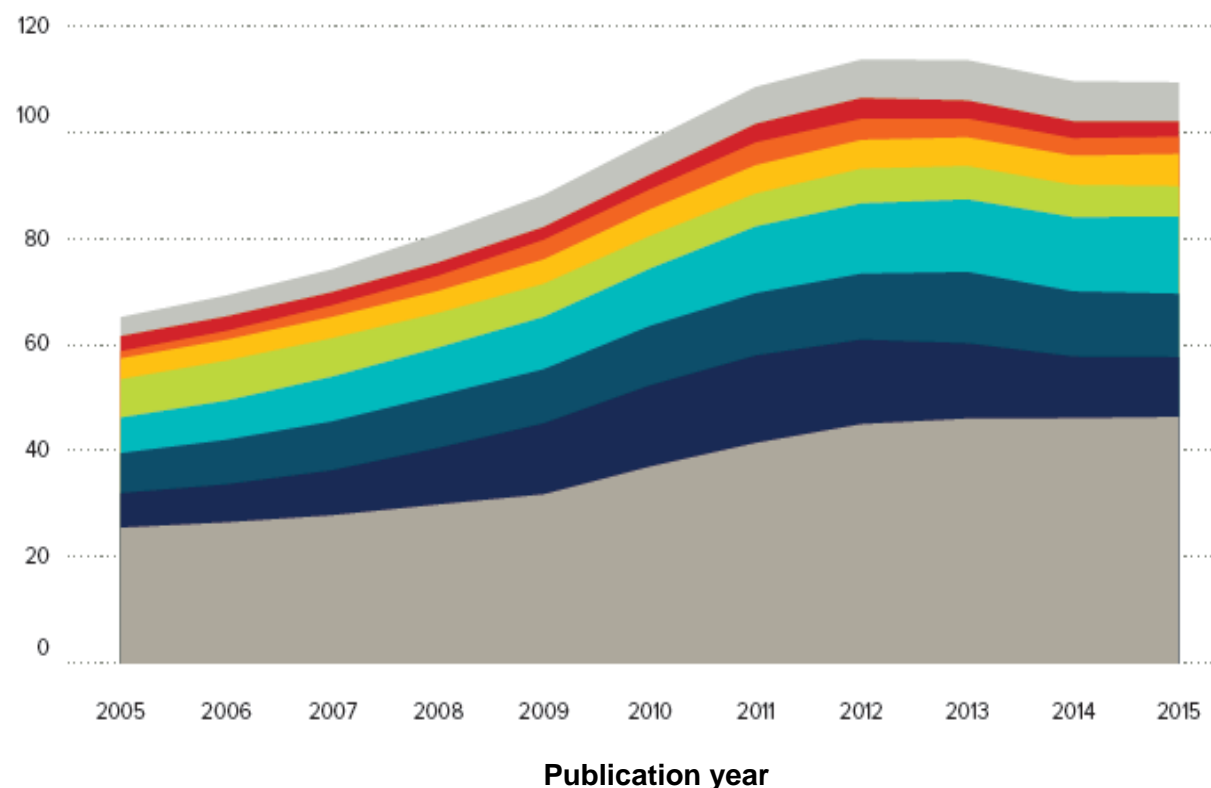


Source: Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) (2018): GreenTech Made in Germany 2018.  
[www.bmu.de/fileadmin/Daten\\_BMU/Pool/Broschueren/greentech\\_2018\\_en\\_t](http://www.bmu.de/fileadmin/Daten_BMU/Pool/Broschueren/greentech_2018_en_t)

# Trends: Green Energy Inventions: Accelerated Growth and Slow Decline

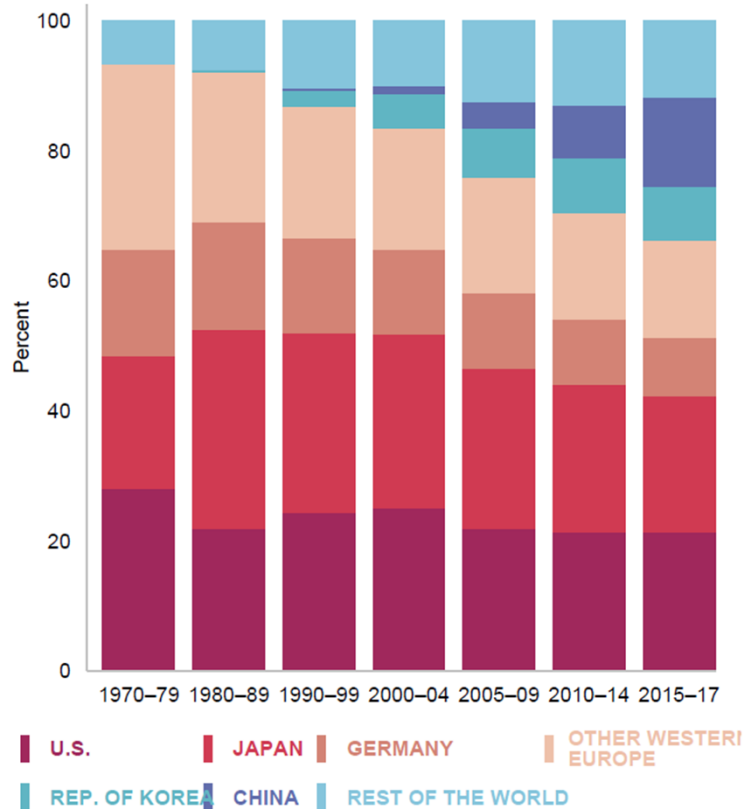
- ❑ The total number of green patents nearly doubled between 2005 and 2013
- ❑ Since then, decrease in number of patents and PCT international patent applications observed every year
- ❑ Why?
  - ❑ Decreased investment and R+D
  - ❑ More mature technologies
  - ❑ Declining oil and fossil fuel prices reduce incentives to invest in GT

Green energy patent families, thousands



# Trends: 2019 World Intellectual Property Report – Diversification and concentration

Evolution of patenting share by top economies



Largest ten hotspots of international collaboration account for **26 %** of international co-inventions: San Francisco-San Jose, New York, Frankfurt, Tokyo, Boston, Shanghai, London, Beijing, Bengaluru, and Paris.

Green tech hotspot?



# IP rights in low carbon technologies

- High degree of substitutability and competition
- Sufficient room in the market for competing technologies

This reduces the influence specific patents can have on technological progress and prices

# Part 2: Opportunities

- SDGs
- Exponential technological growth
- Policies to foster low-carbon innovation
- Diffusion of green technologies (WIPO GREEN!)

**WIPO | GREEN**  
The Marketplace  
for Sustainable Technology



# UN Sustainable Development Goals



**WIPO | GREEN**  
The Marketplace  
for Sustainable Technology



# Exp. Technological Growth drives growth in a variety sectors

- Transportation (electric and autonomous vehicles – but not internal combustion engine)
- Resource management (GIS, Sat. images, remote sensors, spectral imaging)
- Energy (RE & grid integration, storage and energy management, energy efficiency, fusion?)
- Farming (biotech, robots, drones, remote sensing, sensors & trackers, irrigation, hydroponics)

# Policies that foster low-carbon innovation

- More stringent environmental policies, national or international (e.g. emission standards), and regulations
- Effective protection and enforcement of IP rights
- Increased R&D and public support to private R&D
- Better access to finance and support services for SMEs
- (Demand promotion, sensitization, and communication)



# What is WIPO GREEN?



An online platform for technology exchange that contributes to the accelerated adaptation, adoption and deployment of green technology solutions



WIPO GREEN connects those seeking environmentally sustainable solutions with technology and service providers



**Enable** adaptation and deployment of green solutions through collaborative approaches, a transparent marketplace and reduced transaction costs



**Engage** closely with the private sector, the source of ~80% of innovation in the green space

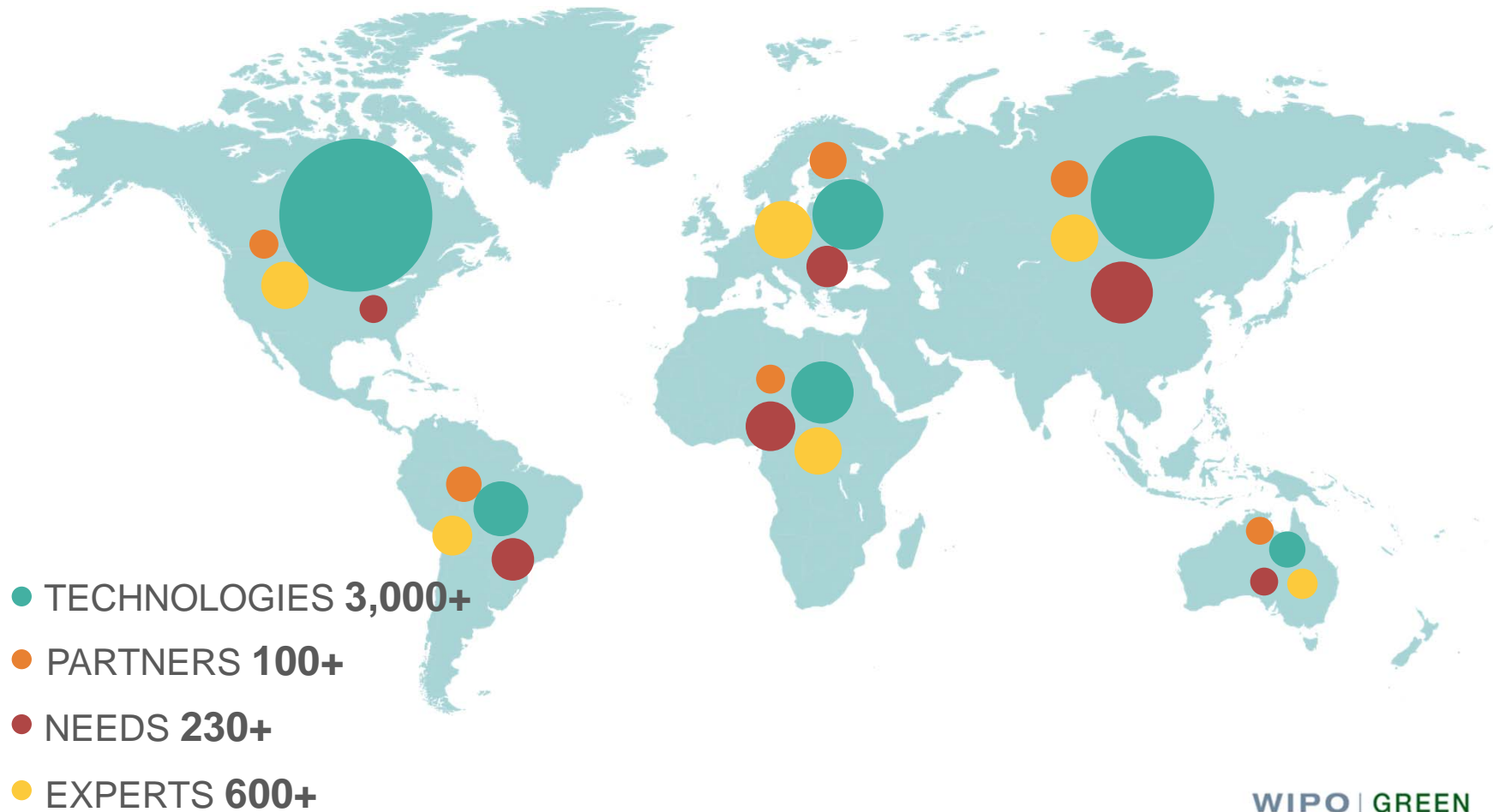


**Support** innovation and innovators, particularly in the developing world

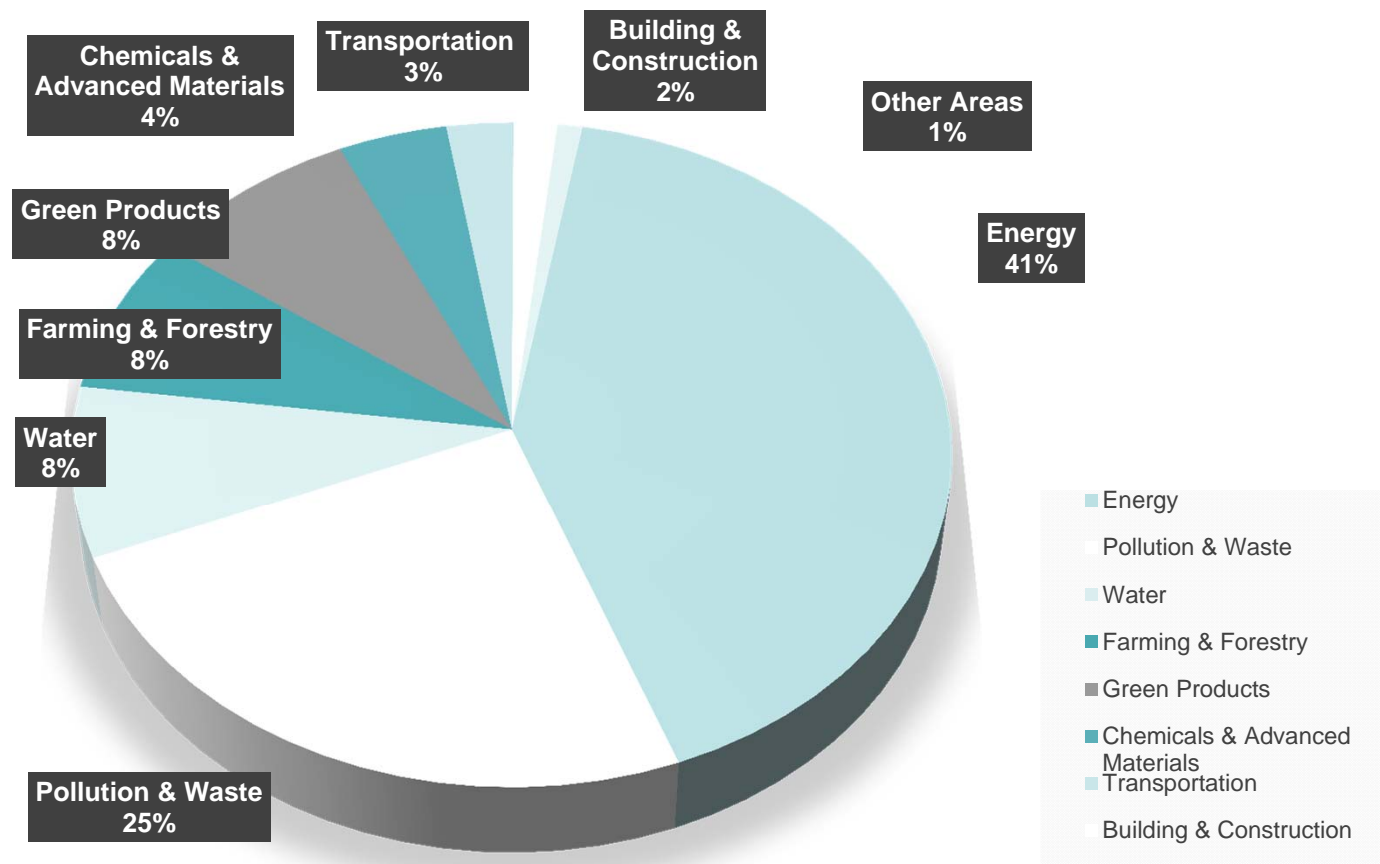


Constructively **contribute** to global policy dialogue

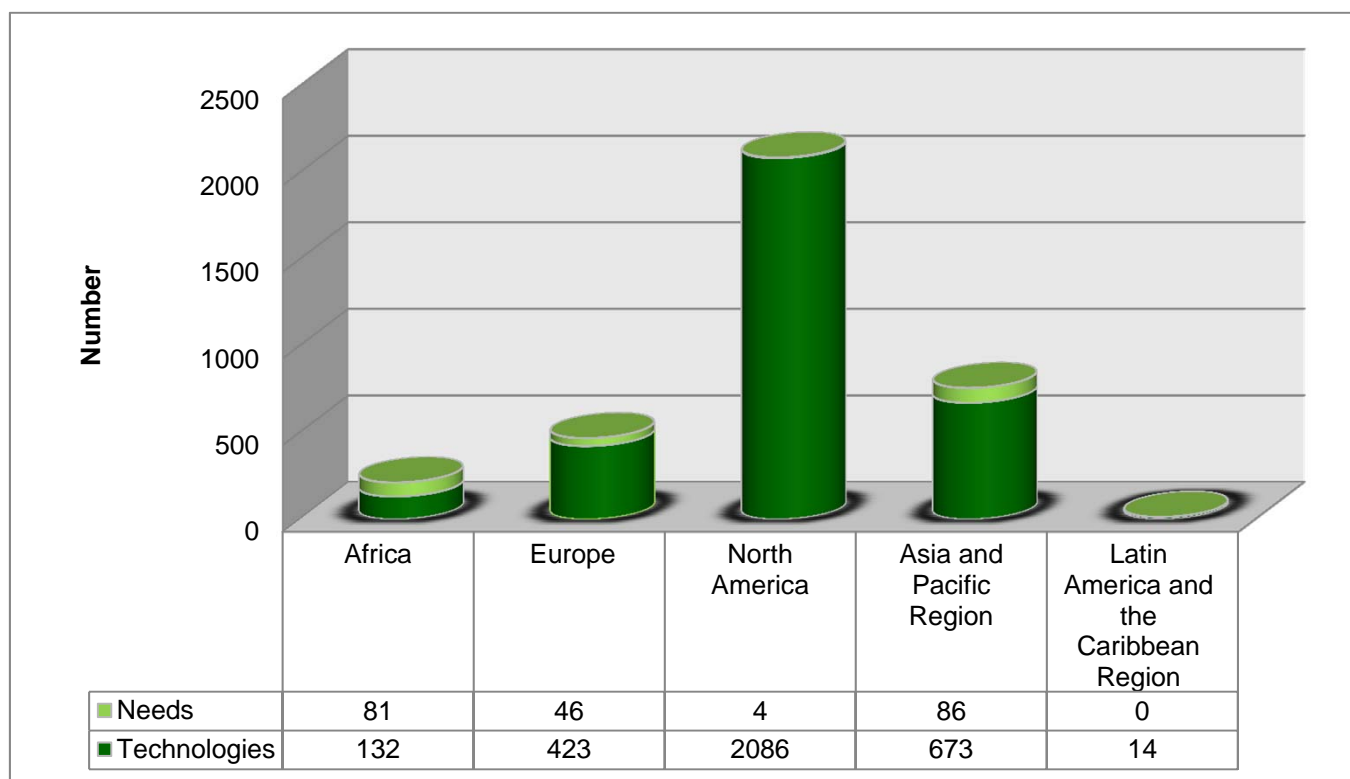
# WIPO GREEN: First six years



# WIPO GREEN Database Technology fields



# WIPO GREEN database: technologies & needs, by regions



\*\*As at 09/01/2019



# Success stories

## Using innovative technology to educate future changemakers

In 2018, WIPO GREEN matchmaking helped the Innovation Hub of Bali's multi-awarded Green School establish a collaboration with the US-born company Zero Mass Water to bring sustainable drinking water to its students.



## Fujitsu concludes green technology licensing agreements

In 2018, Fujitsu signed intellectual property (IP) licensing agreements for two technologies with Kyushu University and University of the Ryukyus – its first green tech deals since becoming a WIPO GREEN Partner in September 2017.

**WIPO | GREEN**  
The Marketplace  
for Sustainable Technology

Connecting  
seekers and  
providers of  
sustainable  
technology



**THANK YOU!**

[wipo.green@wipo.int](mailto:wipo.green@wipo.int)  
[www.wipo.int/green](http://www.wipo.int/green)

**WIPO | GREEN**  
The Marketplace  
for Sustainable Technology