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CLIMATE CHANGE AND THE INTELLECTUAL PROPERTY SYSTEM: WHAT CHALLENGES, WHAT OPTIONS, WHAT SOLUTIONS?

A SUMMARY OF THE ISSUES

INFORMAL CONSULTATION DRAFT ONLY

This document provides a summary of a longer issues paper. This summary, and the issues paper, do not present any official view. They are drafts prepared for informal consultations, with a view to clarifying the intellectual property issues arising from the global challenge of climate change. They do not attempt to advocate or advance any position, but aim only to capture some current issues in an accessible format.

Technology: cause, and remedy, of climate change?

Debate continues over how far climate change is caused by human activity. But one point is entirely clear: whatever its scale, humanity's impact on the climate – anthropogenic climate change, as the jargon has it – has essentially been caused by our technologies: the remarkable development and dissemination of the energy technologies that catalyzed the industrial revolution; the technological muscle that cleared much of the world's forests; the new industrial chemicals we synthesized and released into the atmosphere, unaware they would intensify the greenhouse effect.

It follows that reversing the human impact on the atmosphere – climate change mitigation – also boils down to deploying the right technologies. And adapting to the inevitability of a transformed climate will also need new technologies, widely disseminated, such as crops that will still feed those living in hotter, drier, more saline conditions. So technology was the root of the problem; and technology will be at the core of the solution.

What role for intellectual property?

The same applies for intellectual property (IP) and climate change: it's seen as a two-edged sword. The IP system, especially the patent system, is closely interrelated with many technologies that could help mitigate and Some scenarios would cast IP as a problem – as a barrier to technology diffusion. This is a widespread assumption in the climate change policy community. IP is something you have to get around. Other scenarios would cast the IP system in a positive right, as contributing to the crafting of solutions – the many, diverse solutions we will need to address the impact of climate change.

So is IP as a problem or solution? It is up to us. It will depend on whether we take an informed, strategic view or a reactive view. It will hinge on whether we take up the system in a positive spirit and ensure that it works as it is intended to, ensure that it delivers on its undoubted potential. For the IP system was certainly not devised as a means of blocking access to technologies or denying the public the benefits of new technologies. It was created not only to stimulate the creation of new technologies, but also to provide an efficient means of widely disseminating this new technological information, and to build structures to transfer the technology and to put it to work.

Building an information base for policy choices

Patent information systems allow us to track developments in key areas of climate change mitigation and adaptation technology. They show a welcome surge of investment, and an equally welcome diversification of inventive effort – including emerging players from developing countries. Whether these many patents flow into socially beneficial outcomes is ultimately a matter of informed choices, and effective management of this knowledge. This is the challenge for policymakers – what are the key technologies now, and what will be the key technologies in the future; and how can rights over those technologies be managed and structured most effectively to deliver them to the public, to disseminate the technologies needed to tackle the climate change challenge.

There are no simple answers to these questions: finding the solutions will be a matter of continuing dialogue and cooperation, both within the international community on the policy plane, and at a practical level on the part of individual enterprises. The task of assessing the complex factual situation, and of sifting through a welter of policy options, is an immense one, necessitating widespread collaboration and the pooling of diverse expertise. The IP system undoubtedly has the potential, in principle, to deliver the outcomes society demands of it; the challenge now is to realize those principles in practice.

IP & CLIMATE CHANGE: SNAPSHOT OF THE ISSUES

This section provides a brief review of the range of issues discussed more extensively in the draft issues paper.

Technology lies at the centre of the climate change debate – the impact of technology on the climate, how to stimulate green innovation, promoting technology transfer and the diffusion of technological knowledge – these are pressing questions for policymakers. International legal instruments and global policy initiatives place high emphasis on the role of technology in addressing the challenge of climate change. It is therefore natural that when climate change policymakers consider the intellectual property (IP) system, they focused almost exclusively on patents. The patent system is closely interwoven with the whole process of creating, refining, developing and delivering the kind of technologies that will be essential to mitigate and adapt to climate change. When the patent system works according to plan, it stimulates the creation of new technologies and creates pathways for their dissemination and uptake. But the patent system needs

constant attention and careful management to ensure that it does deliver in practice what it offers in principle.

Transparency is a key principle of the patent system; and here the system undoubtedly delivers, thanks to advances in information technology and the increasing availability of free information from many countries worldwide. Patent information provides an invaluable window on technology development. Patent landscapes give policymakers an overview of emerging technologies in key areas of interest – from wind turbine technologies to reversing desertification. Landscapes illustrate trends over time and the changing geographical profile of innovation, disclose the most active players and new entrants on the scene, and show the split between public and private, developed and developing, multinationals and small firms in those technologies of most interest to policymakers. Patent information can be used to chart the trend of the major energy companies to invest increasingly in renewable energy technologies, and can track what new carbon sequestration methods are under development.

Patent policy: in the balance

The essential logic of the patent system is often portrayed as a 'balance': an optimal balance that respects the private interests of those investing resources in the development of new technologies, and that promotes the broader public interest in seeing these new technologies emerge not only as abstract scientific publications, but as effective, proven technologies that are actually disseminated to the broader public, for overall welfare outcomes. Achieving this idea of 'balance' is a complex matter, in turns both technical and controversial; but, broadly speaking, the idea of balance can be broken down into two clusters of issues:

- pre-grant questions (what kind of technologies should patent offices grant patents for, and what claimed inventions should be denied protection), and
- post-grant questions (what forms of licensing and other access to technology should be encourages; what steps should be taken to monitor and to regulate, as necessary, the actual use of patent rights in the marketplace, and what forms of intervention are required, if any)

Pre-grant phase: patent pending

The essential question in the **pre-grant phase** is to ensure that the patents that are granted conform most closely to the public interest, as expressed in the so-called

'patentability' criteria – patents are intended only for technologies

- that are genuine additions to existing technological knowledge ('novel'),
- that involve a substantial step forward in their technical field ('inventive' or 'non-obvious'), and
- that are practically useful ('utility' or 'industrial applicability').

The patent application must describe the invention (its 'teaching' function) sufficient for a skilled reader to carry out the new technology in practice – this is what makes patent information systems valuable as a source of technology diffusion and dissemination; and the scope of the patent rights claimed cannot extend beyond the new technology actually disclosed in the patent: patent offices frequently narrow claims during the application phase to restrict patent rights to their legitimate scope.

These criteria are well established and widely accepted at the level of broad principle, but ensuring that, in actual practice, issued patents do conform with these criteria (the question of 'patent quality') is key to an effective patent system. Many national laws also give patent offices the power to exclude technologies that would cause damage to the environment if commercially exploited, a substantial area of overlap between patent law and practice and environmental policy.

Post-grant phase: the patent in the marketplace

Once a patent is approved and issued on a given technology, **post-grant considerations** apply, as the patented technology moves into a broader legal and regulatory environment**:** questions concern how to encourage, or indeed legally require, a patent owner to exercise the exclusive patent rights appropriately; and what other remedies may be needed to serve the public interest. After the patent enters into force, the focus is therefore more on how the rights granted under the patent are to be exercised, and the broader public impact of the exercise of the patent rights. Even so, whether the patent was validly granted may still be reviewed, as there is no guarantee that the original decision to grant a patent took account of all relevant background information and correctly applied the patentability criteria.

Rarely does a new patented technology stand entirely on its own, and technologies typically have to be packaged together from several sources, through a range of licensing arrangements and other technology transfer structures; this applies especially to platform technologies, such as a new solar cell technology, but also to the many improvement and refinements of existing technologies that will see, for example, efficiency gains in sustainable energy production. The manner in which a patent holder

licenses technology may attract the attention of regulators, including competition authorities. For patented technologies that are developed by public sector institutions or through public funding, there may be additional expectations that the technology should be made available for the public benefit.

In general, post-grant questions include:

- Determining what licensing structures and IP management strategies are appropriate to promote the uptake and dissemination of technologies needed to address climate change; distinguishing the special responsibilities of those publicly funded or public sector institutions which increasingly hold key patents on valuable technologies with a strong public interest flavour.

- Shaping and exercising exceptions and limitations to patent law, to safeguard the public interest, such as exceptions for pre-commercial or non-commercial research, and for steps required to comply with regulatory processes.

- Establishing the rationale for other interventions which override exclusive patent rights, such as remedies for anticompetitive practices and other abuses of patent rights, including compulsory licensing, and government use authorizations for non-commercial public use.

Patents and technology transfer

The role of patents in the transfer of technology, particularly for technologies needed for sustainable development, has been the subject of a longstanding international debate. Current concerns about climate change, health and food security have given this debate renewed intensity and focus, given the crucial role of access to new technologies in crafting effective responses to these global challenges. The debate is a complex, multifaceted one, blending international law with the economics and policy context of innovation, competition policy, and ethical considerations. But some broad observations can be made:

- The simple existence of a patent on a particular technology is not a barrier in itself to transfer of technology; nor does it guarantee that the technology will be fully exploited in all possibly beneficial ways. Much depends on how the exclusive rights that come with a patent are deployed; where they are in force and where they are not; and how they can be used as components in constructing suitable vehicles for technology transfer.

- Equally, the absence of an enforceable patent right in a certain country does not in itself provide any guarantee of technology transfer. Most patented technologies are already free of enforceable patent rights in the majority of developing countries, and this absence of patent protection doesn't necessarily spur technology transfer. At best, it leaves open the prospect of using the technology disclosed in the patent document, but often without the partnership or involvement of the technology originator, and the transfer of valuable knowhow and other background technology that may be useful for the effective exploitation of the technology.

- The transparency of the patent system, if effectively exploited, can in itself serve as a major boost to technology transfer. In principle, it can help:

    - Track significant technological developments and trends, including monitoring new players, geographical shifts and the relative participation of public and private sector actors, established firms and new entrants
    - Avoid duplicative research and development, and enable technological leapfrogging and other forms of cumulative development, such that innovations disclosed and published through the patent system fuel further innovation
    - Organize and structure technology transfer arrangements, as well as providing an effective incentive not only to enter into such arrangements but also to include within them improvements, knowhow and other related technologies

- Taking out a patent is not a stand-alone technology transfer mechanism, any more than foregoing the option of a patent is a single form of knowledge management. Rather, patents are used in a host of different ways to transfer technology, depending on whether effective transfer of the technology concerned requires
    - a market-based incentive for a core new technology to be developed and disseminated,
    - a means of leveraging access to other related technologies to form a package of technologies from different sources
    - public institutions to maintain an interest and a degree of leverage over technology developed through public investment
    - the creation of new enterprises as tailor-made vehicles for development of a new technology

- a broad-based open licensing structure to promote dissemination of a platform or enabling technology
- cross-licensing structures or pool arrangements that allow diverse technology players to build on the benefits of each others' technologies
- packaging the patented technology with other non-patented material, such as manufacturing knowhow, other commercial information, or regulatory approval dossiers

Intellectual property beyond patents

Given the essential focus on the innovation and dissemination of new technologies in the climate change debate, the patent system has borne much more scrutiny than other aspects of intellectual property law and policy. But IP is a broader field, and should not be conflated with patents alone. Several other aspects of IP law and policy may be relevant to addressing the challenge of climate change, for instance:

- The protection of undisclosed information or trade secrets for key areas of knowhow relevant to mitigation and adaptation;
- The use of certification and collective marks, geographical indications and other distinctive signs used to identify products that are particularly relevant to climate change mitigation;
- Protection of undisclosed information and regulatory data from the field testing of genetically modified crops relevant to climate change adaptation;
- The protection of traditional knowledge through conventional or sui generis mechanisms, including environmental and agricultural knowledge;
- The suppression of unfair competition, including such acts as greenwashing and misleading claims about carbon offsets.