

Intellectual property offices and sustainable innovation

Implementing the SDGs in national intellectual property systems



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A research study by WIPO Japan Office in collaboration with WIPO's Special Representative on the UN SDGs, and commissioned to Inngot Limited

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DISCLAIMER

Information herein has been compiled using a combination of primary and secondary research by the authors. However, not all IP offices publish all their sustainability activities, or draw connections between them and individual SDGs, so these may contain inaccuracies and omissions.

If any IP office believes that inaccuracies are present, WIPO would like to invite them to contact WIPO.

1. Executive Summary

Sustainable development, in its many manifestations, is of high and growing importance across the globe. Increasingly, governments are setting targets for sustainability improvements ranging from societal inclusiveness to carbon emission reductions; corporations are marketing their products and services by highlighting their 'eco' credentials; and consumers are basing buying decisions on sustainable criteria.

As a United Nations (UN) agency, WIPO has an important role to play in the achievement of the UN's sustainable development goals (SDGs). While the relationship between SDGs and WIPO's activities may not be as clear-cut and obvious as, for example, those of the World Health Organization, which has clear responsibility for SDG 3 relating to good health and well-being, there are compelling reasons to believe that intellectual property (IP) systems can and should contribute to SDGs, and in doing so, can be more responsive to WIPO customer and societal needs.

This study has been commissioned by WIPO Japan Office, in collaboration with WIPO's Special Representative on the UN SDGs to identify examples of good practice among IP offices in supporting the achievement of SDGs. Using a combination of primary and secondary research (survey data and published materials), a cross-section of offices has been examined.

IP offices have a particular role to play in supporting the achievement of the 'core' SDG relating to industry, innovation and infrastructure, number 9. Innovation is absolutely necessary to encourage new technical solutions to profound sustainability challenges, including but not limited to climate change and improved living standard. Good examples have been found of initiatives which educate and inform, promote diversity and inclusion, and make more efficient use of natural resources. Naturally, some offices such as EPO have the financial capacity to set challenging targets for aspects such as carbon reduction, while others' aspirations and successes to date are more modest. In general, there is good engagement evidenced across the world with the topic of sustainability.

It is apparent that WIPO itself already contributes to the achievement of SDGs – albeit sometimes unintentionally. The best example of this is its long-term stewardship and promotion of IP treaties, which have led to efficiency and sustainability benefits that enable access to economic incentives for innovators, and thereby foster the technological and societal advancement. These initiatives predate the articulation of SDGs by decades.

WIPO has also recently started to address its own operational carbon footprint. However, there still remains room for a more proactive strategy to encourage and lead active consideration of sustainability. This will require the establishment of SDG focused programs and partnerships, both within the UN family and beyond, and critically, with commercial organizations. It is also likely to involve the youth and adoption of new technologies, such as machine translation, to deepen the scope of WIPO's sustainability initiatives.

2. Background to the research project

2.1. Aims of the research project

This research study, commissioned by WIPO Japan Office, sponsored by Funds-In-Trust Japan Industrial Property Global¹, in collaboration with WIPO's Special Representative on the UN SDGs, aims to identify the relationship between IP policies/engagements and SDGs in various countries and measures being taken by national and regional IP offices to motivate the creation, protection and exploitation of IP that contributes to achievement of SDGs. It focuses particularly on patents and trade marks, but also considers how the offices themselves are responding to the need to be more sustainable in the way in which they operate.

The primary function of the offices being studied is the administration of IP systems, which is the focus for this report. However, where respondents to the survey have provided evidence of support for the achievement of SDGs that go beyond the IP remit, it has been included for completeness.

2.2. Research methodology and sources

In more detail, the research project has been initiated to identify answers to two key questions:

- i) *What customer-facing policies, incentives and educational initiatives have leading national and regional IP offices put in place to help companies achieve sustainable development goals by encouraging or supporting inventors with environmentally beneficial technologies?*
- ii) *What changes have patent offices made to their own (or related international) systems and procedures in the interests of sustainability – for example, to make the process of patent examination more sustainable in its own right, or to facilitate examination by updating the way environmental technologies are identified and classified?*

In the interests of promoting best practice, the study also aims to determine what indicators are available that would enable the success of these policies to be determined (e.g. in terms of levels of usage, efficiency gains, awareness or uptake for incentives on offer).

The preferred source for the information contained in this report was questionnaire completion.

In this study, where the context requires, responses received with full or partial response are described as 'primary information or data', while referral to official publication and other sources and no response are described as 'secondary information or data'. In some cases, the study contents have been populated using a mixture of both primary and secondary data relating to individual IP offices.

For primary research, leading IP offices including the 'IP5' (Japan, China, Korea, Europe and the US) and IP offices in territories outside the IP5 group, especially developing countries, were approached for comment. These were selected to provide a

¹ https://www.wipo.int/cooperation/en/funds_in_trust/japan_fitip_global/index.html

representative spread of examples from across all regions, and to ensure offices that have not been consulted in the past by WIPO on such matters were included. Within the set of responses that can be characterised as primary, the majority of questionnaires were partially completed. Perhaps due to the overarching priority of operating a functional rights registration system during the pandemic, few offices were able to provide the researchers with insights regarding the level of uptake of individual innovator-facing initiatives.

The main sources of secondary data were annual reports produced by individual IP offices and policy papers relating to strategies to achieve SDGs, typically produced by other government departments (where identified). Within these additional, official publications, it is noted that the word ‘sustainable’ is most often used to describe measures to promote the institutional, political, operational and financial stability of the office or agency itself. Not all references to “sustainability” are therefore relevant to the consideration of SDG achievement.

3. Dependency of SDGs on IP

3.1. *The Sustainable Development Goals (SDGs)*

The origin of the **Sustainable Development Goals (SDGs)** can be traced back to the **Millennium Development Goals (MDGs)**², eight international development goals for the year 2015 that had been established following the Millennium Summit of the United Nations (UN) in 2000, following the adoption of the UN’s Millennium Declaration. These were based on the OECD DAC International Development Goals agreed by Development Ministers in the "Shaping the 21st Century Strategy".

The SDGs, also known as the Global Goals, were adopted by the UN in 2015 as a universal call to action, to end poverty, protect the planet, and ensure that by 2030 all people can enjoy peace and prosperity. They are not intended to be restricted to the UN, or to government organizations, but to be adopted by the private sector³ and by communities more generally, with the youth sector⁴ being particularly influential and important.

Countries have committed to prioritise progress for those who are furthest behind (as is evidenced by the slogan associated with SDGs, “Leave No One Behind”). They acknowledge that creativity, know-how, technology and financial resources from society as a whole are necessary to achieve the SDGs in every situation. The universality of SDGs initiatives can improve and complement actions towards each SDG item.

²

[https://en.wikipedia.org/wiki/Millennium_Development_Goals#:~:text=The%20MDGs%20emphasized%20three%20areas.and%20reproductive%20health\)%20and%20education.](https://en.wikipedia.org/wiki/Millennium_Development_Goals#:~:text=The%20MDGs%20emphasized%20three%20areas.and%20reproductive%20health)%20and%20education.)

³ <https://www.csis.org/events/role-private-sector-achieving-sustainable-development-goals-sdgs>

⁴ <https://sdgzone.com/sector/sdg-for-youth/>

The UN summarizes the SDGs pictorially as follows:



Figure 1 - 17 Sustainable Development Goals (taken from <https://sdgs.un.org/>, accessed 27 June 2022)

The 17 SDGs are interdependent; they recognise that action in one area will affect outcomes in others, and that development must balance social, economic and environmental sustainability. The MDGs have been, and the SDGs continue to be, strategic goals intended to improve the health of the planet, and whatever form they take in the future, they are very likely to remain central to the UN's mission.

3.2. The relevance of SDGs for intellectual property systems

The areas of inequality highlighted by the UN SDGs require innovative solutions – in particular the societal and economic challenges posed by climate change, but also the ongoing impact of the Covid-19 pandemic on lives and livelihoods, global food crisis and rising geopolitical tensions. The UN has long recognised a link between the achievement of SDGs and technology, as evidenced by its organization of an annual Multi-Stakeholder Forum on Science, Technology and Innovation for the SDGs (STI Forum), the seventh edition of which was held from 5 - 6 May 2022.⁵

Intellectual property ('IP') is likely to be a key contributor to improvements in sustainability, due to its unique characteristics. These include:

- *Its lack of physical substance.* IP is, of itself, inherently highly scalable and sustainable. It therefore forms an excellent basis for low-carbon business strategies, including export (as exemplified by the large and growing global incomes associated with IP licensing; the World Bank estimates charges for the use of IP reached a new peak of US \$444bn in 2020⁶).
- *Its role in supporting innovation.* IP provides inventors and creators with a legally enforceable mechanism that helps them make a return on their investment. Without the ability to generate this return, it is questionable whether enterprises would be willing and able to make such investments. The innovation the IP system encourages is required to facilitate the achievement of a broad range of SDGs (a point explored further below).
- *Its contributions to the innovation ecosystem.* IP plays an important role in creating and sustaining the innovation ecosystem. The key to successful innovation

⁵ <https://sdgs.un.org/tfm/STIForum2022>

⁶ <https://data.worldbank.org/indicator/BX.GSR.ROYL.CD> (accessed 18/7/2022)

ecosystem is a sustainable circulation of funds, human resources and technologies among the industry, government and academia in order to inspire innovation through interactive harmonization and cooperation. In this ecosystem, the IP can ensure return of investment funds and therefore facilitate innovation involving all the stakeholders.

- *Its high level of international acceptance and conformity.* Sustainability challenges are global; the IP system is already backed by a series of regulations and treaties, administered by WIPO, which harmonize rights protection and provide efficient ways to extend and enforce IP. International agreements such as the Madrid Protocol have roots extending back more than a century (its basis dates from 1891⁷), generating efficiencies which also have sustainability benefits such as simplified process, and paperless and centralised filing system.

Just as at the micro-firm level, products in the marketplace are protected by a bundle of IP rights, the same concept applies at the macro-level. The different IP rights are synergistic in supporting innovation, and especially sustainable innovation and economy.

WIPO's missions have direct relevance for many SDGs. Whilst WIPO considers that SDG 9 (Industry, Innovation and Infrastructure) is at the core of its mission to lead the development of the international IP system for the common good⁸, its sphere of interest extends to other notable areas such as SDG 4 (Quality Education), SDG 5 (Gender Equality) and SDG 17 (Partnership). Further, WIPO's position is that innovation is essential to economic and social development, and in particular, achievement of SDGs 2, 3, 6, 7, 8, 11, 12 and 13, and that national and regional innovation policies can assist in achieving most of the remainder.

Based on this analysis, the relevance of IP systems for the achievement of SDGs can be represented graphically as follows:



Figure 2 – SDGs and their relevance for IP systems and policies. ‘Core’ SDGs that are the focus for specific IP-related initiatives have a solid outline: SDGs to which innovation contributes (through economic and social development) have a dotted outline: SDGs with no direct relationship to IP systems are greyed out

⁷ Madrid Agreement Concerning the International Registration of Marks

⁸ <https://www.wipo.int/sdgs/en/story.html>

Most governments have an interest in initiatives that incentivize innovation and build innovative capacity, which can include policy, market and regulatory measures. To promote sustainable development, governments will need to form coherent cross-sectoral policies – with respect to the environment, agriculture, energy, economy, trade, foreign affairs and development cooperation⁹. However, governments cannot achieve this without engaging the private sector. IP stimulates and rewards innovation by providing the means by which organizations can protect, and thus obtain freedom to exploit, ‘creations of the mind’.

There is already a substantial body of research investigating the financial and economic benefits of IP systems. However, the way in which IP (and its associated legal systems and offices) can be used to drive social and environmental benefits and support SDGs requires further exploration. Many private sector companies are already exhibiting strong interest in, and commitment to achieving SDGs in the context of demonstrating corporate social responsibility (CSR); they also have a need to respond to legislative requirements and behavioural changes amongst consumers, many of whom are making purchasing decisions that reflect their increasing consciousness of the need for sustainability. An example is the SDG Academy¹⁰ which provides free educational materials on sustainable development and SDGs. Governments, and IP systems, have an opportunity to recognise, support and promote these trends as part of their own drive towards greater sustainability.

Patent filings provide one indicator of investment in technology and innovation which can be associated with certain aspects of sustainability such as environmental benefits. LexisNexis¹¹ is one of the organizations which has recently made attempts to track and measure sustainable innovation and investments, in order to meet the need of innovators seeking to report on sustainability and meet SDGs¹². In an analysis of the intensity of patenting activity associated with specific SDGs, LexisNexis showed that SDG3 (Health and Well-being) has the highest patent count, whereas SDG10 (Reduced Inequalities) has zero patent count, as might be expected. Technologies such as Quantum Computing (T059) are in their infancy, but may confidently be predicted to grow; the increasing level of activity around all topics connected with ‘Big Data’ reflects the expected benefits of being able to conduct analysis at a depth or scale that would not be viable or sustainable with purely human input. It is also interesting to note that Eurostat interprets the growth of patent filings at the EPO as fulfilling SDG 9 in the EU context.¹³

Trade mark filings have also been studied more recently, by EU IPO¹⁴. This study suggests that increased concern among the public and policymakers over climate change and environmental degradation has influenced an increase in EU trade mark applications. There has also been a significant increase in the filing of ‘green’ EU trade marks¹⁵ (which help businesses show and maintain their ‘green’ credentials, contributing to increased goodwill in their products and services).

⁹ <https://waterfootprint.org/en/water-footprint/national-water-footprint/what-can-governments-do/>

¹⁰ <https://sdgacademy.org/>

¹¹ <https://www.patentsight.com/sustainable-development-goals>

¹² https://www.pwc.com/gx/en/sustainability/SDG/SDG%20Research_FINAL.pdf

¹³ <https://ec.europa.eu/eurostat/documents/3217494/11011074/KS-02-20-202-EN-N.pdf/334a8cfe-636a-bb8a-294a-73a052882f7f>

¹⁴ https://euiipo.europa.eu/tunnel-web/secure/webdav/guest/document_library/observatory/documents/reports/2021_Green_EU_trade_marks/2021_Green_EU_trade_marks_Ex_Sum_en.pdf

¹⁵ https://euiipo.europa.eu/tunnel-web/secure/webdav/guest/document_library/observatory/documents/reports/2021_Green_EU_trade_marks/2021_Green_EU_trade_marks_Ex_Sum_en.pdf

While the IP system is largely harmonized internationally, individual IP offices have some freedom to choose how they administer the prosecution and enforcement of IP rights in order to promote national or regional interests; some have already taken significant steps to include SDGs within this strategic focus.

This research study aims to contribute to the body of knowledge as summarized in section 2.

3.3. WIPO SDG initiatives

In addition to its vital role in establishing and operating the international IP system, which has its own sustainability benefits, WIPO also provides national and regional IP offices with support for the achievement of SDGs via a combination of programs; it is also actively engaged in investigating the links between IP and SDGs^{16,17,18}. In line with its mission to support SDG 9, it has a particular focus on enabling the IP system to be used to establish innovation policy frameworks that can drive the innovation, competitiveness and creativity needed to achieve SDGs.

Name	Description	Link to SDG
WIPO GREEN	Supports global efforts to address climate change by connecting providers and seekers of environmentally-friendly technologies. Includes WIPO GREEN Acceleration Projects to help green technologies deployed in the field and other activities	Various (6, 7, 9, 10, 11, 12, 13, 14, 15 and 17)
Technology Innovation & Support Centres (TISCs)	Contribute to SDGs by providing on-the-ground IP information and support to innovators helping to unlock innovation, creativity and competitiveness. TISCs are hosted in institutions such as patent offices, universities, research centres, or science and technology parks, providing training and access to rich technology information in patent documents, as well as scientific and technical publications	4
Inventor Assistance Program (IAP)	Matches developing-country inventors with patent attorneys who give them free legal advice on patenting	4
The Innovation Gender Gap Initiative	A project studying ways in which the IP system could foster a more inclusive innovation landscape	5
IP & Tourism	A project demonstrating how IP tools and strategies can support the promotion of sustainable tourism, as well as economic, social and cultural development	8
Accessible Books Consortium (ABC)	Contributes to SDGs by helping increase the number of books worldwide in accessible formats and making them available to the visually impaired	10

Table 1 – Example WIPO programs that seek to support achievement of SDGs through education, sharing of technical information and collaboration for green innovations

¹⁶ For example, https://www.wipo.int/wipo_magazine/en/2013/03/article_0002.html

¹⁷ <https://www.wipo.int/sdgs/en/>

¹⁸ <https://surveys.wipo.int/s3/Climate-Change-Impact-Survey-WIPO-GREEN>

WIPO also holds events to reflect on changing and more sustainability-conscious market attitudes. For instance, annual World IP Day in 2022¹⁹ was organized under the theme of youth and showcased young people's engagement in sustainable business. A four-month training program called IP Management Clinic to assist and advise SMEs in the sustainable fashion industry was held in 2022²⁰.

WIPO GREEN²¹ is a further, recent important addition designed to encourage technology exchange that can address SDGs 6, 7, 9, 10, 11, 12, 13, 14, 15 and 17. It supports global efforts to address climate change by connecting providers and seekers of environmentally-friendly technologies. Through its database, network and acceleration projects, it brings together key players to catalyse green technology innovation and diffusion.

The WIPO GREEN website includes a new IPO GREEN section²² designed to facilitate sharing of best practice among IP offices. The present study aims to add to this body of knowledge by setting out specific IP office initiatives aimed at supporting SDGs.

In recent years, WIPO has also made changes to its operational arrangements in order to promote sustainability. A prime example is the organization's administration building in Geneva, completed in 2011. Sustainable design principles incorporated in this building include use of Lake Geneva's water for cooling, thermally activated ground floor concrete slabs, natural 'stack-effect' air extraction and optimisation of natural light. It also has devices on its glass roofs to redirect daylight, and its glass facades feature daylight-optimized blinds to control heat and glare²³. This sets a standard to which other parts of WIPO's property portfolio may aspire in future.

As a UN organization, WIPO has a history of working in partnership with other UN organizations, which has had the ultimate effect of supporting the aims of the current SDGs. Examples include the following:

- In 2010, WIPO and ITU organized an Accessibility workshop in Geneva²⁴.
- In 2012, the IAEA board of governors reported on successful projects jointly with WIPO²⁵.
- In 2014, the Committee on Development and Intellectual Property²⁶ reported on the measurement of the MDGs in other United Nations agencies and specialized agencies, and on the contribution of WIPO to the implementation of the MDGs. 21 UN Agencies and Specialized Agencies were consulted.
- In 2015, a study was conducted by WIPO in partnership with ITU, UNIDO, WHO, and UNESCO on E-waste management in Latin America²⁷, anticipating the forthcoming SDGs.

Responding to the Covid-19 pandemic, the Directors General of WHO, WIPO and the WTO agreed in 2021 on Intensified Cooperation in Support of Access to Medical Technologies Worldwide²⁸. One of the heads of agreement was collaboration on the

¹⁹ <https://www.wipo.int/ip-outreach/en/ipday/>

²⁰ https://www3.wipo.int/wipogreen/en/news/2022/news_0018.html

²¹ <https://www3.wipo.int/wipogreen/en/>

²² <https://www3.wipo.int/wipogreen/en/ipo-green/> (accessed 13 July 2022)

²³ <https://behnisch.com/work/projects/0095> (accessed 18 July 2022)

²⁴ https://www.wipo.int/meetings/en/2010/wipo_itu_wai/

²⁵ https://www.iaea.org/sites/default/files/gc/gc56-7_en.pdf

²⁶ CDIP/14/12 REV. ORIGINAL: ENGLISH DATE: OCTOBER 28 2014

²⁷ https://www.wipo.int/patentscope/en/programs/patent_landscapes/news/2015/news_0002.html

²⁸ https://www.wipo.int/pressroom/en/articles/2021/article_0006.html

organization of practical, capacity-building workshops to enhance the flow of updated information on current developments in the pandemic and responses to achieve equitable access to Covid-19 health technologies. The significance of "information" in the agreement is particularly relevant for WIPO as the custodian of extensive global IP databases which are not only relevant to Covid-19, but all aspects of IP relevant to SDGs.

However, potentially WIPO's biggest contributions to facilitating the achievement of SDGs are the IP treaties it has been administering for decades.²⁹ These treaties, which obviously pre-date the MDGs and current SDGs, were not originally designed with SDGs in mind. However, they are inherently SDG compliant in that they harmonize IP practice and procedure across the globe. They are enabling, innately non-discriminatory and inclusive. Every owner of IP rights is equal under the eyes of the WIPO-administered treaties.

With this history of inter-UN agency synergy, and its track record of activities, WIPO clearly has the capacity and standing to act as a role model within the UN and further afield in the context of SDGs. However, WIPO has the potential to be more influential, within the UN as well as more generally; for example, the UNESCO publication on educational SDG resources³⁰ only references patents in the context of SDG 6 – it should be more prevalent in such material.

3.4. The Covid-19 context

Any review of innovation trends and current IP office practice cannot fail to acknowledge the impact of Covid-19 on innovation and SDGs. Overall, the global pandemic has had a negative impact on innovation; an update of the EUIPO study on the economic impact of the Covid-19 crisis on IPR-intensive industries – published in June 2021 – demonstrated that IPR-intensive industries in the EU declined by 6.5 % in 2020.³¹

This is not to say, however, that the pandemic has necessarily led to reduced use of the IP system. A recent CEPR ebook, bringing together insights into the performance of the global innovation system in response to Covid-19, has also analysed trade mark³² filings (on the basis that these are likely to reflect the introduction of new goods and services). CEPR's findings showed a disproportionately strong recovery in 2021 in many jurisdictions, especially for healthcare products and ecommerce-related goods and services, broadly mirroring the patent filing results referenced in section 2.2 above. There was also a high local (national) response to trade mark filings, in particular with evidence in Brazil, Australia and Republic of Korea confirming a surge in business entries and start-up activity in 2021.

This may point to new entrepreneurial activity caused by digital opportunities that arose out of the pandemic. The ebook suggests that this activity mirrors a similar start-up boom in the midst of the Spanish flu pandemic in 1919, "*highlighting how societal disruption generates momentum to start new activities for those entrepreneurs willing and able to take the risk amidst high overall uncertainty*" – in other words, it observes that societal disruption may lead to disruptive innovation.

²⁹ <https://www.wipo.int/treaties/en/>

³⁰ <https://en.unesco.org/themes/education/sdgs/material>

³¹ Economic performance of IPR indicators March 2021 update – EUIPO

³² <https://www.murgitroyd.com/blog/trade-mark-trademark-or-trade-mark/>

In terms of SDG implementation, the *Sustainable Development Goals Report 2021*³³ suggests the impact of the pandemic may be serious. Although the report pointed out that insufficient official data sources³⁴ made it difficult to obtain a detailed and accurate picture of progress towards the SDGs in real time, it identified a number of areas that required urgent and coordinated action between public and private stakeholders. More data are now available to assess the impact of the pandemic on labour markets. While the picture is gradually becoming clearer, the report does not judge that the general outlook is any brighter³⁵.

At the same time, recent papers have confirmed that the pandemic has accelerated research, development and innovation in many **healthcare**-related technological areas, such as vaccines, therapeutics, diagnostics, analytics, informatics, medical technologies, and post-covid technologies for the new normal^{36,37}. These include analysis published by WIPO (and national IP offices referenced in this study) of the patent landscape associated with these innovations, including first insights on the use and response of the patent system during the pandemic³⁸. There is also evidence that synergies between disparate companies, and even disparate industries, arose from efforts to combat the particular emergencies thrown up by the pandemic, such as the shortage of ventilators³⁹.

The pandemic has also provided a broader opportunity for sustainable growth, with many organizations from both the manufacturing and service sectors making decisions to transform their organizations through **digitization**⁴⁰. Of these two broad industrial sectors, service firms have proven more likely to focus on continuous innovation activities than to abandon them⁴¹; have been more interested in using organizational approaches (e.g. work-at-home policies); and have increased the use of platforms for internal and external communications.

Where organizational changes have been reported, 93% of service businesses have increased 'smart working', involving information technology to perform tasks remotely and collaborate virtually, and expanding their use of flexible working hours, which were previously limited to a few large corporations. Smart working has been adopted to improve work efficiency and provide flexibility that has helped companies survive the turbulent market conditions⁴².

In manufacturing, prioritisation of rapid responses in countries globally⁴³ and innovation in operational technologies has been observed, with many firms modifying their production methods to incorporate new operational intelligence and robotics. In Republic of Korea alone, approximately 68% of firms that responded to a study⁴⁴ indicated they had adopted or invested in these operational technologies during the crisis. An increase

³³ <https://unstats.un.org/sdgs/report/2021/>

³⁴ <https://unstats.un.org/sdgs/report/2021/investing-in-data-to-save-lives-and-build-back-better/> (accessed 27 June 2022)

³⁵ <https://ilostat ilo.org/covid-19-and-the-sustainable-development-goals-reversing-progress-towards-decent-work-for-all/> (accessed 27 June 2022)

³⁶ <https://www.epo.org/news-events/in-focus/fighting-coronavirus/innovation.html> (accessed 27 June 2022)

³⁷ <https://onlinelibrary.wiley.com/doi/full/10.1111/radm.12447> (accessed 27 June 2022)

³⁸ <https://www.wipo.int/publications/en/details.jsp?id=4589&plang=EN>

³⁹ <https://www.dw.com/en/volkswagen-explores-using-3d-printers-to-produce-ventilators/a-52867155> (accessed 27 June 2022)

⁴⁰ <https://voxeu.org/content/resilience-and-ingenuity-global-innovation-responses-covid-19>

⁴¹ Chapter 8 CEPR Resilience and Ingenuity: Global Innovation Responses to Covid-19, 2022

⁴² B Brynjolfsson, E, J J Horton, A Ozimek, D Rock, G Sharma and H Y TuYe (2020), "COVID-19 and remote work: An early look at US data", NBER Working Paper No. 27344

⁴³ McKinsey & Company (2021), "COVID-19: An inflection point for Industry 4.0", 15 January.

⁴⁴ Korea Innovation Survey (2021, 2022)

of patent applications involving IoT technologies appears to confirm these study responses.

The pandemic posed some fundamental challenges to the operation of the IP system. It induced some parties to suggest radical actions such as patent pledges⁴⁵ or even patent waivers^{46,47} in order to make treatments more widely available. Whilst these suggestions did not gain much traction, the pandemic has forced businesses and government agencies (including IP offices) to adopt new working practices that offer certain sustainability benefits.

Initially, of necessity, the pandemic caused many IP offices to restrict operations, and to implement precautionary health measures such as remote working, reduced workplace occupancy, reduced travel and implementation of virtual rather than face-to-face meetings. It also increased the use of electronic IP application filing. These measures will have had an incidental, but significant, sustainability impact, as well as the intended public health benefits. There is some evidence that IP offices are returning to pre-Covid-19 methods of working, albeit with some restrictions⁴⁸, but there are also reasons to believe that changes to remote working and meeting practices may remain in place, as the benefits of such arrangements have become more apparent (see figure below).

Virtual meetings: advantages	In-person meetings: advantages
Choice of increasingly flexible videoconferencing platforms	No technological dependency
Easy access to useful additional facilities, e.g. meeting recording and transcription, attendance controls, etc	Potential benefits of natural person interaction
Few, if any, financial or operational constraints governing meeting size	Easier to monitor participant 'mood'
Reduction in travel and accommodation cost (including time-cost of travel and commuting)	Established business <i>modus operandi</i>
Reduced carbon footprint	Hybrid meetings (combining in-person and online participation) represent a means of seeking to combine the advantages of these different approaches

Figure 3 – IP offices have found that virtual meetings have potential benefits not limited to sustainability advantages

⁴⁵ <https://opencovidpledge.org/> (accessed 27 June 2022)

⁴⁶ <https://www.nature.com/articles/d41586-022-00878-x> , (accessed 27 June 2022)

⁴⁷ <https://www.oxfam.org/en/press-releases/wto-agrees-deal-patents-covid-vaccines-campaigners-say-absolutely-not-broad> (accessed 27 June 2022)

⁴⁸ <https://www.worldtrademarkreview.com/article/ip-offices-implement-measures-in-wake-of-coronavirus-crisis> (accessed 27 June 2022)

4. Measures to encourage sustainable innovation

4.1. E-filing incentives

E-filing at IP offices is essentially ubiquitous (see also 4.4 below). It contributes to sustainability objectives by saving time, cost and resource for both applicants and offices. It is increasingly recognised as delivering an environmental benefit and this sustainability feature is now being actively promoted by many IP offices.

E-filing may offer additional benefits to applicants. For example, in **China**, the CNIPA trade mark e-filing service allows notifications and amendments to be processed via its platform, and dispenses with separate national and international forms⁴⁹.

In some cases, e-filing is *incentivized* over and above traditional paper filings, delivering a direct cost saving to applicants. Examples found during this study include the following:

- **IP Australia** explicitly states that online fees for patent and trade mark filing and payments are cheaper than traditional paper filing and payment transactions^{50,51}
- Patent filing at the **EPO** is more expensive on paper than online⁵²
- **INPI Brazil** has incentives for e-filing for patents as well as for filing “green” patents⁵³
- **INPI Portugal** has means of e-filing for IPR, which are at reduced cost compared with filing IP applications on paper⁵⁴.
- **KIPO** in Korea charges a fixed online fee for filing a patent application with unlimited pages, while the standard filing fee for a paper application is higher, with increasing fees for additional pages⁵⁵

Indonesia has gone further, dispensing with manual filing of patents, trade marks and industrial designs at its Directorate General of Intellectual Property (DGIP) in 2019, and replacing it with mandatory online filing. Online filing is therefore required, rather than being incentivized. However, DGIP also has adopted a program of mobile IP clinics to support accessibility to IP system in general in 35 provinces around Indonesia⁵⁶, using this to support IP education amongst businesses and universities. Other elements in its national IP strategy include the establishment of an IP academy.

An interesting observation of changes in e-filing activities due to the Covid-19 pandemic comes from the **Canadian Intellectual Property Office (CIPO)**, which introduced new digital services to assist with customer access to its services, comprising a chat function on the CIPO "Contact us" web page allowing answers to client IP-related questions, 24 hours a day, 7 days a week. E-filing options were also enhanced, such as in 2020–2021, CIPO automating the processing of trademark applications and renewal requests submitted via the trademark e-filing system as an example. Almost overnight, CIPO went from receiving primarily paper filings and correspondence to over 90% in electronic form. CIPO has also introduced e-correspondence services for trademark and

⁴⁹ https://www.wipo.int/madrid/en/news/2018/news_0012.html

⁵⁰ <https://www.ipaustralia.gov.au/patents/understanding-patents/time-and-costs>

⁵¹ <https://www.ipaustralia.gov.au/trade-marks/understanding-trade-marks/trade-mark-costs>

⁵² <https://www.epo.org/service-support/faq/own-file.html>

⁵³ <https://www.gov.br/inpi/en/services/patents/prioritized-examination/pilot-projects/green-patents>

⁵⁴ <https://justica.gov.pt/en-gb/Registos/Industrial-Property/Patent/How-much-does-it-cost-to-register-a-patent>

⁵⁵ https://www.wipo.int/wipo_magazine/en/2017/04/article_0007.html

⁵⁶ <https://conventuslaw.com/report/indonesia-4-featured-programs-from-dgip-in-2022/>

Patent Cooperation Treaty (PCT) applications for enhanced access⁵⁷ and became a patent depositing office for WIPO's Digital Access Service, reducing the need for certified paper copies of priority applications⁵⁸.

Further evidence for the success of e-filing comes from **UIBM Italy**, which claims >95% uptake for both online national filings and online EP validations, and from **INAPI Chile**, which claims that it has realised 45% savings on paper usage.

4.2. Incentivized processing

As is evident from the preceding table, with the exception of e-filing (which was not specifically targeted at SDG goals at introduction), the most widely applied measure to encourage the development of sustainable technologies is the provision of faster processing for patent applications.

Principal benefits of accelerated search/examination for the applicant
Can encourage faster introduction/adoption of technologies that make a contribution towards SDGs (particularly those concerned with climate change, where there is a well-understood urgent need for new solutions)
Can enable enforcement action to be taken more swiftly to address infringement, allowing the inventor of the technology to commercialise, recoup investment and generate profit and wealth by being able to practise the invention without unfair competition
May facilitate the process of raising finance, particularly where a company requires funds to bring a sustainable technology to market and investors are seeking reassurance that an invention is novel and inventive
May expedite the ability to disclose a new technology to the public
May have a marketing benefit (by being able to point to the patent protection enjoyed by a new product)

Figure 4 – main reasons why applicants may find accelerated processing beneficial

Expedited granted rights can also allow innovators to benefit from tax incentives such as 'Patent Box/Innovation Box⁵⁹' initiatives, in territories where these are provided. It is also the case that certain technology areas associated with sustainable innovation are very fast-moving, with short product cycles; therefore, there is an advantage in providing expedited IP protection to ensure businesses remain competitive. However, accelerated patent prosecution does not suit all applicants; some may prefer to delay prosecution/grant as a means of postponing further costs or causing details of an innovation to be published before the originator has the resources in place to commercialise it effectively.

This research has established that accelerated processing of patents (and in some cases utility models, where these are offered by IP offices) may be made available for inventions that offer sustainability benefits in two main ways:

- i) As a targeted incentive directed specifically at 'green' technologies.

⁵⁷ <https://www.canada.ca/en/intellectual-property-office/news/2021/10/cipo-launches-its-new-national-entry-request-ner-online-solution.html>

⁵⁸ <https://www.canada.ca/en/intellectual-property-office/news/2022/02/cipo-to-become-a-digital-access-service-depositing-office-for-patent-applications.html>

⁵⁹ Also known as intellectual property box regime, innovation box, knowledge development box or IP box.

- ii) Where technologies, materials and methods that have a ‘green’ benefit are one of a number of categories of invention that are eligible for accelerated processing.

The following examples illustrate the way in which these incentives operate. Firstly, within the first category of targeted green technology measures:

- **USPTO** is one office which has made incentives and concessions for “green technology” patent applications available for more than a decade. In 2009, its Green Technology Pilot was launched, aiming to reduce the time from application to grant by approximately one year, open to applicants whose innovations “materially enhance[d] the quality of the environment”. In 2010, the duration and scope of the program was extended, and it was finally closed in February 2012 after a total of 3,500 applications had been through the accelerated process.

The latest US initiative takes the form of a fast track for applications involving greenhouse gas reduction technologies. The new Climate Change Mitigation Pilot Program offers accelerated examination of patent applications for innovations that reduce greenhouse gas emissions (initiated after the first office action, which must confirm eligibility). This initiative is scheduled to continue until June 2023, or until 1,000 applications have been accepted. US PTO states: “This program supports the US PTO’s efforts to secure an equitable economic future, reduce greenhouse gas emissions, and mitigate the effects of climate change.”⁶⁰ A further awards competition proposed by the USPTO (at the time of writing) is entitled ‘Patents for Humanity: Clean Energy Technologies’, a green technology version of the USPTO’s ‘Patents for Humanity’ awards competition.

- In South America, **INPI Brazil** has operated a ‘Green Patents’ program, to contribute to the fight against global climate change by accelerating examination of patent applications relating to environmental technologies. INPI’s motivation is chiefly to make it possible to identify new technologies that can be quickly used by society, stimulating licensing and encouraging innovation. The Green Patents pilot program began in April 2012 and its third phase ended on April 2016. From December 2016, INPI began to offer priority examination of applications related to green technologies, a program that continues to operate (as of June 2022).
- Also in South America, **INAPI Chile** offers a fast track for granting patents related to sustainable technologies.
- Within Europe, **UKIPO** established its ‘Green Channel’ in 2009 to encourage innovation in green technologies that can combat climate change. Patent applicants may request accelerated processing of their patent application provided that the invention has an environmental benefit, at no additional charge. Typically, UKIPO explains that this measure reduces patent prosecution times from 2-4 years to around 9 months from application filing date. Applicants can also select which actions they wish to accelerate (search, examination, combined search and examination, and/or publication).

UK IPO publishes a searchable database of published patent applications and granted patents which have been accelerated under its Green Channel⁶¹. These data show that whilst uptake has increased in recent years, Green Channel applications only make up approximately 2% of all published GB patent applications (4,000 patent

⁶⁰ [Climate Change Mitigation Pilot Program](#) (accessed 27 June 2022)

⁶¹ <https://www.ipo.gov.uk/p-qcp.htm>

applications since 2009)⁶². This uptake appears low, considering that there has been a 170% increase recorded in the number of ‘green tech’ patents filed over the last decade, and may suggest that some UK applicants may actively choose to delay prosecution/grant (for example, as a means of delaying further costs).

- **IPOPH Philippines** offer filing fee reductions for small entity applicants and green tech invention applicants.

Research has confirmed that several other national IP offices, including **Australia, Israel, Canada and Japan**, provide accelerated prosecution schemes for ‘green patents’; like the UK, all of these require applicants to submit a written request setting out the ‘green credentials’ of the invention. In **Republic of Korea**, rather than ‘self-certification’, there is a requirement for the innovation to have the results of a prior art search submitted to the IP office in order to apply for accelerated prosecution, and patents are only eligible if they are funded or accredited by the Korean government or given a ‘green certificate’.

Within the second category, of general measures that can include sustainability benefits, examples include:

- SIPO (now **CNIPA**)’s order no. 76 of 2017. This set out administrative measures to accept requests to prioritise the examination of certain patent applications and review cases (invention patents, utility models and design patents) that are not already covered by any international bilateral agreement. The first set of qualifying criteria specifically includes cases which are deemed to relate to “*energy conservation, environmental protection, new sources of energy and new energy vehicles*”, but this and other categories also include other State-designated priority areas of activity. The order states that CNIPA reserves the right to determine what quantity of cases will be eligible depending on technology trends and examination capacity.

Prioritisation for invention patents means that (subject to prompt responses from the applicant and the complexity of the case), a first notice of examination opinion should be issued within 45 days, and the case closed within 12 months. This is reduced to two months for utility models and design patents. Prioritisation can also be requested for patent review cases and invalidation proceedings.

Individual provinces may issue their own guidance on how these applications may be handled. In Jiangsu, for example, only invention patents that have reached the substantive examination stage may be prioritised (alongside utility models and designs), and it may prioritise requests made by particular sources. The main supporting requirement concerns information on the technological advance. No fee is payable for the prioritisation review. The guidance issued in Shanghai is similar.

- **EPO**. The European Patent Office has no specific fast track for ‘green patents’. However, it has a general accelerated examination system (PACE) and accelerated prosecution may also be achieved via related schemes such as the Patent Prosecution Highway (PPH)⁶³. In general, a request for accelerated patent prosecution under the PPH can be made at any participating IP office for any valid patent application, irrespective of SDG- or COVID-driven considerations⁶⁴.

⁶² UKIPO response to WIPO Japan questionnaire June 2022

⁶³ <https://www.epo.org/applying/international/patent-prosecution-highway/outline-faq.html>

⁶⁴ https://www.wipo.int/pct/en/filing/pct_pph.html

- **Switzerland.** In some cases, for example at IGE Switzerland, expedited processing incurs additional fees⁶⁵⁶⁶.
- **Singapore**⁶⁷. Expedited patent grants are deemed to be critical for businesses to secure protection for innovations driven in response to Covid-19 and to weather the challenging global economic landscape. Singapore's Patent Fast Track program is a pilot scheme introduced in May 2020 to accelerate grants of patent applications during the pandemic, making it possible for companies to obtain a Singapore patent grant – in any technological field - within six months of filing. This became the world's fastest application-to-grant process of its kind, and has since been expanded to include related trade mark and design applications, being renamed as the SG IP Fast Track programme in September 2020. The program was capped at five patent applications per month, and was fully subscribed from 2020 to 2021.

4.3. Use of artificial intelligence ('AI') in IP office products

Artificial intelligence ('AI') is a set of computerized tools designed to perform tasks that normally require human intelligence, usually applied to large datasets. Generally, business applications of AI are designed to improve the speed and efficiency of processes – sometimes to the extent of making processes possible that would otherwise be too labour-intensive to contemplate.

AI technology therefore has a potentially important role to play in sustainability, and the technology trends associated with it have been the subject of a recent WIPO study⁶⁸. AI also poses some challenges to the IP system itself (the patentable status of inventions that arise from AI is currently the subject of intense international debate).

The AI hierarchy is comprised of a number of concepts, the most generally accepted of which are:

- *Machine learning ('ML')* – training computers to identify patterns in data and/or predict outcomes
- *Neural networks ('NN')* – algorithms designed to mimic the way the human brain works (often targeted at problems that are too complex to address using 'ordinary' computer code)
- *Deep learning ('DL')* – a subset of machine learning where a model can analyse data without being trained or given specific instructions
- *Natural language processing ('NLP')* – programs that help computers understand, interpret and respond to written text or speech

⁶⁵ <https://www.ige.ch/en/protecting-your-ip/patents/before-you-apply/costs-and-fees/patents-fees>

⁶⁶ <https://www.ige.ch/en/protecting-your-ip/trade-marks/national-applications/costs-and-fees>

⁶⁷ 8 "Growing with Resilience Through Intangibles", IPOS (www.ipos.gov.sg/manage-ip/growing-with-resilience-throughintangibles).

⁶⁸ https://www.wipo.int/edocs/pubdocs/en/wipo_pub_1055_exec_summary.pdf

The relationship between these elements may be represented graphically as follows:

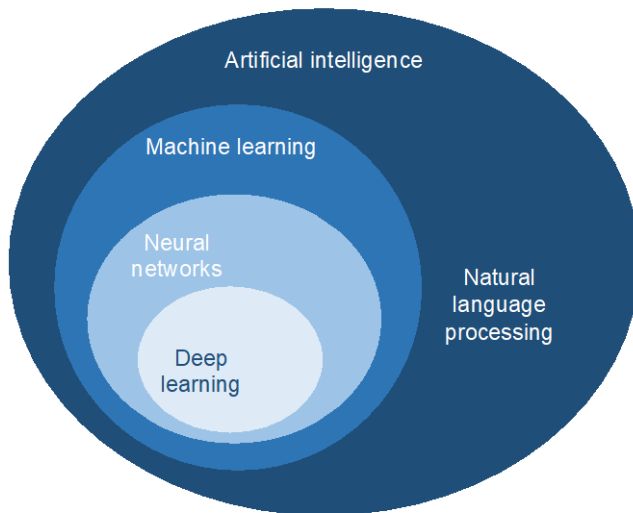


Figure 5 – indicative relationships between different technologies associated with Artificial Intelligence

Globally, WIPO assists IP offices and their clients with the following main sets of tools:

- IPCCAT, to assist patent filers and examiners to categorize patent applications into technical units.
- WIPO Translate for patent documents, incorporated into Patentscope and available to individual IPO systems.
- Image searching as part of the Global Brand Database.
- WIPO GREEN database of needs and green technologies using AI-NLP in two unique search functions of “full-text search” and the “Patent2Solution” search.

Most applications of AI by IP offices are directed at facilitating and streamlining the IP rights filing and examination process, and are summarized in section 4 following. However, some offices have also experimented further with the use of specific tools, including some that are AI-powered, to assist applicants directly.

4.4. Other initiatives and measures

Examples of **fee reductions** relating to technologies that support sustainability are much less prevalent among IP offices than instances of accelerated search and examination. In the schemes referenced above, search and examination fees have to be paid as normal – the only benefit is prioritisation. One exception, however, relates to **India**, where filing fees have recently been discounted by 80% for female entrepreneurs (as well as for start-up companies and micro, small and medium-sized enterprises more generally), as part of a national drive to encourage innovation. Qualifying applications are made online⁶⁹.

India also provides a possible example of indirect financial incentivization. “*The Government Initiative, Startup India, aims to help Indian entrepreneur and Micro Units Development and Refinance Agency (MUDRA) ensures loans at low rates proving helpful in providing credit to MSMEs. Several structural reforms have been taken for*

⁶⁹ <https://taxguru.in/corporate-law/patent-fees-start-upsmeswomen-entrepreneurs-reduced-80.html>

*sustainable economic growth and productive employment. [As a result, the] number of patents granted has been regularly increasing”.*⁷⁰

In **Africa**, the Companies and Intellectual Property Commission (CPIC) **South Africa** and Office Marocain de la Propriété Industrial et Commerciale (OMPIC), **Morocco** both participate in the Inventor Assistance Program⁷¹ which supports inventors and small businesses with limited resources to transform their innovation into commercial assets. The IAP matches selected beneficiaries with a volunteer patent attorney or agent to help them navigate the patent system at no cost. The Program benefits from a global network of volunteers that provide patent drafting and prosecution services on a *pro bono* basis to beneficiaries in their own country and in selected jurisdictions. At regional level, **ARIPO** realises the need for a robust IP system. Its strategic plan for 2022-2026 strongly reinforces the SDG agenda⁷²

A number of IP offices have implemented **education and outreach programs** to support UN SDGs, We observed that education and outreach activities fall broadly into two categories; “training” and “awareness raising”. Training programs are focused on particular groups, typically practitioners, and awareness raising tends to be directed to the public at large. For example, **UIBM Italy** has delivered training seminars on “Green Technologies” targeted on the public at large⁷³. UIBM has received an award from the Ministry of Economic Development for its awareness-raising seminar program on “green technologies and alternative materials” for the academic and research communities⁷⁴.

During the Portuguese presidency of the European Union, **INPI** organized a webinar to discuss the protection of innovative green technology solutions. In 2020, it also prepared a study on patent applications supporting the transition to a low carbon economy under the theme ‘Innovating for a Green Future’, and in 2021, it organized a webinar as part of WIPO GREEN entitled ‘The future of Planet Earth as the (industrial) property of us all’. Most recently, in May 2022, INPI collaborated with **OEPM** (Spain) to produce a report on ‘Patents and the control of rural fires’. It has been participating in further studies on how IP can help to find mechanisms to protect the population from natural disasters, and other activities with young people, in schools and seminars.

A number of IP offices are also engaged with other government agencies seeking to promote achievement of SDGs. The USPTO for example works with the Department of Commerce and even the White House.

WIPO has been active in addressing inclusion and diversity, notably by appointing the Organization’s first IP and Gender champion ⁷⁵ WIPO also is organising its Training, Mentoring and Matchmaking Program on Intellectual Property for Women Entrepreneurs from Indigenous Peoples and Local Communities⁷⁶.

⁷⁰ Government of India, Ministry of Statistics and Programme Implementation, National Statistical Office, Sustainable Development Goals, National Indicator Framework, Progress Report 2021

⁷¹ <https://www.wipo.int/iap/en/0> other participating countries include Chile, Colombia, Ecuador, Peru, the Philippines

⁷² <https://www.aripo.org/wp-content/uploads/2022/03/ARIPO-Strategic-Plan-2022-2026-1.pdf>

⁷³ <https://uibm.mise.gov.it/index.php/it/comunicazione-ed-eventi/accademia-uibm/i-seminari-dell-accademia/seminari-accademia-2022>

⁷⁴ <https://uibm.mise.gov.it/index.php/it/premiati-ad-expo-dubai-preso-il-padiglione-italia-i-vincitori-del-premio-ipa-intellectual-property-award-2021>

⁷⁵ https://www.wipo.int/pct/en/news/2021/news_0043.html

⁷⁶ https://www.wipo.int/tk/en/women_entrepreneurs/

The IP office of Chile, **INAPI**, engages with the country's National Council for Implementation of the 2030 Agenda for Sustainable Development; it lists addressing gender and inclusivity matters as part of its contribution and has prepared gender-based reports on patents and trade marks, though it notes the difficulty in generating accurate data due to the limitations of the information captured during the filing process. It also sees the use of Geographical Indicators, Denominations of Origin, collective and certification marks as important for protecting the interests of traditional Chilean products. INAPI also publishes public domain and technological surveillance reports related to energy Saving / carbon footprint reduction, and process efficiencies.

A number of IPOs e.g. IGE Switzerland, EPO and EUIPO mention “sustainable procurement” such that their procurement of goods and services *per se* are sustainable and/or the suppliers have sustainability credentials. This approach can be seen as both inward- and customer-facing.

The **UK IPO** has a number of activities to ensure that IP-related matters are considered within programs aimed at increasing the uptake of SDGs⁷⁷. Noting that IP rights play a significant role in underpinning the development and adoption of new technology that can tackle climate change, UK IPO is engaging across government on strategies related to net zero, for example by spreading opportunity to all parts of the nation through ‘levelling up’ or assisting the UKs Foreign, Commonwealth and Development Office (FCDO) to engage with other countries to achieve SDGs⁷⁸ (including offering technical assistance through training examiners, resource and capacity building, best practice exchanges, bilateral co-operation, supporting WIPO treaties and global IP systems aiming to promote economic growth, gender equality and innovation). The UK IPO also published a report⁷⁹ on the gender profile of global patenting. Furthermore, as well as IP education programs, financial support to SMEs for audits, and support for UK companies when navigating the international IP environment, UK IPO has also published a series of short reports looking at patenting of green technologies, linked to 10-point plan priorities⁸⁰.

IGE Switzerland is actively discussing the role that IP can play in plant variety protection, in traditional knowledge, biodiversity and sustainable agriculture within the auspices of the WIPO intergovernmental committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore⁸¹ IGE also published an extensive report on GreenTech⁸².

The Intellectual Property Office of the Philippines (IPOP HL) has also recently launched incentive programs in a bid to boost the participation of women inventors and designers in innovation activities. This program⁸³ will waive certain fees for application, publication and substantive examination, and applications will also be accelerated.

⁷⁷ <https://www.gov.uk/government/publications/uk-innovation-strategy-leading-the-future-by-creating-it>

⁷⁸ <https://www.gov.uk/government/publications/implementing-the-sustainable-development-goals/implementing-the-sustainable-development-goals--2>

⁷⁹

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/567518/Gender-profiles-in-worldwide-patenting.pdf

⁸⁰ [Offshore wind power patents](#); [Low-carbon hydrogen patents](#); [Advanced nuclear power patents](#); [Greener vehicle patents](#); [Greener buildings and heat pump patents](#); [Flood and coastal defence patents](#); [Carbon capture, usage and storage patents](#)

⁸¹ <https://www.wipo.int/tk/en/igc/>

⁸² https://issuu.com/cimark/docs/scr_2020_issue

⁸³ <https://www.worldipreview.com/news/philippines-ip-office-waives-fees-for-women-led-patent-applications-22242/#%2EYmvwhAfctY0%2Elinkedin>

In 2021 proposed legislation, the Inventor Diversity for Economic Advancement (IDEA) Act⁸⁴ was announced in the **USA** aimed at closing the gap that women and minorities face when procuring patent rights, as part of which the United States Patent and Trademark Office (USPTO) would be directed to collect demographic data from applicants and make this public. This will complement current major activities such as 'Inclusive Innovation' offering access to USPTO initiatives and support (including free services) to ensure people from all backgrounds have opportunities to become innovators⁸⁵.

⁸⁴ <https://www.tillis.senate.gov/2021/3/tillis-introduces-bipartisan-bicameral-bill-to-close-the-patent-gap-faced-by-women>

⁸⁵ <https://www.uspto.gov/initiatives/equity>

4.5. Conclusions

As noted above, the customer-facing (external) measures in most common use across IP offices that contributes to SDGs is accelerated prosecution. In the majority of cases, this incentive has been in place for some years. In some cases, but not all, the measure is specifically targeted at technology that has an environmental benefit (rather than a more general contribution to SDGs).

Where detailed evidence or analysis has been published, it suggests that take-up is limited among companies that have inventions with sustainability benefits. The LSE research suggests that younger businesses are more likely to find acceleration beneficial, though the UK IPO statistics are inconclusive in this respect.

Acceleration in general may have had other benefits during the pandemic, however, especially in relation to technologies that have made a direct contribution towards addressing Covid-19. The period has also seen increased uptake of electronic filing systems, and businesses appear to have embraced online meetings with IP office employees, with a corresponding benefit for both parties in terms of reduced travel.

Little evidence has been found of direct financial incentives. Fees are generally unchanged for sustainable technologies, with the exception that online application is usually rewarded with a reduced charge. It is notable that nearly all these initiatives are directed at patents (and in some cases utility models, where applicable); this research has not identified additional incentives to encourage or reward green trade mark registration, and there are a just few isolated examples of work on plant varieties, traditional knowledge and geographical indicators.

Several IP offices are active in training and education. IPOPH (Philippines) has a range of learning and education initiatives which are also age-group and gender inclusive. IPOPH specifically mentions training in IP for multipliers/intermediaries (Innovation and Technology Support Offices ITSOs) to support innovators (the 'end-users') in the field, a particular requirement for a country spread over an archipelago of thousands of islands. Other offices bring SDGs into their programs as a means of awareness-raising; UK IPO is one example of an office that is lobbying within government to ensure IP is considered within other programs aimed at increasing sustainability.

5. Measures to operate IP offices more sustainably

5.1. Carbon footprint reduction

As noted in section 3 above, many offices have made substantial changes to operating practices in order to respond to the challenges of the Covid-19 pandemic. Independently of these developments, international, regional and national bodies have made commitments to make their operations more environmentally friendly. The following examples illustrate some specific ways in which this is being achieved (in addition to the initiatives undertaken by WIPO itself, summarized in section 2.3 above).

The **EPO** has made demonstrable progress in reducing its carbon footprint, through measures such as rationalised business travel, teleworking, and sustainable infrastructure, waste and water management. It claims to have made reductions of 36.7%, and plans to be carbon neutral by 2030. The use of biomethane heating in The Hague premises is reported to have led to a reduction of 1,300 tonnes of CO₂ emissions.

The Green Organization⁸⁶ has recognised and rewarded the **EUIPO** for the dramatic improvement of all its environmental indicators, as well as for offsetting its residual CO₂ emissions, the EUIPO thereby becoming a carbon-neutral organization⁸⁷.

Some offices at a national level have provided, or published, detailed examples of the work being done on carbon footprint reduction. Two examples illustrate the measures being implemented and the target objectives of these programs.

Firstly, **UK IPO** has been conducting a 5-year transformation program to transform its IP services, processes and systems through the use of digital technology. It expects its carbon footprint to reduce significantly through not printing, posting and receiving as many paper forms. It also expects to retire its on-site servers and move to cloud servers, which will use newer, more efficient hardware. Having more efficient processes and services is expected to benefit staff and customers by spending less time using IPO's services, and therefore expending less energy per transaction.

Furthermore, UK IPO Corporate priorities 2022/23 include finalizing a Carbon Net Zero Strategy and focusing on Greening Government Commitments from 2021 – 2025. The Greening Government Commitments (GGCs) set out the actions UK government departments and their partner organizations will take to reduce their impacts on the environment in the period 2021 to 2025. Specific sustainability targets for which UK IPO is developing a strategy include:

- Reducing overall greenhouse gas emissions by 62%
- Reducing direct greenhouse gas emissions by 30%
- Reducing overall amount of waste generated by 15%
- Reduce water consumption by at least 8%

UK IPO also aims to continue to buy more sustainable and efficient products and services, to develop and deliver Nature Recovery Plans for land, estates, development and operations, and to develop an organizational Climate Change Adaptation Strategy across estates and operations (consisting of a Climate Change Risk Assessment and an Adaptation Action Plan).

Secondly, **INPI Portugal** has made efforts to modernise its old architectural design building to achieve energy and water consumption reductions. Steps include:

- Equipping the faucets of all WCs with stoppers, to be able to turn off the water after a few moments
- Installing automatic light switches driven by sensors in the WCs and on the stairs of the main building
- Replacing damaged blinds so that all the natural light can be used more easily
- Replacing all lamps with LEDs that have lower consumption and greater longevity
- Replacing air conditioning systems with more recent equipment, with lower consumption and reduced loads of fluorinated gases.

Furthermore, INPI has also changed a number of institutional practices, such as:

⁸⁶ <https://www.thegreenorganization.info/>

⁸⁷ https://euiipo.europa.eu/tunnel-web/secure/webdav/guest/document_library/contentPdfs/about_euiipo/annual_report/annual_activity_report_2021_en.pdf

- Launching an internal awareness campaign promoting the use of natural rather than artificial light, and encouraging staff only to print when necessary (printing equipment is now only turned on when needed)
- Introducing a system for recycling
- Working to reduce waste, such as avoiding unwanted or incorrect prints
- Launching campaigns to take all services online, reducing the use of paper and making it easier to contact the organization.

INPI is also in the process of acquiring a document management system to be applied across all departments. This system allows scanning of all documents and their circulation, thus avoiding unnecessary printing. It also enables access to digital files.

IGE Switzerland IPI is a member of the resource and environmental management program of the federal administration. It includes, among others, environmental measures on the premises such as solar panels, renewable energy as well as measures for the reduction of CO2 emissions during business trips.

The **Canadian Intellectual Property Office** has also taken numerous steps in recent years to reduce its carbon footprint such as introduction of various digital services doing away with paper copies of IP documents (as stated earlier, CIPO went from receiving primarily paper filings and correspondence to over 90% in electronic form). Also, by moving many of its services to virtual platforms it is reducing carbon emissions via less travel requirements, such as its IP awareness and education content pivoting to digital service delivery and its trademarks opposition hearings being conducted entirely by videoconference and teleconference.

USPTO has taken a number of steps⁸⁸ to reduce its carbon footprint including generating zero waste to landfill, installation of more than 34K LED lamps and vacating excess office space to reduce its energy consumption by 10.1% in 2021 compared with 2019. It has also reduced its carbon emissions through telework programs. It has ongoing sustainability and resiliency efforts in the form of an internal demand response program (related to air conditioning and lighting), data centre upgrades and IT disaster recovery and telework expansion. It also formed a Climate Working Group in March 2021 to review sustainability efforts and explore new opportunities including:

- USPTO management - Exploring capital improvements and changes in internal practices to reduce carbon footprint of the USPTO
- IP Policy and operations – exploring updates to USPTO mission-related programs and practices to facilitate green innovation.

5.2. E-filing availability

As the above table indicates, e-filing for trade marks, designs and patents is available from essentially all of the IP offices referenced in the present study. Many copyright registries (where present) also offer e-filing means. E-filing for IP applications began decades ago, predating the establishment of the UN SDGs in 2015, and more recently has been recognised as offering sustainability benefits.

The original rationale for the introduction of e-filing was the increase in desktop and mainframe computing power, the development of online filing software, and improvements in network and internet connectivity. Beyond this study, most

⁸⁸ <https://www.uspto.gov/sites/default/files/documents/20210805-PPAC-Sustainability-and-Environmental-Stewardship.pdf>

international, regional, and national IP offices now offer online filing as an option, and many actively promote its use by discouraging traditional hard copy filing.

Exemplars of sustainable e-filing practices of relevance to this study include the following:

- **WIPO** offers a completely paperless B2B online services to participating IP offices for registering trade marks⁸⁹
- **EPO** offers end-to-end online services for filing EP, Euro-PCT and PCT applications; submissions in opposition, appeal, limitation and revocation proceedings before the EPO; and subsequently filed documents for all EP proceedings. It can also be used to file applications and documents with participating national offices⁹⁰
- **EUIPO** offers a suite of online filing services⁹¹ for trade marks and designs in respect of filing, renewals, invalidity revocation, and appeals
- With effect from 31 July 2022, **USPTO** is offering a new online patent filing service⁹² to include options for provisional, and non-provisional utility patents and for design patents
- **INAPI Chile** offers online trademark filing via the INAPI website (www.inapi.cl.) The application fee must be paid through an electronic transaction, i.e. using a bank account, credit or debit card. To file an application online, it is necessary to create a user account with ID and password credentials.
- **UKIPO** has launched One Transformation⁹³, a five-year digitization program. At its heart is a single, integrated system for all registered IP rights (patents, trade marks and designs) allowing customers to seamlessly apply for, manage and research all of their IP rights in one place. This moves away from building services around separate IP rights and focuses instead on the key tasks its customers need to perform ('Manage IP'; 'Secure IP'; 'Research IP'; 'Challenge IP').

5.3. Adoption of artificial intelligence (AI) for efficiency gains

As noted in section 3, the primary focus of AI amongst IP offices has been to improve internal operations. As an example, one way in which AI can facilitate improvement is to make searches more comprehensive both by surveying a wider pool of data and by deploying tools that are more sophisticated than keyword searches, incorporating syntactical and semantic analysis.

Various AI solutions are being evaluated and implemented by a range of offices, including a number of those under consideration for this study. WIPO maintains an index of IP office AI initiatives⁹⁴.

Some of these applications have not directly substituted human interaction (for example, the automated classification tools trialled by UK IPO in 2018 could not match its 80% manual success rate⁹⁵) but are used to speed up and supplement the allocation process.

At a regional IPO level, **EPO** has implemented AI in a number of ways, using it for automatic pre-classification of patent applications to assist examiner allocation, and for

⁸⁹ https://www.wipo.int/madrid/en/how_to/efile/

⁹⁰ <https://www.epo.org/applying/online-services/online-filing.html>

⁹¹ <https://euipo.europa.eu/ohimportal/en/online-services>

⁹² <https://www.uspto.gov/patents/apply/patent-center>

⁹³ <https://www.gov.uk/government/publications/one-ipo-transformation-prospectus>

⁹⁴ https://www.wipo.int/about-ip/en/artificial_intelligence/search.jsp

⁹⁵ UKIPO: The Quest for Digital https://www.wipo.int/meetings/en/doc_details.jsp?doc_id=407117

automation of CPC code allocation (including subsequent re-classification in the event of changes to the CPC structure). It also uses AI, principally ML, to automate prior art searches and queries, comparison of figures and drawings, and automation of file management, including annotation and quality checking.

EPO has developed its own reference data and system to evaluate automated tool performance and has developed a patent document model and its implementation in a knowledge and information management environment. As well as designing and building its own systems, EPO also makes use of commercial products and uses open source software libraries. It is also understood to be developing its own machine translation tool as well as providing Patent Translate to the general public (see above). Furthermore, an AI- approach to automatically tag patents from the y-branch of the CPC to identify climate change mitigation technologies in patents with high accuracy is ongoing and hopes to provide a prerequisite to understand, quantify and search prior art in this highly relevant field.

EUIPO has developed an image search system called TMVision which is used by internal examiners as well as being made available to the public in the eSearch Plus service (as noted above). It uses an NLP tool for machine translation (a version of which is shared with the public) and has an algorithm to assess a given pair of goods and/or services and predict the outcome of the comparison (currently only used to assist its internal examiners). EUIPO has also developed AI-based tools to extract information from letters and make decisions based on this information; the same process also facilitates analysis of classification outcomes and deficiencies in both trademark and design applications.

Globally, **WIPO**'s tools are referenced in section 2 above.

5.4. Other measures designed to achieve SDGs

In SDGs not directly concerned with environmental innovation and development, **INAPI Chile** is very active in diversity and inclusion. Its gender policy has been recognised as award-winning by the National Gender Equality Plan. INAPI is part of the LATAM/ Caribbean Gender network, and has issued a number of reports (2020-2022) on patents and trademarks and women inventors and entrepreneurs.

IP Australia has recently published statistics on patent applicant gender, which shows an increase in (a) the proportion of women inventors and an increase in (b) the proportion of patent applications with at least one female inventor. The gender gap still exists⁹⁶.

UK IPO has undertaken a number of initiatives to increase its activities on gender/diversity, resulting in a number of awards⁹⁷. It employs a Diversity and Inclusion manager, and has set up a number of networks, such as its BAME Network, established in 2017, Men's Network, Women's Inclusive Network and Mental Health services. Furthermore, for International Pronoun Day 2020, it set a target of having a gender neutral Manual of Patent Practice (MoPP) used by its examiners and others outside of the UKIPO. It used a crowdsourcing method to undertake this exercise, with patent

⁹⁶ https://www.ipaustralia.gov.au/ip-report-2022/chapter-2-patents?utm_source=Whatsnew&utm_medium=newsletter&utm_campaign=IPReport2022&utm_content=IPReportchapter2patents

⁹⁷ <https://ipo.blog.gov.uk/2021/10/01/spotlight-on-inclusion-words-from-our-staff-networks/>

examiners volunteering to adopt a chapter of the MoPP, identify gendered language and suggest suitable amendments⁹⁸. A wider project on language within the UKIPO is ongoing.

INPI Portugal is committed to the implementation of the global partnership for sustainable development, such as using IP for humanitarian needs, partnering with national and international institutions and participating in studies about IP comprising: how IP can help to find solutions to protect the population from natural disasters, as well as other activities with young people, in schools and seminars⁹⁹.

IGE Switzerland has an extensive experience to share with other IPOs in the scope of SDGs:

- Establishing a specific unit in IP offices dealing with the interlinkages between IP and sustainable development
- Coordinating and integrating activities in the overall governmental, and international approaches to SDGs
- Focusing on SMEs and university start-ups which are the beneficiaries of governmental programs.

IGE (Switzerland) suggests IP offices ought to collaborate with those WIPO committees whose remit is the attainment of SDGs and IPOs should also work with other UN agencies in achieving SDGs.

US PTO has a number of internal initiatives on diversity, including its Office of Equal Employment Opportunity and Diversity¹⁰⁰ and external facing activities such as the Council for Inclusive Innovation¹⁰¹. This aims to develop a comprehensive national strategy to increase participation in its innovation ecosystem by encouraging, empowering, and supporting all future innovators, especially women and other underrepresented groups. It also has numerous education activities, including Diversity in Innovation Best Practice Guides¹⁰².

CIPO (Canada) created a new champion of diversity, inclusion and accessibility in 2020-1 with a diverse portfolio including topics related to visible minorities, LGBTQ2+, women, indigenous peoples and accessibility. During the pandemic, CIPO continued to raise awareness of diversity and inclusion through virtual activities celebrating National Indigenous History Month, Black History Month, Asian Heritage Month, Latin American Heritage Month, National AccessAbility Week, International Women's Day, International Day of Pink, and Pride Season, amongst others¹⁰³. It also offers initiatives to make Canada's IP system more inclusive such as to meet the needs of indigenous peoples¹⁰⁴, including educational and awareness resources and funding, including an 'Indigenous Intellectual Property Program' grant¹⁰⁵, allowing indigenous organizations a grant for travel to WIPO sessions and events related to IP and Indigenous knowledge (IK) and Indigenous cultural expressions (ICEs), grants for small-scale IP initiatives such as research or policy paper and/or Project Stream for more complex projects.

⁹⁸ <https://ipo.blog.gov.uk/2021/10/20/crowdsourcing-brings-gender-neutrality-to-a-legacy-manual/>

⁹⁹ <https://inpi.justica.gov.pt/en-gb/INPI-News/Webinar-on-Green-Technologies>

¹⁰⁰ <https://www.uspto.gov/about-us/organizational-offices/office-equal-employment-opportunity-and-diversity>

¹⁰¹ <https://www.uspto.gov/initiatives/equity/ci2>

¹⁰² <https://digitalcommons.law.scu.edu/facpubs/989/>

¹⁰³ [https://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/vwapi/Annual_report_2020-2021-eng.pdf/\\$FILE/Annual_report_2020-2021-eng.pdf](https://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/vwapi/Annual_report_2020-2021-eng.pdf/$FILE/Annual_report_2020-2021-eng.pdf)

¹⁰⁴ <https://www.ic.gc.ca/eic/site/108.nsf/eng/00004.html>

¹⁰⁵ https://www.ic.gc.ca/eic/site/108.nsf/eng/h_00010.html

IPOPH (Philippines) successfully implements IPOPH Learning Activities Workspace (ILAW) which originally was aimed at creating an IP-conscious Philippines through balanced and effective IP learning and education. It reports that uptake has been impressive with thousands of international participants from Asia, the Sub-Continent, Middle East, Africa and Europe.

5.5. Conclusions

In general, there is evidence that IPOs worldwide have embraced SDGs in their internal operations to a greater or lesser extent, to the limit of their own resource and policy constraints. The overall impression is that, in 'adopting' SDGs for their own operations, as well as promoting SDGs to their internal and external target groups, many IPOs are engaged in strengthening the IP systems in practice and perception.

E-filing has become almost ubiquitous in recent years, and all of the IP offices examined for this study offer it, with corresponding reductions in the amount of paper produced and handled, supporting SDG 12. The majority of offices have taken advantage of digitization by introducing AI and related technologies into their operations, to streamline case handling, improve classification and matching and/or strengthen analytical capabilities, with benefits for SDG 9.

Throughout Europe and North America, specific steps have been publicly announced to reduce carbon footprints of IP offices, within the limitations of budgets and building stocks. These support the achievement of SDGs 7, 9, 11 and 12.

Progress also appears to be evident on SDGs 4 and 5 relating to education, diversity and inclusion, with Canada having been particularly active on initiatives contributing to SDG 5. However, recent moves in the US reflect the fact that more effective analysis and action in this area may require additional information to be captured at the point of application.

6. Observations

6.1. Observations on sustainable innovation

As noted in section 3, there is a high degree of commonality between the customer-facing systems and procedures different offices have put in place, in order to reward companies pursuing sustainable innovations and encourage them to interact with IP systems in more sustainable ways. Accelerated prosecution is a case in point: concessions have been in place for certain situations for a number of years, but some countries have experimented with using them specifically to support green objectives. Generally, the inventor's reward is faster protection for qualifying technologies rather than any cost concessions.

How far this approach is actively encouraging sustainable innovation is harder to determine. This question is examined in a recently published empirical analysis by London School of Economics & Political Science (LSE) of programs to fast track 'green' patent applications in seven IPOs¹⁰⁶. It sought to understand answers to the following questions:

- How many patents have been filed under the various fast-tracking schemes?
- Which technologies are mostly involved?
- Do the programs significantly reduce the time from filing the patent to it being granted, compared to regular examination procedures?
- What type of company is most likely to make use of the fast-tracking procedure?
- Do the programs encourage the diffusion of green technological knowledge?

This study found that less than 20% of all relevant green patent applications requested accelerated examination. In more detail, the study found that:

- The low level of participation in the programs was likely to reflect the strong incentive patent applicants have to keep their applications in the examination process for as long as possible.
- The scheme was most in demand among small but fast-growing start-up companies in the green technology sector.
- Climate change-related technologies (in particular renewable energy technologies) represented the vast majority of applications in the fast-tracking programs.
- The available schemes have been effective in reducing the time from application to grant, by up to 75% for patents entering the accelerated procedure.
- The patents that have been fast-tracked appear to be of higher commercial value than other green patents that were filed at the same time but did not request accelerated examination.
- Analysis of patent citation data shows that fast-tracking programs have helped accelerate the diffusion of knowledge in green technologies in the short run (during the first years following the publication of the patents). It is not known whether this effect will persist in the long run.

Incentives dedicated to sustainability may also face challenges if applicants attempt to compromise and "game" the IP systems under the pretext of having "green" or "sustainability" benefits. IP offices are aware that they may receive unfounded claims of this nature, sometimes called "greenwashing. Some authorities¹⁰⁷ have provided

¹⁰⁶ https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2228617

¹⁰⁷ <https://www.lexology.com/library/detail.aspx?g=05d01527-aafe-4ffd-958d-bc9ecdac418f>

guidance to help businesses understand and comply with their existing obligations under consumer protection law when making "green" or "sustainable" claims, while others have been punishing companies over inappropriate 'green' claims, and requiring trade mark applicants to justify their green or sustainable claims and credentials¹⁰⁸.

At **IP Australia**, registered design applicants can obtain Green Tick¹⁰⁹ certification which complies with the latest international standards for sustainability, environmental auditing, and advertising. The latest advertising authority standards require that environmental or 'green' claims be backed by robust evidence, namely a life cycle assessment of a product's effects upon the environment and people.

E-filing is an established service at many offices (and present at nearly all of them) which often involves reduced cost as well as increased speed. While not intentionally introduced in order to drive sustainability benefits, this clearly plays a role in supporting the achievement of SDGs because it reduces the need for paper and encourages electronic communication throughout the rights prosecution process.

A number of IP offices are active in provision of training/education and research to inform sustainability issues. These initiatives often fall broadly into two categories; "training", typically directed at practitioners and "awareness raising" to the public at large. Examples include a seminar program on 'green technologies and alternative materials' from **UIBM Italy** and conducting consultations such as on the 'protection of inventions and creations made by AI with minimal human input' by **UKIPO**.

There are also some more isolated special efforts being made by some countries to improve inclusion through a focus on traditional knowledge, plant varieties and geographical indicators, which are likely to be of importance for less industrialised and technology-intensive sectors. The **Canadian IPO** for example has committed to implement the UN's Declaration on the Rights of Indigenous Peoples and has a number of initiatives to make Canada's IP system more inclusive.

SDGs are often considered in a co-ordinated approach and not individually. For example, many of the initiatives described above are delivered in collaboration with wider government, UN agencies such as WIPO and other IP offices to ensure that IP-related matters are considered within innovation strategies and programs aimed at increasing the uptake of SDGs. Continued cooperation with third parties is an essential part of future SDG goal achievement by WIPO and national IP offices globally.

WIPO currently engages with various stakeholders such as Chambers of Commerce, ASTP and other tech transfer agencies to assist with dissemination of IP education materials. Engagement with potential stakeholders and multipliers such as PATLIBs, technology brokerage networks such as the Enterprise Europe Network, accountants, banks, incubators/accelerators and IP professional services offers good opportunities to increase uptake of SDGs.

6.2. Observations on sustainable operations

As previously noted, the provision of e-filing services is widespread. This clearly plays an important role in reducing the use of natural resources (i.e. paper) and has proved to be a particularly important element in enabling national and international IP systems to continue to function during the Covid-19 pandemic. It is now possible for countries to

¹⁰⁸ <https://www.legalzoom.com/articles/registering-green-trademarks>

¹⁰⁹ <https://www.ipaustralia.gov.au/tools-resources/certification-rules/1057895>

contemplate not only incentivizing or rewarding e-filing, but requiring electronic registration, as Indonesia has demonstrated.

Besides reducing the use of paper, it is apparent that many offices are harnessing technologies such as AI to enable them to do more with less (including, as one example, to improve the quality of search and examination services). As has been observed with some of WIPO's own long-standing activities, the primary motivation for introducing these systems may not be making operations more sustainable; however, by enabling an increasing range of more menial and procedural tasks to be automated, it is apparent that such technologies can lead to more rewarding employment, in the spirit of SDG 8.

More radical steps to reduce carbon footprint are likely to be resource-constrained in most cases. Those IP offices which operate in markets where IP awareness is generally higher (and which consequently have more opportunity to recover operational overheads without pricing innovators out of the market) appear to be making the fastest progress in this regard, though all IP offices surveyed appear to have increased their use of remote working and virtual meeting facilities during the pandemic out of necessity; some of these practices are unlikely to return to previous operating modes, with the likelihood that long-term greenhouse gas emissions are likely to be reduced as travel becomes less essential.

One of the most encouraging outcomes from this study has been the evidence of a wide range of initiatives aimed at promoting diversity and inclusion.

6.3. *Way forward*

The authors acknowledge that the information used to compile this analysis of IP office activity is inevitably incomplete, both in terms of its geographical scope and the comprehensiveness of its findings in individual cases. Whilst primary and secondary sources have been consulted, not all IP offices publish their sustainability activities, or are accustomed to drawing connections between these activities and individual SDGs. Where any IP office reading this report believes that inaccuracies are present, or due account has not been taken of activities that are in progress or planned, there will be opportunities to update the report on presentation of the appropriate evidence.

One acknowledged omission relates to the African continent, apart from the references to activities in section 4.5 above. A study by the UN Economic Commission for Africa reports that the continent is halfway towards achieving the SDG goals and targets by 2030¹¹⁰, which is encouraging, and a recent academic paper implies that acceleration of progress may be achieved by means of IP. However, while Africa is well placed to take advantage of the current 4IR innovation wave and SDG drive, the academic paper's authors conclude that there is much room for improvement in some of the continent's IP systems¹¹¹. Africa should therefore be a focus for future investigation.

At the recent "Unstoppable Africa" event¹¹², Secretary General António Guterres noted that Africa includes some of the world's fastest growing economies, and said that SDGs need to be at the heart of business models. While highlighting some of the opportunities

¹¹⁰ <https://www.uneca.org/stories/africa%E2%80%99s-progress-towards-achieving-the-sdgs-and-targets-needs-strategic-acceleration-%E2%80%93-2020#:~:text=The%20average%20score%20across%20all,goals%20and%20targets%20by%202030>

¹¹¹ K.E. McDave A.Hackman-Aidoo US-China Law Review, January 2021, Vol. 18, No. 1, 12-29
doi:10.17265/1548-6605/2021.01.002

¹¹² <https://www.un.org/africarenewal/news/%E2%80%9Cunstoppable-africa-%E2%80%93-africa-leading-world%E2%80%9D>

on the continent, he said that now is the time for innovation, for new public-private partnerships and for jobs based on renewable technology in all sectors. He also stressed the importance of involving youth across projects, and ensuring that all efforts are gender equal.

The evidence from this study indicates that the IP system is actively supporting the achievement of SDGs. However, when asked to propose recommendations, the most common response from participating IP offices was that more collaboration and co-ordination is needed; not only because SDGs need to be addressed collectively rather than individually, but also because many of the challenges they seek to address are global in nature.



World Intellectual Property Organization
34, chemin des Colombettes
P.O. Box 18
CH-1211 Geneva 20
Switzerland

Tel: +41 22 338 91 11
Fax: +41 22 733 54 28

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External Offices visit:
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