

Session V: Intellectual Property and Innovation in Green Technologies, including Lessons from Work in the TRIPS Council



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United States Mission to the WTO

**WTO Regional Workshop on
Intellectual Property and its Role in the Generation and
Diffusion of Green Technologies**

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Hong Kong China



Intellectual Property and Innovation in Green Technologies, including Lessons from Work in the TRIPS Council

- Innovation in Green Technologies
 - What is Green Technology?
 - What Generates New Green Technologies?
 - What Incentivizes the Diffusion and Use of Green Technology?
- Work of the TRIPS Council
 - Review of Members' Laws
 - Intellectual Property and Innovation
 - Contribution of Intellectual Property to Facilitate the Transfer of Environmentally Rational Technology
 - TRIPS 66.2 Reports



Innovation in Green Technologies: What is Green Technology?

- United States and Patent and Trademark Office, for its pilot program to expedite examination, considered many different technologies to be green technologies, e.g.:
 - Energy storage or distribution
 - Fuel cell-powered vehicles
 - Human-powered vehicles
 - Hybrid-powered vehicles
 - Incoherent light emitter structures
 - Land vehicles
 - Roadway, e.g., recycled surface, all-weather bikeways
 - Solar cells
 - Animal waste disposal or recycling



What Generates New Green Technologies?

- Need → Innovation → Financing → Development
- Key Ingredients for Innovation in, and Development, of Green Technology:
 - Public Policies- Society values green technologies
 - Incentives for Research and Development
 - People and Institutions



What Generates New Green Technologies?

- Public Policies/Incentives for Innovation and Development
 - Economic – financial
 - Intellectual Property Rights
 - Tax Credits, Grants, and Access to Credit are Others
 - Prizes
 - There are a number of characteristics and circumstances “that hinder innovation: a lack of scientists and researchers, brain drain, small market size, the lack of infrastructure, importantly telecommunications infrastructure, the quality the business environment and governance conditions, bureaucratic climate and the formal/informal regulations regarding economic transactions, cash-strapped governments and inability to make public investments in research and infrastructure.”



- Green Technology Pilot
- Program started in 2009, finished in 2012
- Provided accelerated examination for clean technologies
- Other Expedited Examination Programs Continue



Other incentives: Green Technology Prizes

Prize from the 1990's: “**Golden Carrot program**” A consortium including 25 power companies encouraged the development of a Super-Efficient Refrigerator Program SERP. The prize money was used to reduce the price of these refrigerators.



Today:
USPTO's Patents
for Humanity
Prize



Green Technology Incentive: Patents for Humanity Prize

- The Patents for Humanity Program is for Applicants that confront global challenges in:
 - Medicine
 - Nutrition
 - Sanitation
 - Household Energy
 - Living Standards



Green Technology Incentive: Patents for Humanity Prize

- Award winners receive:
- USPTO acceleration certificate
- Publicity and media coverage
- Honorable mentions receive:
- Featured write-up on USPTO website
- Accelerated patent application





Green Technology Incentive: Patents for Humanity Prize

Winner!



**Won for its affordable solar-powered light bulb sold
using innovative business model**





Key Ingredients for Innovation in, and Development, of Green Technology

- People and Institutions
 - Incubators and Innovation Hubs
 - Department of Energy Innovation Hubs
 - Sunlight Energy Innovation Hub
 - » JCAP, a team led by the California Institute of Technology, will run this Innovation Hub, and partner with the Lawrence Berkeley National Lab, SLAC National Accelerator Laboratory, and the Universities of California at Irvine and San Diego and will collaborate with the DOE Energy Frontier Research Centers
 - Research Centers, especially those that are interconnected- UNFCCC Climate Technology Center and Network

Key Ingredients for Innovation in, and Development, of Green Technology: Human and Institutional Capacity



Example of the National University of
Singapore (NUS)

**University as driver for open
innovation & international
collaboration in national innovation
system: The case of National
University of Singapore (NUS)**

Professor Wong Poh Kam

NUS Business School & Director,



New Vision of NUS in the 21st Century: Becoming a Global Knowledge Enterprise

To become a globally-oriented university, open to and competing for students and faculty globally, and benchmarking practice and performance against global leaders

To make NUS a knowledge hub for Industry and Enterprise

To inject an entrepreneurial dimension to NUS education and research

To be a key node in the global innovation network

Profile of Changes in NUS, Before and After Shift to Entrepreneurial University Model

Indicator	AY1996/7	FY 2006/7
Teaching staff	1414	1,944
of which % foreign	39.0%	51.9% ¹
Research staff	843	1,464
of which % foreign	70.1%	78.6% ¹
Undergraduate students enrolled	17,960	22,689
Graduate students enrolled	4,478	6,616
Graduate students as % of total student enrolment	20.0%	22.6%
Percentage of foreign students studying at NUS	13% ²	33.7%
Total research funding	Na	S\$185.9 mil
Total no. of research projects funded	1,751	1759 ³
Journal publications in SCI/SSCI	1,307 ⁴	3,192 ⁵
Patents filed	13	150 ³
Patents granted	4	40 ³
Cumulative patents granted by USPTO	21 ⁶	206 ⁷

1 Percentage for FY2004 2 Percentage of total student intake for 1997/8 3 Figure for FY2005

4 CY1996 5 CY2007 6 CY1990-1997 7 CY1990-2006

Source: NUS Annual Research Report (various years), National University of Singapore; NUS Annual Report; Database of the USPTO; IPOS; ISI Web of Science; NUS Office of Research



What Incentivizes the Diffusion and Use of Green Technology?

- Patent laws promote the diffusion of green technology with the publication of patent applications and patents
 - The European Patent Office's Espacenet public database has over 90 million published patent applications
 - Patent applications are drafted for people of the same skill level to understand, which emphasizes the absorptive capacity necessary for transfer of technology
- In TRIPS Council, it has been noted that investments in green technology is encouraged with
 - Tax credits, access to finance (Green Guaranties- Green Bond Principles)
 - Laws and regulations that promote use of green technology
 - Intellectual Property



What Incentivizes the Diffusion and Use of Green Technology?

- In TRIPS Council, it has also been noted that Investments in green technology is encouraged by:
 - Government procurement of Green Technology
 - Human (including women!), organizational and institutional capacity to use the technology
 - Training!
 - Green technologies that are affordable technologies
 - “Trade in Environmental Goods Initiative”- Eliminate tariffs on environmental goods
 - Reduce transaction costs



What Incentivizes the Diffusion and Use of Green Technology?

- In TRIPS Council, it has also been noted that investments in green technology is encouraged by:
 - Lack of inappropriate financial incentives to acquire or use inefficient or climate un-friendly technologies
 - Avoidance of Rent-seeking behavior (local content requirements) or fraud
 - Market and technical barriers to green tech are eliminated
 - In TRIPS Council, the EU has identified several market barriers to transfer technology to India, including:
 - Varying technical standards, lack of access to finance and cross-cultural business issues,



What Incentivizes the Diffusion and Use of Green Technology?

- In TRIPS Council, it has also been noted that investments in green technology is encouraged by:
"There are a number of characteristics and circumstances of developing nations that hinder innovation: a lack of scientists and researchers, brain drain, small market size, the lack of infrastructure, importantly telecommunications infrastructure, the quality the business environment and governance conditions, bureaucratic climate and the formal/informal regulations regarding economic transactions, cash-strapped governments and inability to make public investments in research and infrastructure."

IPCC Special Report on Methodological and Technological Issues in Technology Transfer:

Key Messages related Decision 4/CP.4

OGUNLADE R DAVIDSON

Co-chair IPCC Working Group III

Workshop on Transfer of Technology Consultative Process
Bonn, 7 June 2000, SBSTA 12



WMO

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC)



UNEP

Specific Sectoral Actions for Enhancing Technology Transfer (1)

- **Buildings:**
 - Incentives and DSM programmes for Energy efficient & ESTs homes
 - Building Codes & guidelines, equipment standards and performance labels.
- **Transport:**
 - Policies on co-operative technology agreements, joint R&D, information networks, and specialised management & technical training
 - Adoption of standards and regulations
 - Partnership among stakeholders and countries.

Specific Sectoral Actions for Enhancing Technology Transfer (2)

- **Industry:**
 - Legislation, regulations & voluntary agreements
 - Information transfer on technology assessments, especially to SMEs
 - Long-term support for capacity building, especially in modifying equipment & products to local conditions
- **Energy Supply:**
 - Power sector reform programs for the promotion of ESTs, particularly RETs
 - Mobilisation of capital for ESTs and RETs

Specific Sectoral Actions for Enhancing Technology Transfer (3)

- **Agriculture:**

- Information transfer on crop varieties, and improved technical and management methods, incl..integration of local solutions.
- Promotion of R&D networks (CIGAR system)

Forestry:

- Transfer of sustainable management practices and techniques, and technical options
- Strengthening government actions and programs including monitoring and evaluation



What Incentivizes the Diffusion and Use of Green Technology?

- Rational purchasing decisions
- Awareness that the Technology Exists
 - United States Association of University Technology Managers (AUTM) Better World Project and Global Technology Portal
 - US Department of Commerce's Environmental Solutions Exporters Portal
 - WIPO Green (matchmaking database)
 - EBTC "Cleantech database"



WTO TRIPS Council

- Review of Members' Laws
- Intellectual Property and Innovation (November 2012):
 - March 2013 – Small and Medium-Sized Enterprises
 - June 2013 – Cost-Effective Innovation
 - October 2013 – Intellectual Property and Sports
 - February 2014 – University Technology Partnerships
 - June 2014 – Innovation Incubators
 - October 2014 – Promoting Awareness; Case Studies



WTO TRIPS Council

- Contribution of Intellectual Property to Facilitate the Transfer of Environmentally Rational Technology
 - Agenda item raised by Ecuador, suggesting that weakening of intellectual property rights will promote investment and increase transfer of green technology
 - A number of WTO Members intervened to dispute this contention.
 - Australia, for example, said that “Technology transfer requires more than access to patented technologies and associated information, affected countries require the services and infrastructure capacity associated with implementing and using the technology”



WTO TRIPS Council

- Contribution of Intellectual Property to Facilitate the Transfer of Environmentally Rational Technology
 - Switzerland noted that “the transfer of state-of-the-art ‘green’ technologies can only take place in a safe legal environment, where the transferor can be confident that his invention is protected”
- TRIPS Article 66.2 Reports

“In our global economy, progress in even the poorest countries can advance the prosperity and security of people far beyond their borders, including my fellow Americans.”

**President Barack Obama
U.N. Millennium Development Goals Summit
September 22, 2010**

