

IP and Development - Addressing Climate Change: IP Helps Achieve the Goals of Carbon Peaking and Carbon Neutrality

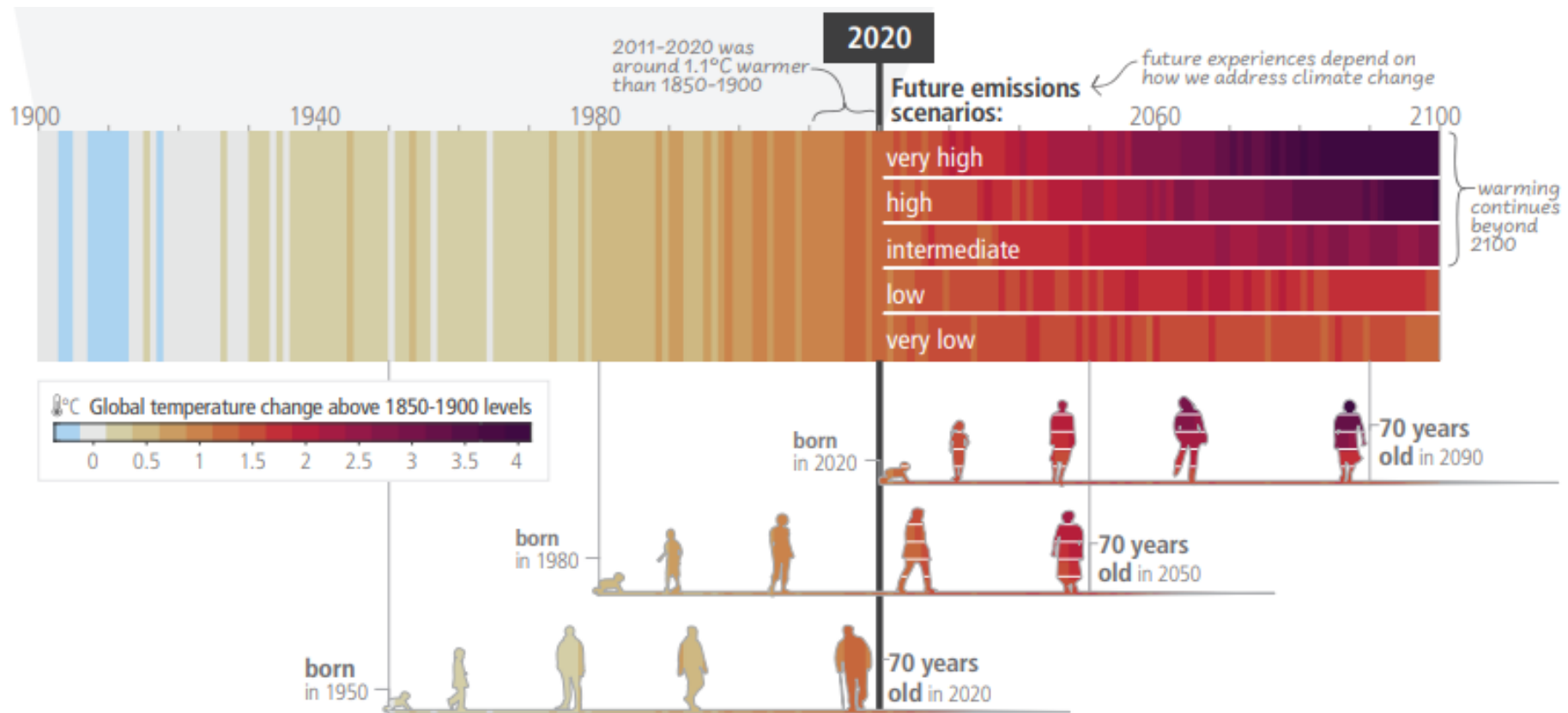
Anja von der Ropp, Senior Program Coordinator

Peter Oksen,

Climate Change & Food Security, Global Challenges Division (GCD), Global Challenges and
Partnerships Sector (GCPS)

November 30, 2023

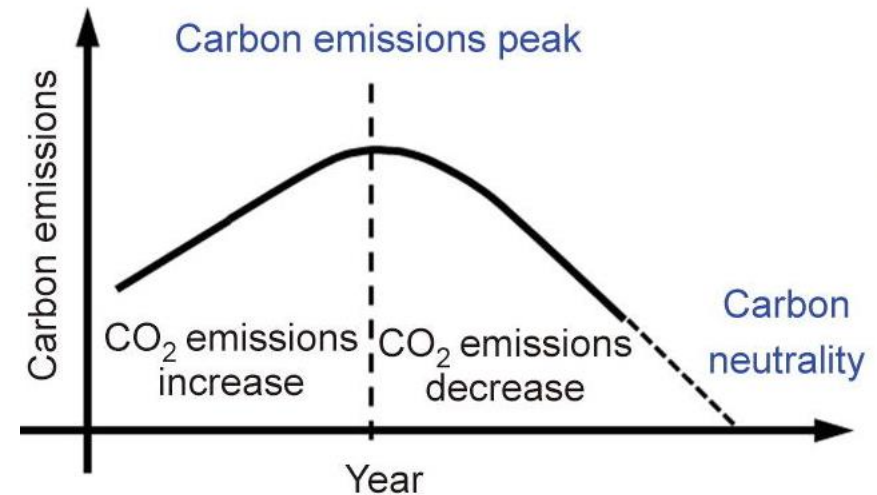
Extent to which current and future generations will experience a hotter and different World



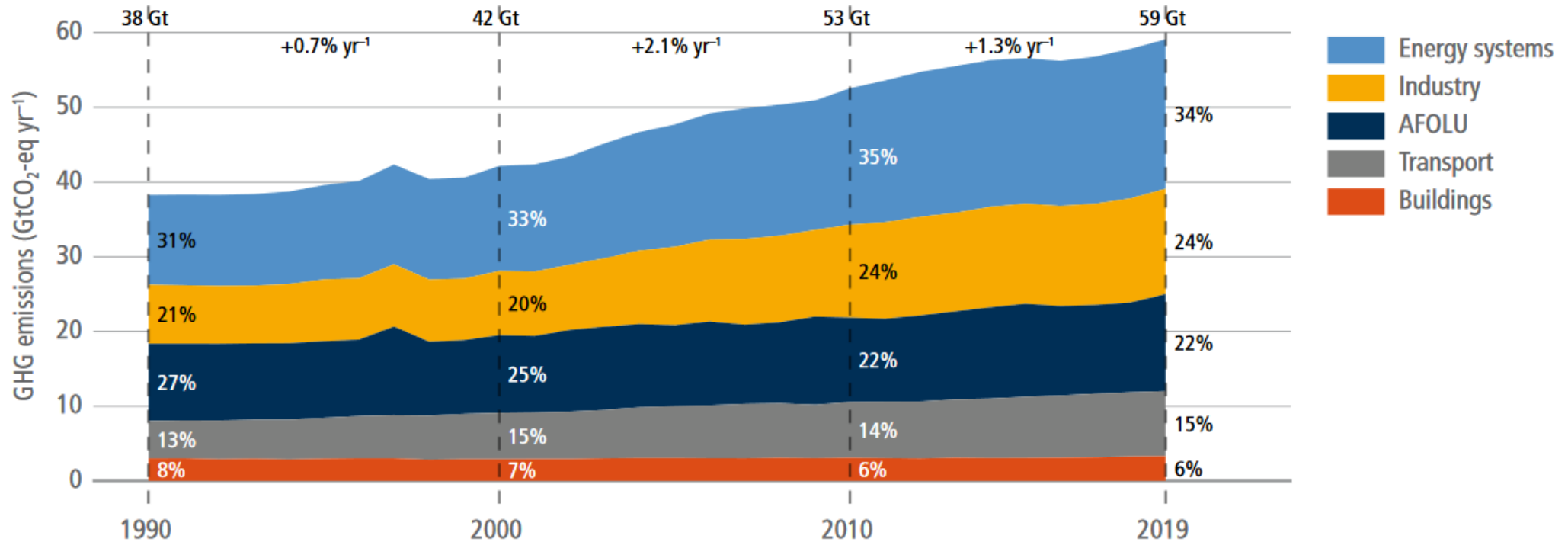
Carbon neutrality and carbon peak

In order to achieve the long-term temperature goal [...], Parties aim to reach global peaking of greenhouse gas emissions as soon as possible, [...] and to undertake rapid reductions thereafter [...], so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century [...].

Article 4 of the Paris Agreement



Trends in global GHG emissions by sector



Mitigation – reducing emissions





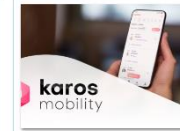









- Since Paris 2015 bottom-up approach
- NDC’s central
- 2024 Global Stocktake
 - We’re behind and the window is narrowing (UNFCCC Technical dialogue of the first global stocktake Sept. 2023)
- Involves all economic sectors
- Deep systems changes to the way we live, work, move, consume
- Innovation & technology have some solutions

Mobility



Electrification of urban transport systems, optimized routing and traffic control, shift from private cars to shared vehicles and efficient mass transport systems; urban mobility offers plenty of options for reducing emissions.

PROVEN FRONTIER HORIZON

 <p><i>Retrofitted electric cars for emerging economies</i></p> <p>Advanced Dynamics</p>	 <p><i>all-in-one smart vehicle charging stations</i></p> <p>XCharge</p>	 <p><i>Car-sharing platform with hourly or daily rentals</i></p> <p>Awto</p>	 <p><i>Efficient electric charging stations</i></p> <p>Waybler</p>	 <p><i>Carpooling platform for daily commuting in suburb...</i></p> <p>Karos Mobility</p>	 <p><i>Collective car ownership</i></p> <p>GoMore</p>
 <p><i>App that nudges consumers towards low-carbon modes...</i></p> <p>Nudgd</p>	 <p><i>EV Charging Solutions</i></p> <p>NEV Enterprise</p>	 <p><i>Lobelia Air: Air Quality Monitoring for Cities at ...</i></p> <p>Lobelia Earth</p>	 <p><i>Data for bicycle and pedestrian planning</i></p> <p>Strava</p>	 <p><i>Public transport decision support system</i></p> <p>Cermoni</p>	 <p><i>City planning with vehicle location data</i></p> <p>Urban Radar</p>
					

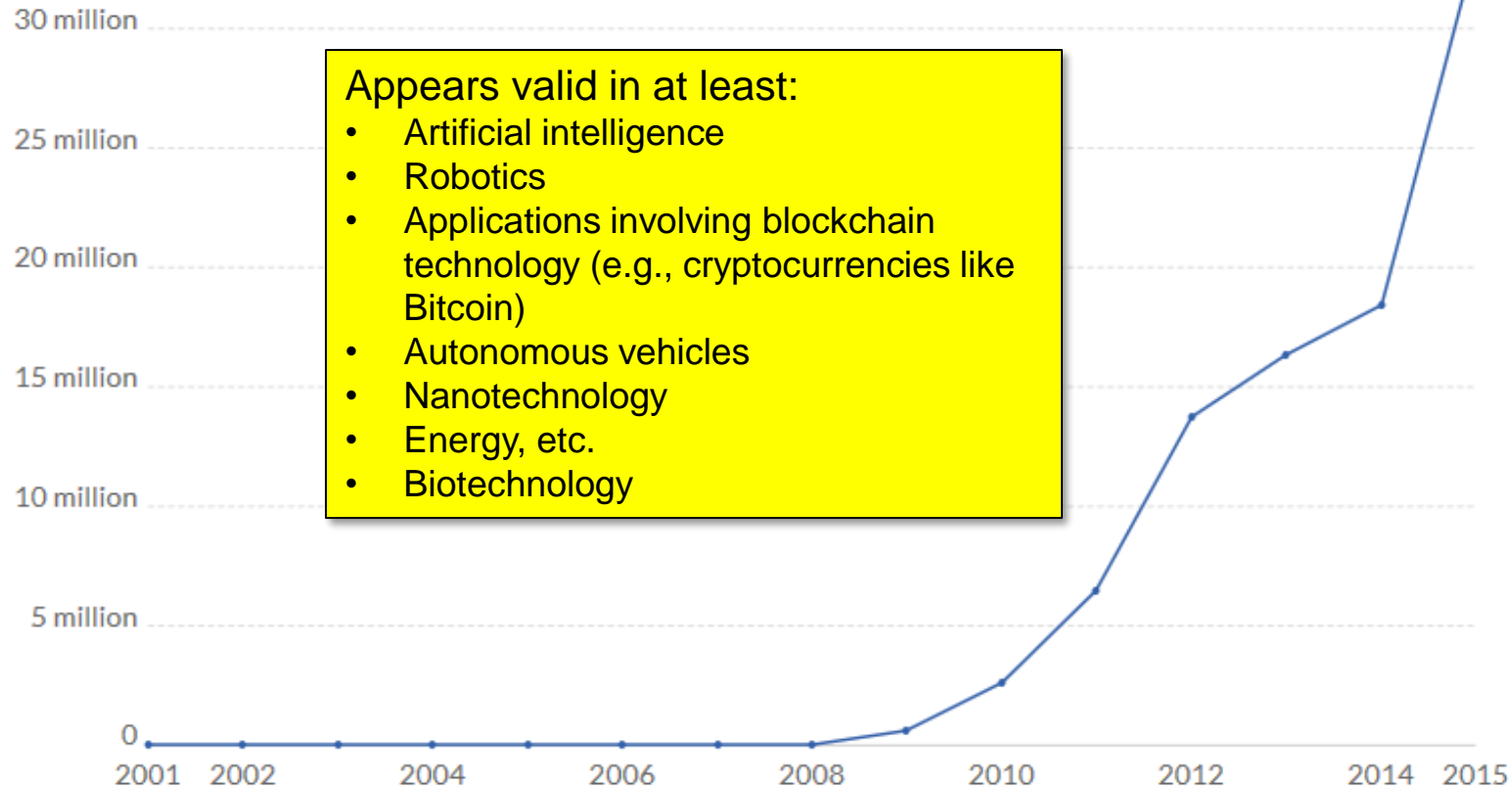
Technological Exponential Growth

Number of human genome base pairs sequenced per US\$

The number of human genome DNA base pairs which can be sequenced for one US\$.

Our World
in Data

LINEAR



Source: NHGRI Genome Sequencing Program (GSP)

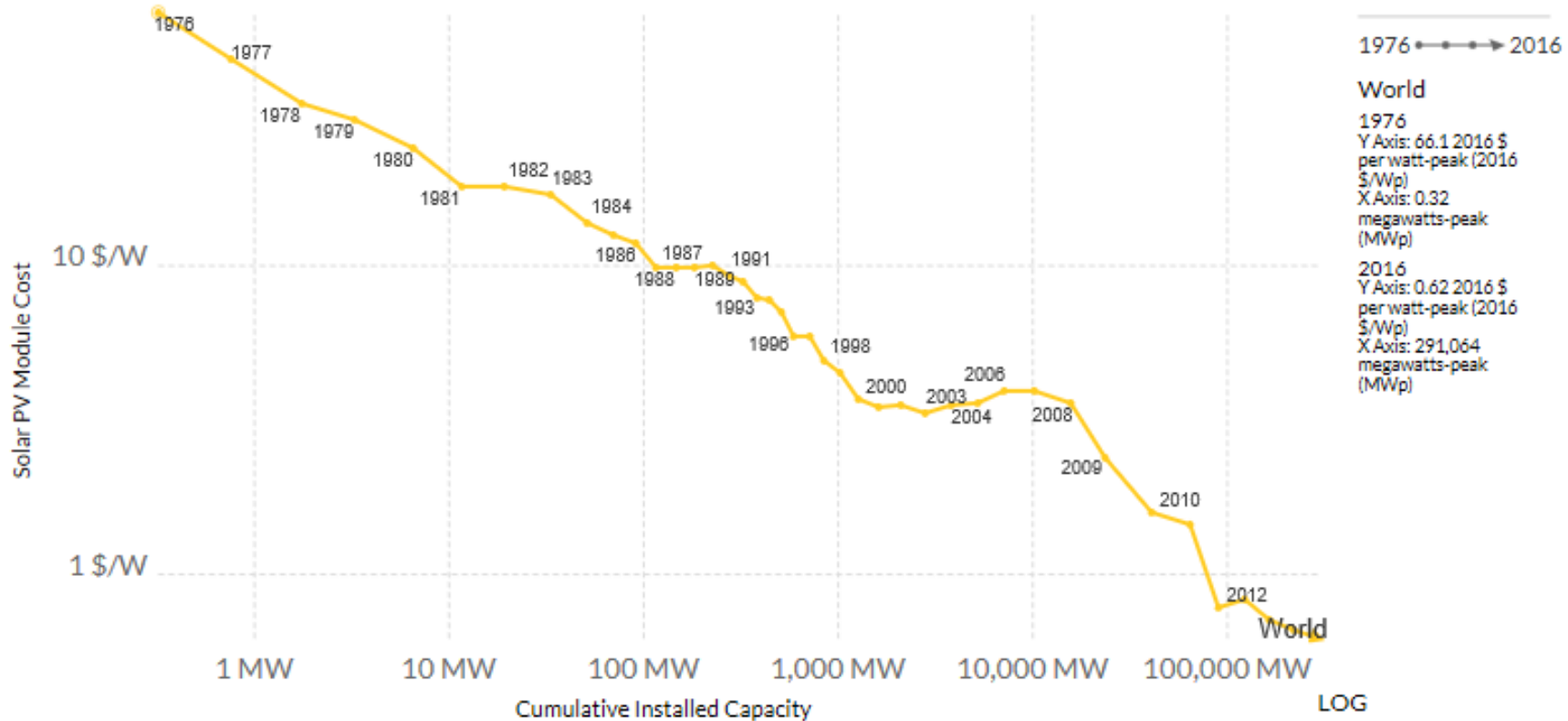
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Solar PV Price Development

Solar PV module prices vs. cumulative capacity, 1976 to 2016

Solar photovoltaic (PV) module prices (measured in 2016 US\$ per watt-peak) versus cumulative installed capacity (measured in megawatts-peak, MWp). This represents the 'learning curve' for solar PV and approximates a 22% reduction in price for every doubling of cumulative capacity.

LOG



Source: Lafond et al. (2017); IRENA; SolarServer

CC BY

Mitigation Tech – from the new Green Technology Book

3D Printed, Plant-
FARMING & FORESTRY > PL

Meat and dairy alternative: dai
Perfect Day

n fermentation



Ventilated facade
Eliane TEC

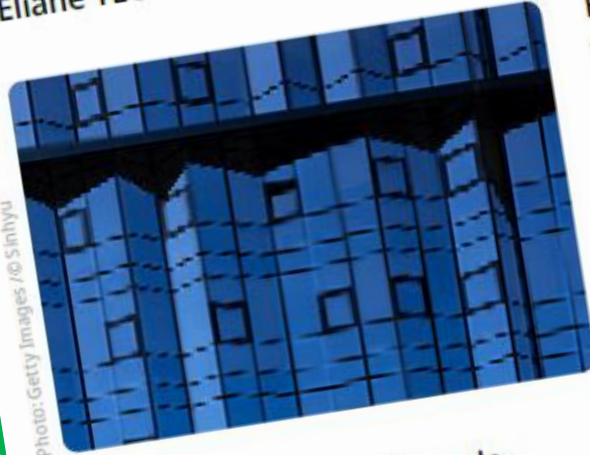


Photo: Getty Images / © Sinihyu

Elia
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Photo: Getty Images / © Sinihyu



Frontier technologies

Clinker substitute: limestone calcined clay cement (LC3)
LC3

A combination of limestone and calcined clay has produced a new type of cement – LC3. The team behind LC3 is focused on the research and testing of Portland cement blend consisting of limestone (15 percent), calcined clay (30 percent), clinker (50 percent) and gypsum. The innovation is in using low-grade clays available in abundance. The most suitable are those available in areas where cement demand is expected to increase the most, that is, tropical and sub-tropical regions. Low-grade clay use would avoid competition for resources with other industries such as ceramics or paper. Pilot projects and testing sites have used LC3 cement in buildings, roads, a check dam and pavements. The company is focusing on bringing the product to market.

- Contracting type: For sale
- Technology level: Medium
- Country of origin: Brazil
- Availability: Worldwide
- Contact: [WIPO GREEN Database](#)

- Contracting type: For sale
- Technology level: Medium
- Country of origin: Switzerland, Cuba
- Availability: Worldwide
- Contact: [WIPO GREEN Database](#)

 EMAIL OWNER

 VISIT WEBSITE

Redefine Meat

Green/Clean-tech Sector

- Greentech and Cleantech often used interchangeably
- Greentech is a diverse range of products, services, and processes which:

Increase:

Efficiency

Performance

Productivity

Decrease:

Pollution

Consumption of
resources

Waste

- Greentech is typically a technology area within environment, energy, transport or climate

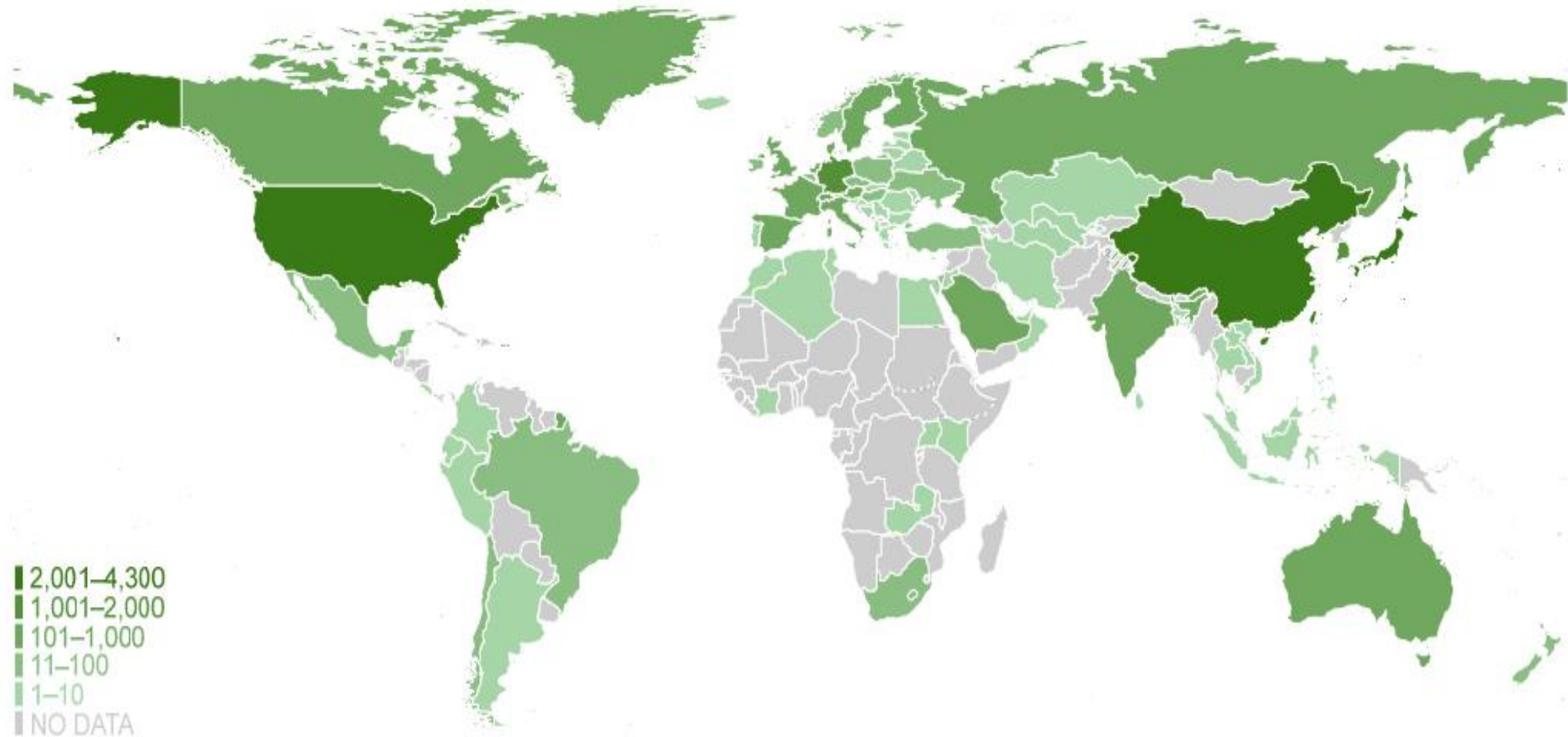


Greentech in multiple sectors

Greentech sectors include, among others:

- Environmentally friendly energy generation and energy storage
- Circular economy (recycling)
- Sustainable water management
- Waste management
- Sustainable mobility and transport
- Resource and material efficiency
- Energy efficiency
- Climate & Environment friendly agriculture

Greentech PCT patent filings 2019



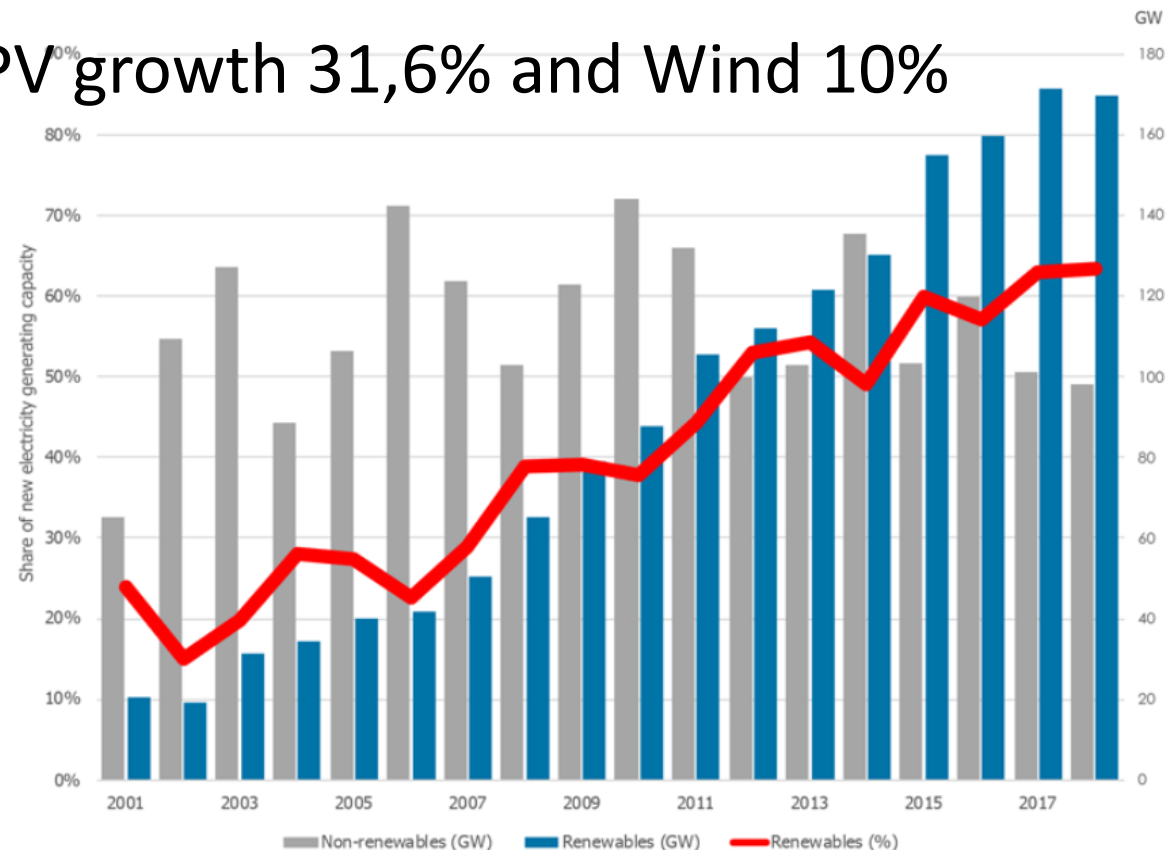
WIPO | GREEN

Source: WIPO IP Statistics Database applying the WIPO International Patent Classification (IPC) Green Inventory

Global Renewable Energy

- 23% of global electricity generation
- Paris accord goal of 37% by 2040
- 2017 2180GW RE capacity. Increase by 8,3%
- Hydro biggest but PV growth 31,6% and Wind 10%

In comparison:
World's largest nuclear plant
close to 8GW cap.
(Kashiwazaki-Kariwa, Japan)
World nuclear cap. ~397GW
(2018)

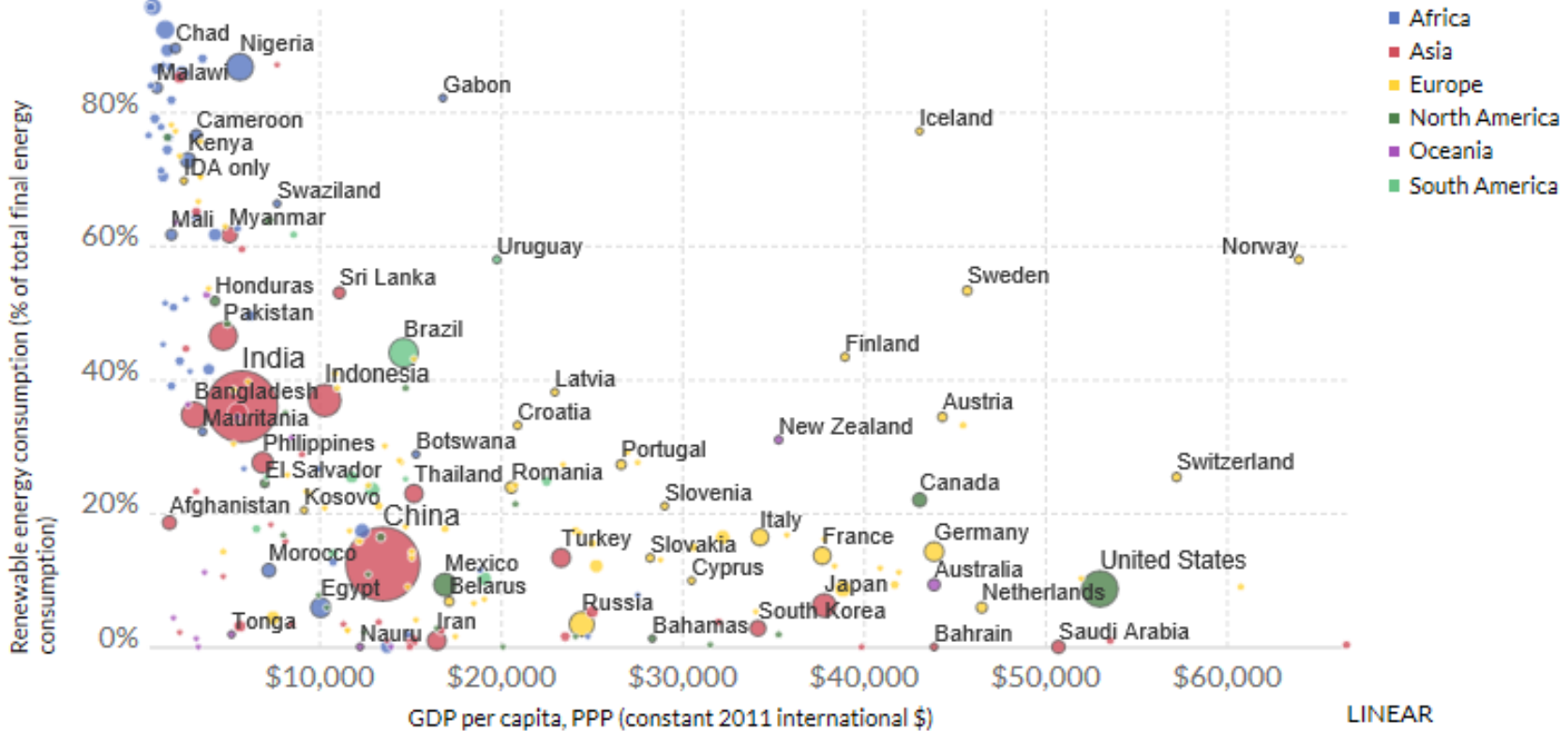


RE and GDP per Capita

Renewable energy consumption vs. GDP per capita, 2015

Renewable energy as a share of total final energy consumption, versus gross domestic product (GDP) per capita, measured in 2011 international-\$. Final energy consumption is inclusive of electricity, transport and cooking and heating. Traditional biomass is included as renewable energy - a primary energy source at low incomes.

Our World
in Data

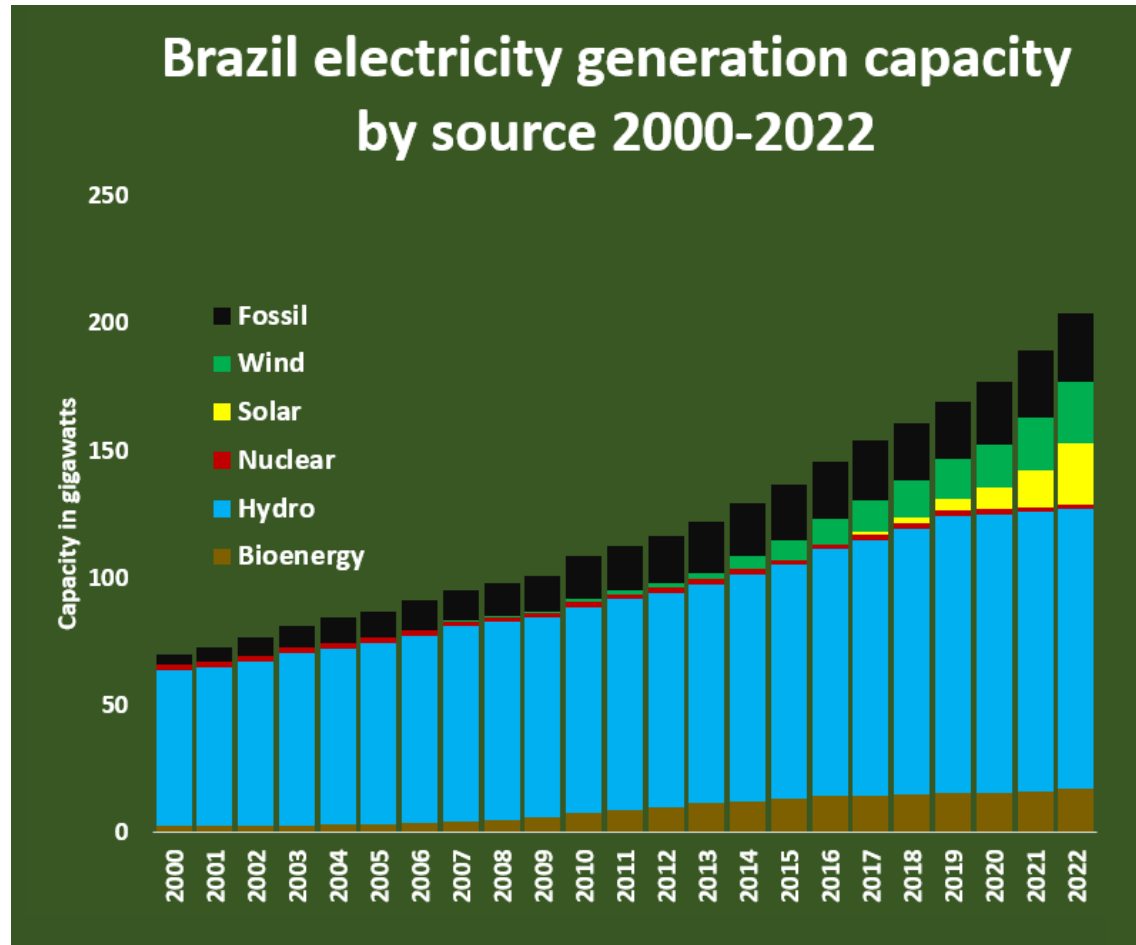


Source: World Bank, Sustainable Energy for All (SE4ALL)

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Energy Efficiency vs. Economic Growth: is it a choice?

The Case of Brazil



Source: <https://www.reuters.com/business/energy/brazil-set-widen-lead-cleanest-major-power-sector-maguire-2023-10-11/>

WIPO | GREEN

The Case of Denmark

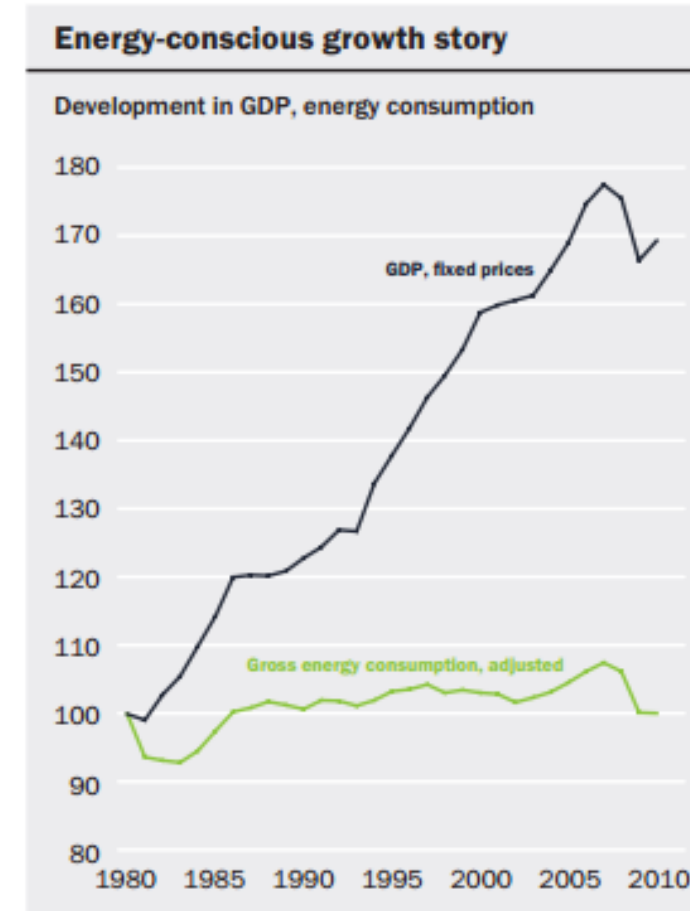
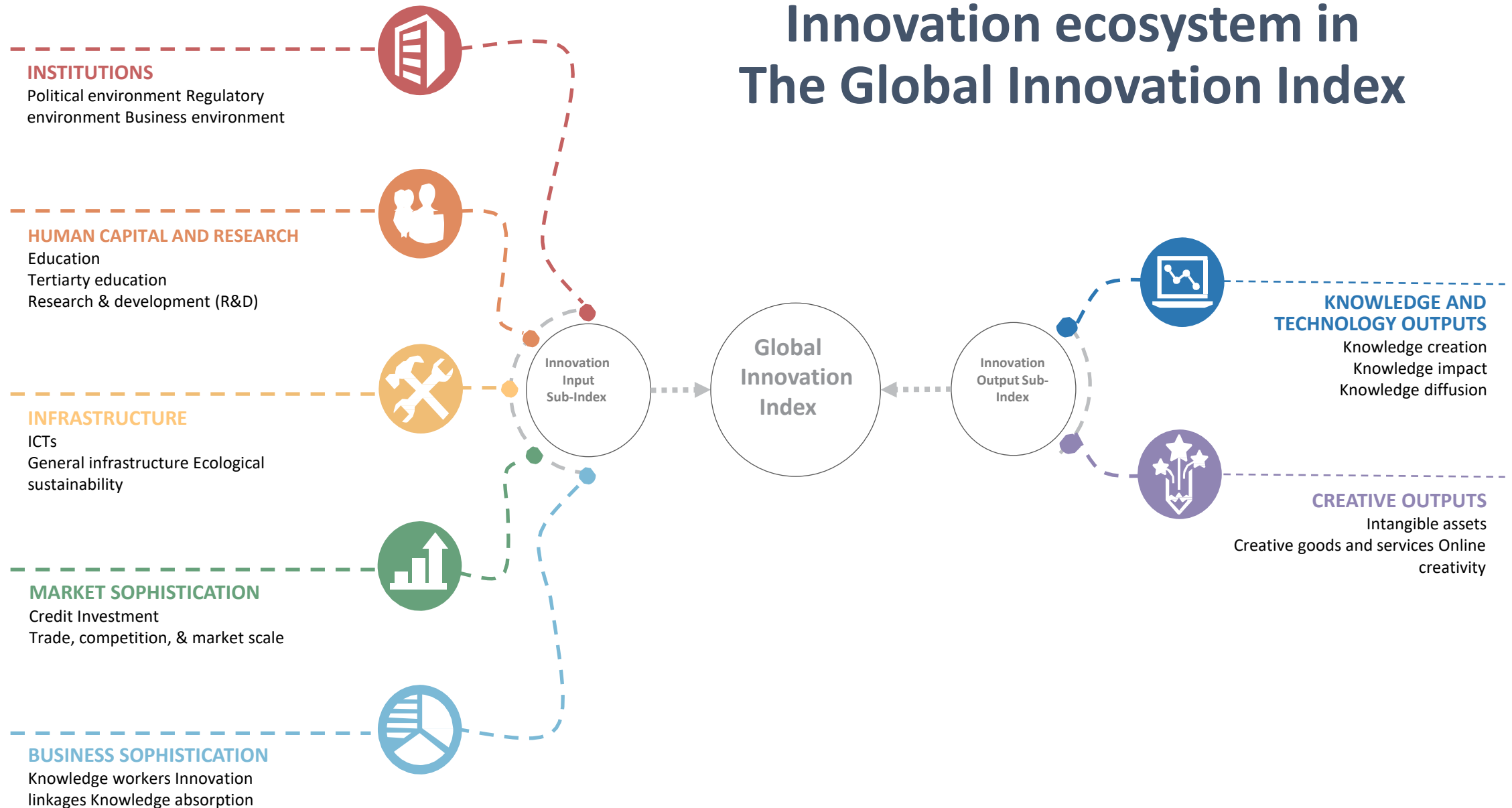


Figure 1: Denmark has cracked the code for sustainable growth.

MM Source: Danish Energy Agency

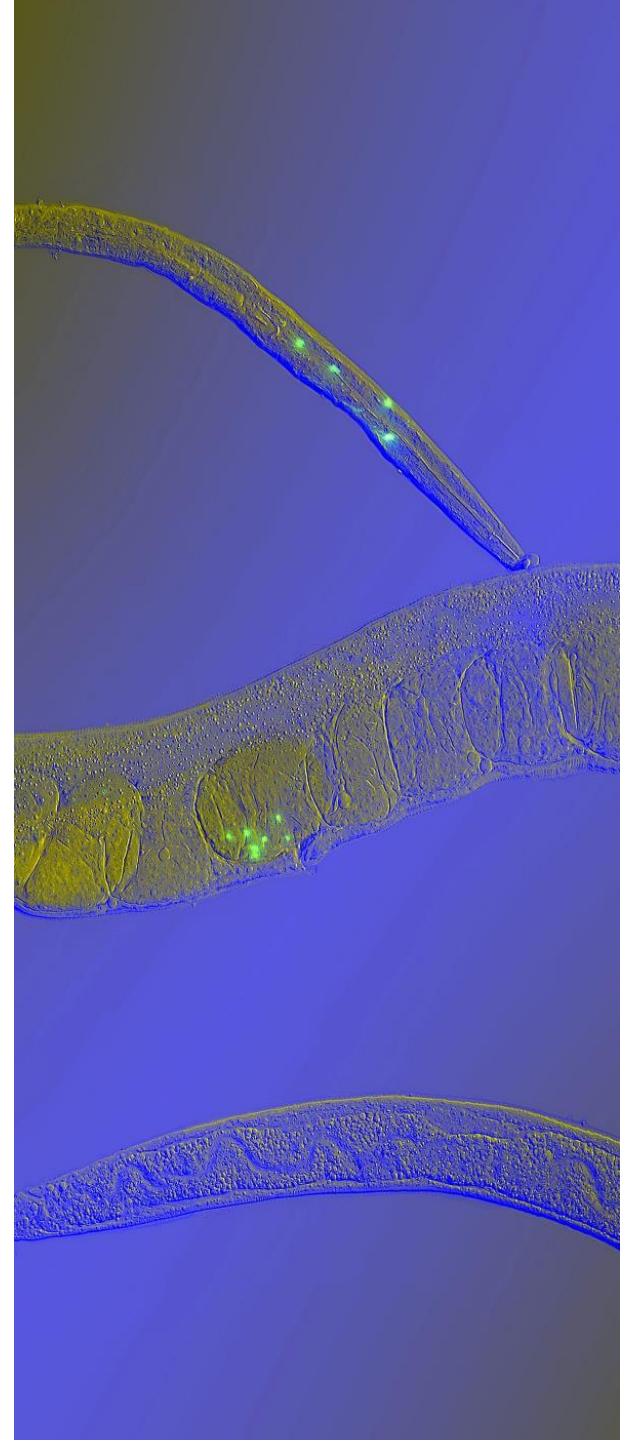
Source: <https://www.nationalbanken.dk/media/ofphc3os/energy-efficiency-and-competitiveness.pdf>

Innovation ecosystem in The Global Innovation Index



The IP system & climate change

- Not so different from other fields, but climate change covers different sectors
- Patent system generates vast amount of technological information
- At the business level, IP can
 - Help protect against imitators, create a distinctive identity for a product/service
 - Create additional revenue streams through licensing.
 - Important factor underpinning collaboration
 - Helps attract investors and partners
- Ongoing debate on role of IP in sustainability



The arguments

- Patents have potential to be barrier to greentech transfer because of exclusionary right conveyed
 - Delayed access
 - Reduced competition
 - Higher costs for technology adopters
- Analogy that greentech is like pharmaceutical industry



The evidence

- Barton (2007) studied diffusion of PV, biofuel and wind technologies in China, India and Brazil and found that patents are mainly filed for improvements; considerable competition within a sector and competition between sector;
- Copenhagen Economics A/S (2009) examined 215,000 patents in developing countries and found that not many patents for greentech in these countries. Barriers:
 - Lack of resources including financial resources, Poor credit access, Inadequate infrastructure required by certain technologies; Unpredictable commercial law, Inadequate legal protection for trade secrets, Lack of skilled workers, Trade barriers including tariffs, High costs of technology agreements;
- Lane (2010) analyzed 9 green technology transfer deals in developing countries and found that IP may have facilitated at least some of them by providing developing country partner with some degree of exclusivity in its home market;
- Branstetter et al. (2006) examined tech transfer within US multinationals in response to IPR reforms that occurred in 16 countries and found that tech transfer to affiliates increased significantly after IPR reforms as measured by royalty payment for transferred technology and R&D spending by affiliates.



Analysis of adaptation technologies from low and middle-income countries (LMIC)

An analysis of 56,041 adaptation technology patents in LMICs* revealed:

- Only 1 out of 10 high-value adaptation technologies developed in LMIC, mainly India and China
- Mainly human health technologies
- 53 adaptation technologies patented in low-income countries vs. 57,781 in high-income countries
- Adaptation inventions geographically concentrated: US, Germany and Japan account for more than half
- Adaptation inventions are increasing (5.83% annually), but the share of adaptation technologies among high-value inventions is moderate

Important note: the study does not capture grassroots activities and implementation of technologies often prevalent in LMICs. The primary objective should be to make adaptation technologies available where they are most needed.

Source: (article under review) Elsen, M., and Tietze, F. (2023). The long tail of climate change adaptation technologies. Version 01 March 2023.

Why WIPO GREEN?

- Innovation & technology are part of the solution
- Many solutions are available, but uptake is too slow
- Lack of information & awareness of available solutions
- Part of WIPO's contribution to the SDGs
- IP crucial for technology development & dissemination
- Collaboration between different actors are key
- Growing demand for green innovation & technology

Our approach

Contribute to technology development and deployment by

- Increasing knowledge
- Connecting stakeholders
- Supporting entrepreneurs

WIPO GREEN

The Marketplace for Sustainable Technology

Network of 150+ partners, from SMEs to Fortune 500 companies



Acceleration Projects

Match technology providers to solution seekers in a particular geographical area or technological domain.



Finance Initiative to contribute to technology development and deployment



WIPO GREEN database



Green Technology Book

A WIPO flagship publication

IPO Green

IP Office's forum for exchange of best practices to support the transition to a green economy



IP Management Clinics

Supports SMEs in developing their IP and business strategies.



WIPO Green Technology Book

1st edition launched at COP27, 2022

Solutions for Climate Change Adaptation

- Close to 1 million unique visitors since launch mid-Nov. 2022
- 25.000 full report downloads
- Strong developing country interest



أكاديمية البحث العلمي والتكنولوجيا
Academy of Scientific Research
and Technology



CLIMATE TECHNOLOGY CENTRE & NETWORK

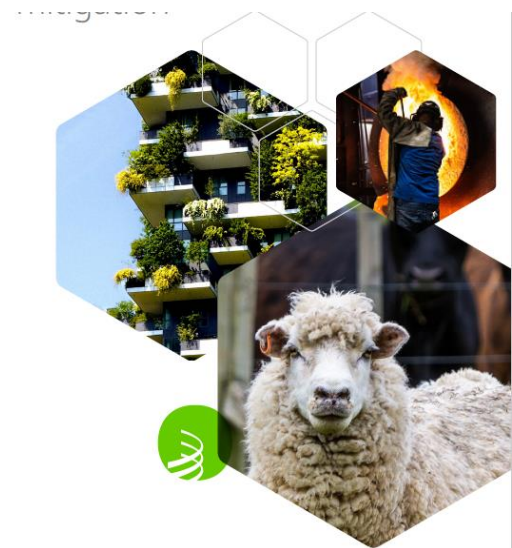
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WIPO

The Green Technology Book

- New annual digital-first WIPO Flagship publication
- The Green Technology Book showcases 200+ technologies
- An active matchmaking tool
- Provides an overview and inspiration for general public
- Solutions for climate change adaptation in:
 - Agriculture & Forestry
 - Water and Coastal Regions
 - Cities
- Solutions for climate change Mitigation in:
 - Agriculture & Land use
 - Cities
 - Industry



<https://www.wipo.int/en/green-technology-book/>

The Green Technology Book shows solutions - a digital first publication



WIPO
Publications / Green Technology Book

Green Technology Book 2022 Solutions for climate change adaptation

Table of contents
Download
Database

The Green Technology Book takes a look at the state of play of green technologies responding to some of the most critical challenges of climate change.

In the 2022 report, we present the technology trends and practical solutions to combat climate-change impact on agriculture and forestry, the water sector and cities.

How can innovative technologies and the intellectual property system help us adapt to climate change?

The Green Technology Book illustrates how healthy innovation ecosystems are generating a wealth of green technology solutions.

Drawing on a rich database of technologies - whether proven, frontier or still on the horizon - the report offers practical and inspiring examples of green technologies that can help people adapt to the reality of climate change.

Executive summary

Daren Tang
WIPO Director General

We should take encouragement - and inspiration - from the sheer range of transformational tools to help communities adapt to climate change.

Climate-change adaptation, technology and innovation

Chapter 1
Climate change adaptation and technology

Chapter 2
Innovation and transfer of solutions

Green technology solutions to our changing environment

Chapter 3
Agriculture and forestry

Chapter 4
Water and coastal regions

Chapter 5
Cities

The future of climate-change adaptation

Chapter 6
Conclusion and recommendations

Share this content

3 Technology areas: Agriculture & Forestry Water and Coastal Regions, Cities



Chapter 5 Cities

Today, over half the world lives in cities, and the number is growing. Climate impacts such as heatwaves, floods and extreme weather events are becoming more intense and frequent. Urban areas have been hit hard. As cities look toward increasing their preparedness and capacity to adapt, technologies are offering part of the solution.



From cooling buildings, rainwater harvesting, protecting critical infrastructure to warning residents about a flood, this section showcases some well-established solutions. It also introduces technologies as yet on the horizon, and presents examples of innovative ways of using technology for climate adaptation. Nature-based and engineered solutions all have their important role to play.

Explore technologies



16 Technology sections



Chapter 5. Cities

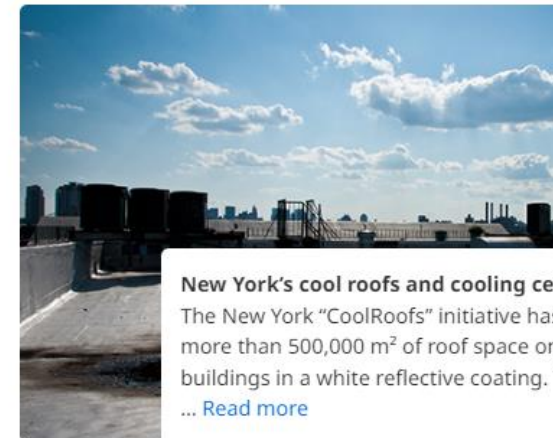
Buildings

Heatwaves are associated with increased mortality and health risks. The impact will be greatest on cities compared to rural areas due to the heat island effect. The need for buildings to offer heat relief has accelerated innovation in cooling technologies. At the same time, buildings themselves must stay protected from climate-related hazards such as floods.



©

Innovation examples



Proven technologies ▾

Examples and Proven, Frontier & Horizon groups



- Table of contents
- Download
- Database

Innovation example: Singapore's "Garden City"
A strong rise in economic prosperity triggered tall and densely built architecture in Singapore. The city started profiling itself as a "Garden City" ... [Read more](#)

New York's cool roofs and cooling centers
The New York "CoolRoofs" initiative has covered more than 500,000 m² of roof space on city buildings in a white reflective coating. The ... [Read more](#)

Proven technologies ^

g
cated rainwater
ited Kingdom. The
nd residential

Building envelope waterproofing and foundation drainage
A drain is installed along the foundation of a building to collect excess groundwater and drain it away from the building. Nilex's NuDrain Sheet ... [Read more](#)

Double- and triple-paned windows with insulating gas
Among the window products provided by the company SSG, the DuraComfort comprises two or more layers of insulating glass units with a cavity between. ... [Read more](#)

Frontier technologies ^

Mediterranean seagrass as insulation
Natural alternatives to synthetic insulation

Thermocrete concrete with cooling effect
Thermocrete is a concrete mixed with Therm



Individual solutions



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3. Agriculture and forestry / Irrigation / Proven technologies

Smartphone control of alternative energy powered irrigation system

TECH-INNOV NIGER



The founder of the Tech-Innov company, Abdou Maman, has developed a remote-controlled irrigation system adapted to the semi-arid conditions of Niger in West Africa. It introduces the concepts of digital farms and tele-irrigation in support of agricultural development in the country. The company provides farmers with tools enabling them to move away from manual watering and reduce water waste. The system uses mobile devices so farmers can manage irrigation remotely and efficiently. It also integrates hydraulic and meteorological data so farmers can optimize water usage.

- Contracting type: For sale
- Technology level: Medium
- Country of origin: Niger
- Availability: Niger

WIPO



4. Water and coastal regions / Marine ecosystems / Proven technologies

Artificial reefs

Reefmaker



Reefmaker's patented process for artificial reefs uses Florida limestone. This soft rock matches the pH levels of the ecosystems targeted and provides a good substrate for marine life, allowing it to grow naturally. The limestone is attached to a concrete structure in a sloping design to ensure durability while increasing surface area for reef. A special deployment vessel equipped with cranes has been designed for accurate placement of the artificial reefs out to sea. In addition to coral reef restoration, the limestone reefs can also be used for oyster reef restoration, wave attenuation and erosion control. Structures can be designed to fit along the length of permanently fitted vertical poles attached to the sea bed. The aim is to keep the concrete proud of the marine floor and firmly retain the artificial reefs during extreme events like hurricanes. More than 50,000 reefs have been deployed along the US coast.

- Contracting type: For sale
- Technology level: Medium
- Country of origin: United States
- Availability: United States

WIPO



5. Cities / Infrastructure and services / Proven technologies

Decentralized water treatment and storage systems

Fluence Corporation



Resiliency in water infrastructure can be enhanced through decentralized water treatment and storage systems. Treating water at point of use can make water treatment more fit for purpose and effective compared to treating all water to a potable standard. Also decentralized water storage could be used for river flow management, irrigation or in emergency situations. Fluence is a company that provides modular, decentralized water and wastewater treatment solutions for remote locations. Water treatment systems are built into steel shipping containers. Transportation and site preparation is easy and installation quick. The technology has been developed for use in resorts and recreation sites. But similar solutions could potentially be used in emergency situations. For example, storms and hurricanes where central water supplies may be damaged or contaminated.

- Contracting type: For sale
- Technology level: Medium
- Country of origin: United States
- Availability: Worldwide

Direct link to the WIPO GREEN Database



Smartphone control of alternative energy powered irrigation system

FARMING & FORESTRY > IRRIGATION



Description Benefits Other Information

[Log in for access to additional information and attachments](#)

ID	147519
Owner	TECH-INNOV NIGER
Uploaded by	WIPO GREEN Admin
Type	Technology
Source	User uploads
Published	Oct 13, 2022
Updated	Oct 29, 2022

Remote-controlled irrigation system to manage irrigation remotely and efficiently.

The founder of the Tech-Innov company, Abdou Maman, has developed a remote-controlled irrigation system adapted to the semi-arid conditions of Niger in West Africa. It introduces the concepts of digital farms and tele-irrigation in support of agricultural development in the country. The company provides farmers with tools enabling them to move away from manual watering and reduce water waste. The system uses mobile devices so farmers can manage irrigation remotely and efficiently. It also integrates hydraulic and meteorological data so farmers can optimize water usage.

 EMAIL OWNER  VISIT WEBSITE
TECH-INNOV NIGER

Green Technology Book

WIPO GREEN Database Collection



Green Technology Book - Climate Change Adaptation



Green Technology Book - Climate Change Mitigation - next edition for release in 2023



Database collection - Mitigation















Soils, land use change and forestry



Healthy soils contain large reservoirs of carbon. This can be maintained and increased to act as a carbon sink or it can be released when soils are cultivated unsustainably. Land use affects carbon emissions. Conversion of forests to fields and fields to built-up areas all have impacts.

PROVEN
FRONTIER
HORIZON

 <p>Agrivoltaics: Solar Panels on Farm Land</p> <p>Solar Edge</p>	 <p>Biochar Production from EFB</p> <p>Agricultural Environmental Research Inst...</p>	 <p>Mix of cover crops in no-till in organic vegetable...</p> <p>Universidade Federal Rural do Rio de Jan...</p>	 <p>Soil Microbiology</p> <p>Duverde Eco Soluções</p>	 <p>Farmer Manager Natural Regeneration</p> <p>Farmer Manager Natural Regeneration</p>	 <p>Quantifying on-farm greenhouse gas emissions and s...</p> <p>The Cool Farm Alliance</p>
 <p>COMET-Farm: A Whole Farm and Ranch Carbon and GHG ...</p>	 <p>Calculating greenhouse gas emissions using IPCC me...</p>	 <p>Produce Organic Grade Fertilizer, Soil Conditioner...</p>	 <p>Regenerative agriculture certificate</p>	 <p>Implement for small family farms.</p>	 <p>Biostimulant to improve plat and soil health</p>

WIPO GREEN Database a central tool

- Free UN-based public database
- Major repository of innovative green technologies and needs
- Automatic matchmaking
- 129.000 articles
- 3900 user uploads
- Simple registration and upload
- No fees
- Integrated experts database
- No fees
- Search “WIPO GREEN” and go to the database

The screenshot shows the WIPO GREEN Database website. At the top, there is a navigation bar with links for Partners, Resources, IPO Green, About, Contact, and Register. Below this is a search bar with the text "Search WIPO GREEN Database" and a "Simple" dropdown menu. To the right of the search bar is a "Search" button with a magnifying glass icon and a "Full Text Search" button. Below the search bar is a "Register" button.

The main heading is "WIPO GREEN Database of Innovative Technologies and Needs". Below this is a paragraph describing the database: "The WIPO GREEN database is a free, solutions oriented, global innovation catalogue that connects needs for solving environmental or climate change problems with tangible solutions. The database consists of user uploads of needs and solutions, green technology patents from the WIPO Patentscope database, imports from select partner organizations, relevant knowledge material, and relevant expert profiles. Some of the unique features of the database are: Always-on AI-assisted auto-matching, user uploads tracing and alerts, full-text search for solutions based on long need descriptions, and the PatentSolution search function for finding commercial applications of a patent. Free registration is required for uploading. Please help us by [letting us know](#) if you have initiated contacts or technological transfer agreements or similar through use of the database."

Below the description are seven icons representing different sectors: ENERGY, WATER, FARMING FORESTRY, POLLUTION WASTE, TRANSPORTATION, PRODUCTS MATERIALS PROCESSES, and BUILDING CONSTRUCTION.

The "Collections" section is titled "Collections" and has a sub-heading "Collections group needs and technologies from WIPO GREEN Acceleration Projects and other activities. WIPO GREEN Acceleration Projects actively identify pertinent needs within specific climate change, food security, and environmental issues in a country or region as well as potential innovative green solutions." Below this are six collection cards:

- Sustainable textiles**: Environmentally friendly textile and accessory production can make a difference in the fashion industry. (Image: white fabric)
- Green Technology Book Full Collection**: The new WIPO flagship publication showcases climate change technologies. Upload to the database to become part of the collection. (Image: book cover)
- China Cities**: Acceleration project in China seeking solutions to environmental needs in cities. (Image: city skyline)
- Feeding 9bn**: Ideas for how innovation can help feed the more than 9 billion people forecast to inhabit earth by 2050. (Image: wheat field)
- LAC Climate Smart Agriculture**: Our Latin America Project focusing on precision in Brazil, sustainable agriculture and forestry in Argentina and Peru, and wine producers in Chile. (Image: vineyard)
- POME Indonesia**: Acceleration project in Indonesia on technology solutions for treating Palm Oil Mill Effluent (POME). (Image: green landscape)

The "Experts" section is titled "Experts" and has a sub-heading "The database contains profiles of relevant experts. Experts in many different fields can be found and they will also appear in searches. They can be contacted for provision of services. Some also offer limited pro bono services. Below are some of the most recently added expert profiles. Expert profiles are provided by the experts themselves." Below this is a list of expert profiles.

The screenshot shows the "LATEST ENTRIES" and "FEATURED ARTICLES" sections of the WIPO GREEN Database website. The "LATEST ENTRIES" section has a heading "LATEST ENTRIES" and a "More..." button. It lists several entries with dates and titles:

- Nov 29, 2023**: Bio-stimulant/ Plant Stress Reliever/ Food Converter/ Plant-Based Wastes to Bokashi Compost Activator. This green innovation relates to a darkish b...
- Nov 19, 2023**: Automated Sewer Inspection Robot (ASIR). EnviroDan focuses on water resources, supply...
- Nov 19, 2023**: Green Bus Stops Against Heat Island Effect. Amphi Consult addresses urban heat islanda...
- Nov 19, 2023**: Digital Flood Monitoring. WSP provides digital monitoring systems to...

The "FEATURED ARTICLES" section has a heading "FEATURED ARTICLES" and a "More..." button. It lists several articles with dates and titles:

- Aug 17, 2023**: Development of rice resistant to iron deficiency (Fe) is a critical agricultural...
- Apr 17, 2023**: Efficient Bioremediation Technology of ... Break through the continuous ultra-fine...
- Apr 13, 2023**: Imec® - Growing Vegetables with Less Wa... Mebiol, Inc. has invented a film called "Ime...
- Nov 6, 2022**: Potato varieties for mid-altitude, semi-hum... Saharan Africa, focusing on heat, drought... Bringing potato to non-traditional agro-ec...

Simple keyword search

Home Database Projects Partners Resources IPO Green About Contact Register

Search WIPO GREEN Database

Filter << Quick Filters

Search in filters

Reset all

Green Technology Book (621)

Source

- Patentscope (124226)
- User uploads (4212)
- AUTM (818)

Type

- Technology (128529)
- Need (391)
- Expert (291)
- Knowledge material (45)

Transportation (25538)

Energy (56596)

Water (3281)

Farming & Forestry (13111)

Pollution & Waste (17769)

PRODUCT, MATERIALS AND PROCESSES > BIO BASED PRODUCTS

Bio cement using urine and industrial waste

By harnessing waste materials exclusively, scientists at NTU have developed an alternative to conventional cement.

This innovative bio cement is already undergoing trials to fortify the concrete. It has achieved this breakthrough by utilizing two commonplace waste materials.

TRL3-4 TRL5-6 TRL7 TRL8

POLLUTION & WASTE > CARBON CAPTURE & STORAGE

DAC cement plant

Climeworks has pioneered the world's inaugural direct air capture and storage (DAC) groundbreaking facility. Climeworks has unequivocally demonstrated the technology under authentic conditions.

Comprising 18 CO₂ collectors, the facility collectively sequesters 1,000 tonnes of CO₂ annually.

TRL3-4 TRL5-6 TRL7 TRL8

PRODUCT, MATERIALS AND PROCESSES > IMPROVED MATERIALS

Catalytic scrubber for cement plant

Significant advancements in catalytic scrubbing technology within the cement industry have made it a dependable and indispensable solution within the cement industry, and its integration has become so integral that envisioning our future without it is challenging.

Catalytic denitrification offers an added and noteworthy benefit.

TRL3-4 TRL5-6 TRL7 TRL8

WIPO | GREEN
The Marketplace for Sustainable Technology

Home Database

Filter << Quick Filters

Search in filters

Reset all

Green Technology Book (621)

Source

- Patentscope (124226)
- User uploads (4212)
- AUTM (818)

Type

- Technology (128529)
- Need (391)
- Expert (291)
- Knowledge material (45)

Collections

- Transportation (25538)
- Energy (56596)
- Water (3281)
- Farming & Forestry (13111)
- Pollution & Waste (17769)

Product, materials and processes (10912)

Building & Construction (13528)

Company

Country / Territory

Developed in

Deployed in

Type of technology

Type of collaboration sought

Major environmental benefits

Type of technology transfer

Type of finance

Office

Fields of Expertise

Publication date

Featured

- Thumbnails, sorting, book

Details of a technology or need

Database Projects Partners Resources IPO Green About Contact Register

TestAgro NutriCheck Max

FARMING & FORESTRY > FARMING TECHNOLOGIES

EN Home Shop All Resources Search for... Log In

Growers & Agronomists Measure

Description Benefits Other Info

Message* Maximum 4000 characters

From

Name: WG WIPO GREEN Admin
Email address: wipogreen.admin@wipo.ir
Company Name: WIPO GREEN Admin

Cancel Contact the provider

Some of Our Clients

Federal Stoller Saint Mary's University AXIOS RESEARCH

Have you initiated contacts or technological transfer agreements? The WIPO GREEN database is a free resource, but please help us by [letting us know](#) the database.

ID	148636
Owner	Teste Agro
Uploaded by	BioActiva
Type	Technology
Source	User uploads
Published	Sep 5, 2023
Updated	Sep 5, 2023

EMAIL OWNER VISIT WEBSITE

Teste Agro

Patent2Solution

AI-assisted search for commercial applications of a patent

CONTROLLING THE SYNTHESIS GAS COMPOSITION

POLLUTION & WASTE > RECYCLING & REUSE

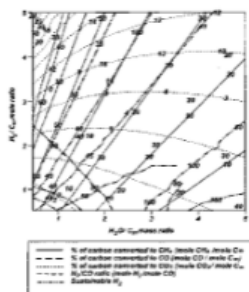


Fig. 7

Description Details Other

An improved, economical alternative accomplished by a combination of the feedstock for the SMR by reforming, condensation removal, temperature above the boiling point embodiment, a method is provided by adjusting the hydrogen feed at SMR.



Patent2Solution

ID 52432
Applicant THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
Uploaded by WIPO GREEN

Patent2Solution

Patent2Solution is a unique search function providing links to commercial sites which may be related to the patent chosen. It appears but due to the variety and complexity of patents, it may not always produce useful results. The emphasis is on providing a commercial likelihood of finding an exact match decreases.

Patent2Solution is developed by WIPO GREEN and is provided for assistance only. Feedback on how you use this function and write to info@wipogreen.int.

Disclaimer

Hyperlinks to other websites are provided as a convenience only, and imply neither responsibility for, nor approval of, the information contained either express or implied, as to the accuracy, availability, reliability or content of such information, text, graphics and hyperlinks. WIPO has no representations as to the quality, safety, reliability or suitability of such software.

Results related to [CONTROLLING THE SYNTHESIS GAS COMPOSITION OF A STEAM](#)

Editable keywords used:

CONTROLLING SYNTHESIS GAS COMPOSITION STEAM petroleum engines resources

(54) Total results

Page 1 of 6 << < 1 2 3 4 5 >>

regents.universityofcalifornia.edu >

[UC Regents](#)

Board of **Regents** ... On August 20, Governor Newsom appointed Jose Hernandez as a **UC Regent**. **Regent** Hernandez is the president of the

[en.wikipedia.org > wiki > Regents_of_the_University_of_California](https://en.wikipedia.org/wiki/Regents_of_the_University_of_California)

[Regents of the University of California - Wikipedia](#)

Regent Richard C. Blum, financier and husband to Sen. Dianne Feinstein, currently serves on the board of **regents'** Investment

[regents.universityofcalifornia.edu > about > index.html](https://regents.universityofcalifornia.edu/about/index.html)

[About the Regents | Board of Regents](#)

The **University** is governed by **The Regents**, which under Article IX, Section 9 of the **California** Constitution has "full powers of

[www.universityofcalifornia.edu > subject > term > uc-regents](https://www.universityofcalifornia.edu/subject/term/uc-regents)

[UC regents | University of California](#)

The University of California Board of Regents appointed Michael V. Drake, M.D., as the 31st president of UC Berkeley.

Acceleration projects

- Matchmaking projects with specific geographical scope and local partner implementation
- Active and focused matchmaking
- Identify needs and propose solutions
- Specific subject and location
- Work through local consultants
- Act as technology agent for need owners
- Matchmaking events as relevant
- Database is a central tool

- Active projects in:
 - Latin America (Argentina, Brazil, Chile and Peru, Uruguay)
 - China;
 - Indonesia;
 - Tajikistan (with CCAEEC)



Indonesia

- Technological Options for Treatment & Valorization of POME
- Methane capture, biogas, solid separation for fertilizer, biochar, biodiesel, biohydrogen etc.
- 19 needs & 24 technologies
- Solutions oriented technology catalogue
- 3rd phase (2023) has added dimension on policy and raising awareness for POME amongst government and certification schemes



LAC Climate Smart Agriculture project

- Argentina, Chile, Brazil, Peru, Uruguay
- Funded by FIT Japan
- Needs:
 - Irrigation
 - Pest & disease
 - Renewables
- 228 uploads to database, 72 needs and 156 technologies
- 16 connections, 17 matches and 2 deployments in Argentina



China Cities

- Beijing focus
- Targets environmental issues in large cities
- 68 uploads: 59 technologies and 9 needs
- Implemented in partnership with Bluetech Clean Air Alliance (BCAA)
- Development of 'service' package with partners to facilitate deployment of green technologies



Deployment #1: Composting Facility

Lake View Hotel, Beijing

"Company looking for on-site high-temperature aerobic restaurant kitchen waste resource treatment equipment, which needs to be able to realize harmless, resource and reduction treatment of restaurant kitchen waste from the source."

SINOENC Engineering Technology Co., Ltd.

Full process clean composting solution. The organic waste is treated by aerobic fermentation, the material reduction rate is more than 90%, and the output material is uniform and odorless. All the indexes meet the standard of "Organic Fertilizer".



Deployment #2: management of EV charging

Beijing Century City Property Management Co., Ltd.

"Increasing demand of community residents for charging installation is in great contradiction with the insufficient distributable capacitors. To meet the charging demand of residents and ensure a safe charging process, we urgently need to find a set of solutions that can effectively allocate power load."

Beijing ShijiYunan New Energy Co., Ltd.

Community Flexible Smart Charging Solution

A charging management platform that makes full use of the existing remaining capacity of the community. This avoids installation of new, costly charging capacity



Need

Solution

Catalogues – widespread inspiration for others



GREEN TECHNOLOGIES

Dealing with the negative effects of climate change in the Chilean wine industry

Annex-1: Identified needs and seekers

In this section of annexes, the identification of needs expressed by each vineyard that is part of this catalog is presented.

Optimization of water resources

Loncomilla Winery Cooperative
The cooperative works based on dry land vineyards, which only receive water from rainfall, and where the rains have drastically decreased. This climatic effect impacts the profitability of the vineyards, affecting the production of grapes per hectare by 30-40%. The scarce existing water resource needs to be optimized.



Image: Wineries and offices of Loncomilla wine cooperative. Source: Loncomilla Winery Cooperative

Alternatives to handling phytosanitary product containers that impact the environment

OAstaburuaga Family Wines

The law in Chile obliges to carry out a triple washing of the phytosanitary product containers because they can have a great impact on the environment and at the same time present an impact on public health because they are considered hazardous waste.

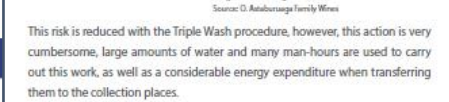


Image: O. Astaburuaga Vineyards. Source: O. Astaburuaga Family Wines

Lack of water and decrease in cold hours

OAstaburuaga Family Wines
Climate change has led to countless events that have altered the ecosystem but also the behavior of plants. Thus, the lack of rain and decrease in cold hours, increasingly, affect the production and grape, which considerably reduces the yields of the vineyards.



Image: O. Astaburuaga Vineyards. Source: O. Astaburuaga Family Wines

Reuse of winemaking process waste

OAstaburuaga Family Wines

Different types of waste are generated in the winemaking process. Some are reused, as is the case with riles, and grape seeds, which are separated and used only for compost. However, its degree of reuse is low and there are also other wastes that could be given a higher value.



Image: O. Astaburuaga Family Wines. Source: O. Astaburuaga Family Wines

Nanoenvi® AG
138862

Nanoenvi® AG is a device designed for remote data capture and transmission in precision agriculture applications. The Nanoenvi® AG devices allow the creation of wireless agricultural resources in real-time due to their cloud connection. These networks bring greater control to farms by managing to control diseases, regulating the application of plant protection products, making efficient use of water in irrigation, and, in general, optimizing resources. Nanoenvi® AG is compatible with various types of sensors, such as: meteorological (temperature, humidity, pressure, rain, solar radiation), gases (for example, H2S, CO, CO2, SO2) or agricultural (leaf moisture, soil pH, dendrometers, among others). This allows measuring a wide range of variables of interest in agriculture. Through this wireless sensor device connected to the cloud, the person in charge of the farm knows its status in real-time from his computer, mobile phone, or tablet, so he can make immediate decisions to improve the productivity of his crops and, therefore, its profitability. The device works with an energy harvesting system (with solar panel) and is installed both outdoors and indoors.

SERVICES OFFERED:

- Development of Smart Agro solutions to monitor innovative agricultural and livestock farms, which incorporate all types of sensors to suit the needs of each customer.
- Training
- Maintenance
- Calibration to ensure traceability according to national or international standards.
- Evaluation of air quality data
- Development of specific software for data acquisition, exploitation, and analysis

BENEFITS:

- Improve the quality of wines through predictive models, utilizing digital technologies that allow to increase productivity, reduce risks and reduce costs by improving crop prediction, yield, and irrigation prediction and management.
- Through the use of Nanoenvi® AG and the information it provides, it is possible to:
 - Improvement of soil quality and fertility.
 - Pest control.
 - Better management of resources.
 - Crop quality optimization.
 - Increased productivity.
 - Risk reduction.

NETAFIM
138861

NetBeat™ is Digital Farming's solution to enable automated irrigation, fertigation, and crop protection. It allows easy monitoring, analysis, and irrigation control from anywhere. NetBeat™ permanently receives data coming from the field and weather stations (temperature, humidity, radiation, and wind, among others). There is a better understanding of what is happening, to make more precise use of inputs and increase output. It has Dynamic Crop Models™ that generate customized daily irrigation strategies for crops, to make the right decisions. The interface of NetBeat™ was developed taking into account real farmers. The NetBeat software™ gives farmers the ability to manage their daily activities from their smartphones while giving them access to a super-computing brain with multiple benefits.

SERVICES OFFERED:

- Satellite services as follows:
 - ADNet: Agronomy at the service of irrigation design
 - IDNet: Irrigation diagnostic
 - BIONet: Monitor a crop for a defined period
 - GEONet: Asses the agronomic potential of a future farm
 - Technical assistance
- NetBeat™ facilitates the saving of water in the fields, allows to irrigate them efficiently, and also increases the productivity and the quality of the plants. The system delivers smart recommendations that help farmers save on productive costs and achieve higher yields.
- NetBeat™ allows:
 - Get accurate irrigation recommendations from Dynamic Crop Models™
 - Obtain information in real-time from multiple sources: field sensors, external data sources (weather, satellite images).
 - Protect data with high information privacy standards. NetBeat™ is compliant with the General Data Protection Regulation (GDPR).
 - Identify and alert anomalies found.
 - Provide supercomputing capacity for analysis and reporting.
 - Smart irrigation for all, because of its advanced modular solution suitable for use from advanced corporate farms to small producers.

DEVELOPED IN: Israel
PREFERRED REGIONS: Global
<https://www.netafim.com/digital-farm>

BENEFITS:

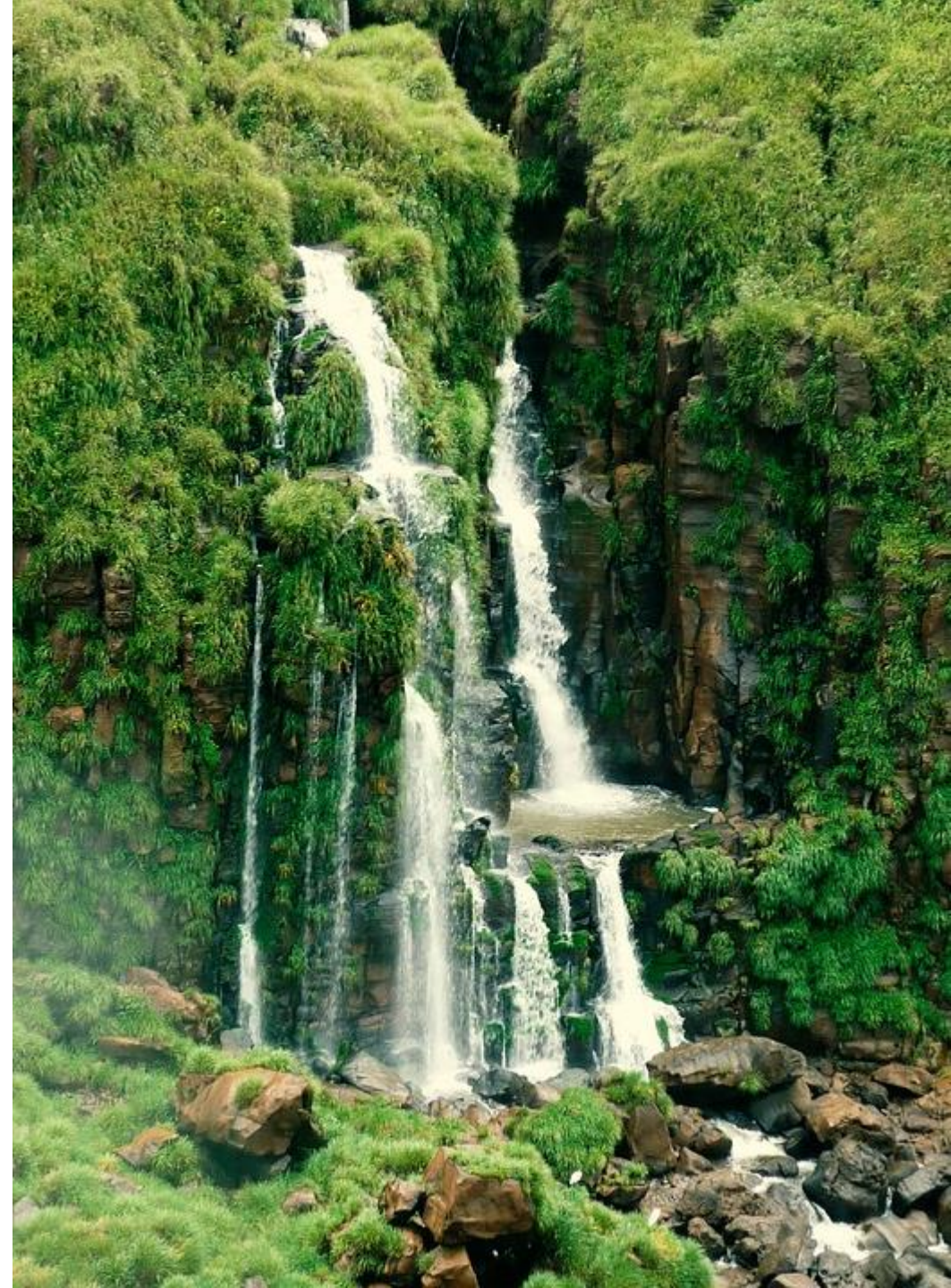
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Acceleration Projects Solutions catalogues



WIPO GREEN Finance Initiative Phase II take-aways

- Areas for action established
 - Project financing
 - Green tech development
 - Green tech deployment
- Better understanding of financial needs in our community: Acceleration Projects and database - diverse needs, some need broader support than just connection with investor;
 - Gaps with regard to entrepreneurs' knowledge
 - Gaps with regard to funding sources in some countries
- New contacts with financial organizations;
- Better understanding of the possible avenues for WIPO GREEN to become active



IPO Green

- Connecting national IP offices to support green technologies and innovation;
- **13** initiatives identified (available in English, French + Arabic). Among them:
 - Fast-tracking mechanism;
 - Green data analysis;
 - Financial support for green patent applications;
- **17** webinars delivered in Autumn 2022 and Winter 2023
- 2024 plans: Conference to take stock and look into the future to interested IP offices

The screenshot shows the IPO GREEN website homepage. At the top is a green navigation bar with links for Home, Database, Projects, Partners, Resources, IPO Green, Experts, and About. A search bar on the right contains the text 'Search WIPO GREEN'. Below the navigation bar, the main heading 'IPO GREEN' is displayed. The introductory text states: 'Intellectual Property Offices are key actors in green innovation ecosystems.' This is followed by a paragraph explaining their role in supporting green innovation and effective IP management. A section titled 'IPO GREEN is an initiative that supports IP Offices to enact green policies and programs.' is followed by a paragraph about its launch in 2022 with funding from the Japan Patent Office. A 'Background research provided by our research partner Innovation Insights.' note is also present. A 'Work financed by' section features the JPO logo (Japan Patent Office). On the right side, a 'FEATURED' section highlights a partnership between INPI Brazil and the Royal Danish Embassy, with a 'Join' button. Below this, a 'Spotlight: IP Office Initiatives' section provides information on policies and programs to accelerate the green transition. At the bottom, four icons represent key areas: Accelerated Patent, Provision of Green Data and, Matchmaking and Business, and Regional Cooperation on.

IP Management Clinic – 2023 Agriculture

- 5-month program with IP for Business Division that supports innovative companies in formulating/refining their IP strategies.
- This year: 12 companies from 10 countries: Japan, Kenya, Madagascar, Mongolia, Namibia, Pakistan, Philippines, Sri Lanka, the USA and Vietnam.

Individualized Mentoring



One-on-one
mentorship with IP
experts, SMEs receive
roadmap of IP strategy
development

Group Training and Coaching



Group Workshops,
hands-on orientation on
IP topics & access to
WIPO practical tools and
resources

Networking



Networking
opportunities

Thank you !

wipo.int/green



SEARCH

We invite you to search for technologies on our database.



UPLOAD

Register to be a WIPO GREEN user and upload your technology needs and solutions.



CONNECT

The automated matchmaking function on our database makes it easy to connect with technology seekers and providers.