

**Addressing climate challenges
with innovation: WIPO GREEN
guide for youth roundtables**





What is WIPO GREEN?

WIPO GREEN is an online platform that connects technology and service providers with those seeking innovative solutions.

Established in 2013 by the World Intellectual Property Organization (WIPO), it supports global efforts to address climate change.

Through its database, network and acceleration projects, it brings together key players to catalyze green technology innovation and diffusion.

wipo.int/green



Photo: Nikada / iStock / Getty Images Plus

Young people are at the forefront of the climate crisis and are actively looking for solutions.

This guide can help you to better understand **the ways in which you can use innovation in the climate crisis response**.

Created to facilitate group discussions and inspire action, the guide incorporates theoretical resources and practical tools for using green technologies and intellectual property (IP) to empower youth in their efforts against climate change.

This guide will be useful for:

- students and young professionals with an interest in climate change
- students, young innovators, and professionals in the fields of technology, engineering, sciences, and other related fields
- young change-makers and environmental advocates
- middle- to high-level educational institutions, professors, and tutors in relevant fields
- WIPO GREEN partners seeking to develop or enhance their youth engagement efforts

WIPO GREEN invites all users to send feedback on the guide to wipo.green@wipo.int



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Introduction

Why youth?

Young people are often particularly engaged in efforts to raise awareness, promote sustainable lifestyles, and take action on developing and implementing environmentally friendly practices. Younger generations are increasingly using their digital savviness to spotlight issues – particularly relating to climate change – that are seen as existential risks to the entire global community.

As entrepreneurs, as actors in the startup scene, as advocates, as scholars, and in the development of new and innovative technologies, young people play a crucial role in driving technology adaptation and change. Moreover, they are the future stakeholders and main users of new technologies, which they generally adopt openly and swiftly.

Furthermore, the socio-economic wellbeing and employment prospects for young people will be affected by the evolution of climate-friendly technologies. Supporting the contributions of youth for the development of climate solutions will support future career opportunities and aid in the development of national clean technology sectors.





Photo: Drazen_ / E+ / Getty Images

Why WIPO GREEN?

The WIPO GREEN platform aims to connect technology seekers and providers to maximize the potential for green technology transfer, i.e. relaying research results from one actor to another. The term is discussed in more depth on page 10.

Acknowledging the potential of youth to drive innovation, WIPO GREEN seeks to raise awareness about intellectual property and green technology and facilitate the engagement of young people in the international environmental agenda.

By investigating the potential of engaging with young inventors, scholars, and eco-entrepreneurs, WIPO GREEN strives to be more inclusive in its outreach in order to foster even more innovative solutions to environmental challenges.

WIPO GREEN's youth engagement strategy also aims to engage its partners in supporting youth-led initiatives. We believe that encouraging interactions will help foster a better understanding of young peoples' potential for green tech innovation.



Photo: Mienny / E+ / Getty Images

Questions for youth roundtables



Photo: SciStock / E+ / Getty Images

The below set of questions will help guide various stakeholders (youth groups from various backgrounds, educational institutions, and WIPO GREEN partners) in fostering discussions and group learning through interactive roundtable sessions.

- What are green technologies? What differentiates them from other types of technologies?
 - Does my technology qualify as a green technology? (Discussion in smaller groups for the innovators in the room).
- What are the main international agreements that shape the policy framework for green innovation?
- How does IP protect green technologies?
 - What types of IP rights could be used to protect green technologies?
- What are key enablers and barriers for the development and diffusion of green technologies?
- What is fast track patent examination?
 - How could this foster dissemination of green technology?
- What is technology transfer?
- Can open innovation models facilitate green technology transfers?

Key discussion topics

What are green technologies?

- Many activities underpinning the carbon-based economy have caused environmental degradation, termed for carbon dioxide, which accounts for the largest share of greenhouse gas emissions. Discuss a few examples.
- Discuss the notions of green economy (low carbon, resource efficient and socially inclusive), sustainability, and sustainable innovation (meeting present needs without compromising the ability of future generations to meet their own needs).
- Green technologies include know-how, procedures, goods and services, equipment, and organizational and managerial procedures. They generally consume less resources and energy, are non-polluting (or less polluting than current technologies on the market) and use renewable energy/materials.
- For example:
 - Recycling: green technology is used in the recycling process, as well as in waste management. Recyclable material can be used when manufacturing plastics, fertilizer, and fuel.
 - Clean water: green technologies are used to purify water resources and remove salt from seawater in order to increase the availability of clean drinking water.
 - Clean air: green technologies are used in processes that purify the air by reducing carbon emissions and gases that are released into the air from manufacturing plants.
 - Energy: green technologies can be used to generate energy from alternative sources that are more environmentally friendly than fossil fuels. Examples include solar, wind, wave power, and a process called Waste-to-Energy. They can also be used in processes intended to conserve energy.

Activity

Read and discuss the article

[Innovation, the environment and the future](#) by Jo Bowman in the WIPO Magazine.

Based on the information you have learned thus far, reflect on and answer the question:

What one action could you take to contribute to a greener future?

Photo: Zbynek Pospisil / iStock / Getty Images Plus



Photo: mayichao / E+ / Getty Images



The policy framework

The 2030 Agenda for Sustainable Development:

- Adopted by all United Nations Member States in 2015, it provides a shared blueprint for peace and prosperity for people and the planet, now and in the future.
- At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries in a global partnership.
- They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.

The Paris Agreement:

- At COP21 in Paris, on December 12, 2015, Parties to the United Nations Framework Convention on Climate change (UNFCCC) reached a landmark agreement to combat climate change, and accelerate and intensify the actions and investments needed for a sustainable low-carbon future (characterized by a minimal output of greenhouse gas emissions).
- Its central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2.0 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius.
- Under the Paris Agreement, each country must determine, plan, and regularly report on the contribution that it undertakes to mitigate global warming.



Activity

Explore and discuss the main climate-related policy documents

[The United Nations 2030 Agenda for Sustainable Development](#)

[The Paris Agreement](#)

Based on the information you have learned thus far, reflect on and answer the following questions:

How could green innovation contribute to the 2030 Sustainable Development Goals? How many of the SDGs could be positively influenced through green innovation?

Did you notice any mention of innovation in the Paris Agreement? How do you think innovation could contribute to achieving the goals outlined in the Agreement?

If you could make a decision for the global community, what climate-focused action would you prioritize and why?

How IP protects green technologies

- Tackling climate change will require new inventions, techniques, and improvements to existing ways of doing business.
- International efforts have helped to spur climate-friendly innovation around the globe. Patent filings related to renewable energy technologies have increased sharply over the last decades, but recently have stagnated in a number of areas.
- Businesses with patents are better placed to attract and secure the funding and investment required to commercialize their innovations, as patents provide a legal right that can be enforced, sold or licensed.
- IP rights (IPR) play a key role in terms of attracting investors, facilitating entry into new markets, and enabling effective collaborations:
 - Patents underpin several types of technology collaboration and potential partnerships, which enhance technological diffusion and development.
 - Trade secrets are widely used to protect know-how and commercially valuable information.
 - Trademarks convey attitudes, meanings, or expectations. They are a great means to communicate that a product is environmentally friendly.
 - Copyright is an important IPR for the protection of software and algorithms implemented in software.
 - Design rights grant protection for the aesthetic appearance of products or their parts.



Photo: francreporter / E+ / Getty Images

Activity

Read and discuss the articles

[Patenting trends in renewable energy](#) by James Nurton in the WIPO Magazine

[GREEN IP - A look at how sustainability influences IP and how IP can help in achieving sustainability](#) by Fabian M. Klein

Based on the information you learned from the articles, reflect on and answer the following questions:

What is the world's current stage of green technology development?

Imagine that you are a green technology inventor; would you protect your green technology and if so, how?

The key to diffusion of green technologies

- Green technology diffusion refers to their widespread adoption and use, with the aim to address climate change.
- Knowledge about how green technology transfer operates – and the role that IP plays in the process – fosters effective collaboration.
- Markets that support the exchange of knowledge across a broad range of stakeholders help reduce transaction costs.
- Barriers to green technology diffusion may be economic in nature, i.e. country's openness to trade and foreign direct investment.
- They may also result from an inadequate regulatory framework in relation to environmental or IP policy.

Activity

Explore and discuss the publications

[Innovation and Diffusion of Green Technologies: The Role of Intellectual Property and Other Enabling Factors](#) by K. Lybecker and S. Lohse

[Green Technology Diffusion: Insights from Industry](#) by Jennifer Brant in the WIPO Magazine

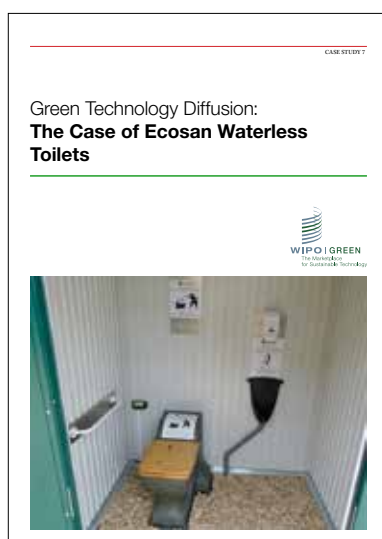
Based on the information you have learned, reflect on and answer the following questions:

How can innovation be incentivized?

What support would you need as a young inventor?

Do you know of any national or international initiatives that support young innovators?

What do you think is the most daunting challenge faced by young innovators in your country, and what changes are necessary to overcome it?



Case Study

Green technology diffusion: the case of Ecosan waterless toilets

The EcoSan waterless toilet is a sanitation system that converts human waste into dehydrated, compostable material. The waste can then be used as compost or disposed of at a traditional waste management facility. It is particularly relevant to improving sanitation in rural communities.

What is fast track patent examination?

- It may take several years to obtain a patent, depending on the country. Under fast-track patent application systems, the time required can be significantly reduced through an accelerated examination of the application by the patent office – from several years to mere months.
- One of the benefits of having a patent granted earlier is that patent applicants can license and use their technologies sooner, which increases the diffusion of the technology in the short term.
- Several countries, such as Brazil and the United Kingdom, introduced fast-track programs for climate-change-related technologies.

Activity

Read and discuss the article

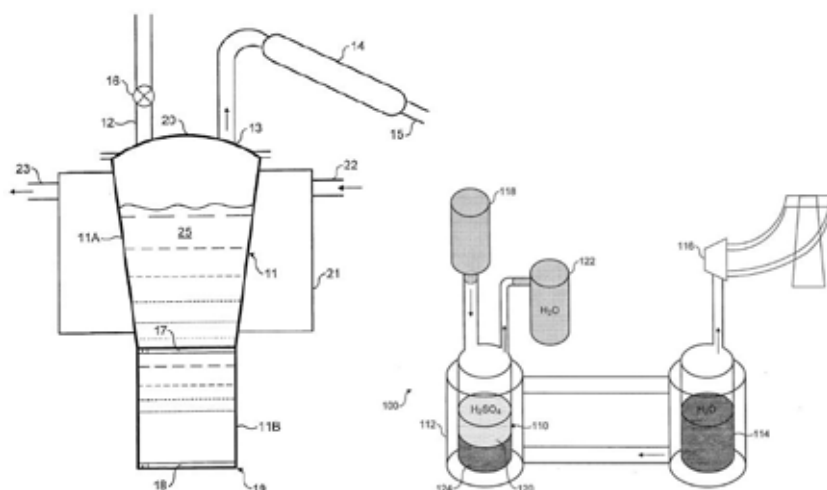
[Fast-tracking green patent applications](#) by A. Dechezleprêtre and E. Lane in the WIPO Magazine

Based on the information you have learned, reflect on and answer the following questions:

How many countries with fast-tracking green patent processes can you name?

Where could you find information about your country's patenting processes for green technologies?

How would you encourage young innovators to use the fast track examination process?



The first patent application (GB 2437148B) submitted under an accelerated procedure relates to a method of heat generation that does not directly use fossil fuels. Invented by Josef Tapper, it is also the first patent granted under such a procedure.

What is technology transfer?

- “Technology transfer refers to the process of conveying results stemming from scientific and technological research to the market place and to wider society, along with associated skills and procedures.”
- It covers the complex value chain linking research to its eventual societal deployment.
- It occurs along various axes: among universities, from universities to businesses (and vice versa), from large businesses to smaller ones (and vice versa), from governments to businesses (and vice versa), and across geopolitical borders.
- Good or high quality research results are not enough for successful technology transfer; general awareness and willingness both at the organizational and individual level, as well as skills and capacity related to specific aspects such as access to risk finance and IP management, are necessary components.

Activity

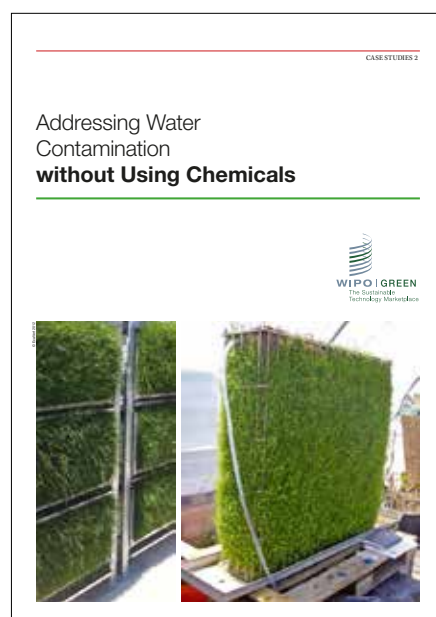
Read and discuss the article

[WIPO GREEN: supporting green innovation and technology transfer](#) by Amy Dietterich

Based on the information you have learned, reflect on and answer the following questions:

Why is technology transfer important?

What technologies would be particularly useful if introduced in your community? Your country? Your region?



Case Study

Addressing water contamination without using chemicals

In order to reduce contamination of water from pesticides, the Vertical Green Biobed enables efficient degradation of pesticides with a mixture of soil, organic materials, and plants.

Joint research projects are deploying and enhancing the degradation of pollutants to disseminate the technology in Europe.

Open innovation models

- Open innovation seeks ideas from inside and outside the organization or company to advance in the technological aspects of the innovation process.
- It has two dimensions: the external ideas and technologies that are brought into the company's own innovation processes and the un-used and under-utilized ideas and technologies from the company that are incorporated into others' innovation processes.
- Opportunities for open innovation are growing as firms increasingly value collaborative partnerships.
- Given the complexity of the technology involved and the global nature of climate change, open innovation is of particular relevance for environmental innovation.

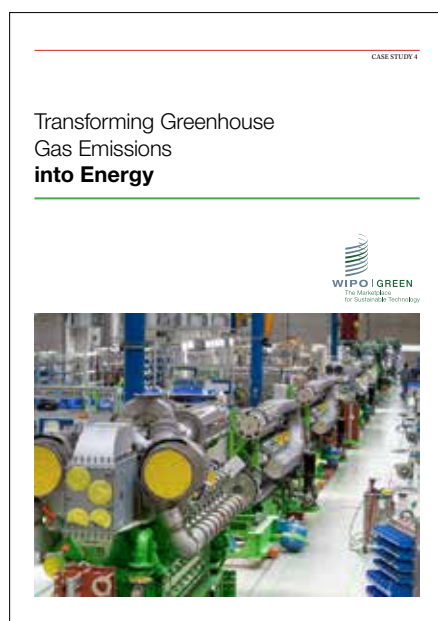
Activity

Explore and discuss the publication

[Interfacing Intellectual property rights and Open innovation](#) by Nari Lee, Soili Nystén-Haarala, Laura Huhtilainen

Based on the information you have learned, reflect on and answer the following question:

What national policies and international structures are necessary to enable open innovation?



Case Study

Transforming greenhouse gas emissions into energy

General Electric's Jenbacher Gas Engines convert waste into clean energy and heat to tackle greenhouse gas emissions, such as methane and carbon dioxide.

The technology has been deployed in multiple countries (China, India, Belgium, the Netherlands, etc.) in several projects using manure.

Your toolbox for green innovation



Watch

All you need to know about IP and green tech

For a quick dive into IP and green technology, watch this one-hour webinar, discussing market perspectives, policy tools, enabling factors, and other key issues.

Get equipped

Tips and Tools for greentech SMEs

In celebration of Micro-, Small and Medium-sized Enterprises Day 2020, WIPO GREEN published a special feature exploring industry trends, useful tools, and examples of environmentally-friendly micro-, small- and medium-sized businesses (SMEs).

Read the special feature [here](#).



Statistics on Innovation around the Globe

Do you want to understand how innovation works? The trends, the statistics, the new avenues? The [Global Innovation Index \(GII\)](#) provides detailed metrics about the innovation performance of 131 countries and economies around the world. The GII's 80 indicators explore a broad vision of innovation, including political environment, education, infrastructure, and business sophistication.

Explore the GII Report [Energizing the World with Innovation](#), focused on green energy.



Explore

WIPO GREEN Database

If you are interested in green technology, the [WIPO GREEN database](#) is the place to go. This unique catalogue of sustainable solutions and needs across the world provides browsing by category or using keywords -- from anywhere, free of charge.





PATENTSCOPE

Are you an aspiring inventor looking for more technical knowledge? This WIPO tool is a free global search engine for technology information, which provides online access to a database of patents and patent applications from all across the globe. Need help navigating it? [Here is the user guide.](#)

WIPO Magazine



Looking for a lighter reading? The WIPO Magazine explores IP, creativity and innovation at work across the world. Regularly published articles with insights on green innovation and climate-friendly technology will help you orientate yourself in the ever-changing world of green tech, while not getting into technicalities.

Raise awareness

World Intellectual Property Day

Every year, on April 26, the world celebrates World IP Day. In 2020, the global campaign was focused on innovation for a green future. You can find the campaign page, with more green innovation-related resources, tools, and our free social media toolkit on the World IP Day website or in the archives. Have a look at our campaign messages and feel free to share them on your social media channels.

Every year you can join the celebration by raising awareness about green innovation, organizing your own social media campaigns, panel discussions and events, or even a digital invention competition in your class. Find more ideas for engagement and free tools provided by WIPO on the World IP Day website. We invite you to highlight the remarkable individuals who are developing solutions to environmental problems in your region on social media using the hashtag #worldipday.





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