

THE WTO TRIPS AGREEMENT – A PRACTICAL OVERVIEW FOR CLIMATE CHANGE POLICYMAKERS*

The WTO's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) sets out international standards for the protection and enforcement of intellectual property (IP) rights. TRIPS also includes the substantive provisions of key treaties on IP that are administered by the World Intellectual Property Organization, notably the Paris and Berne Conventions. IP issues have been discussed extensively in the work under the UNFCCC on technology development and transfer in view of the linkage between the IP system – and patents in particular – and the development and dissemination of the technologies that will be vital to addressing climate change mitigation and adaptation.

This paper endeavours to present a neutral, practical guide to the provisions of the TRIPS Agreement that are most relevant to this discussion. A spectrum of views has been expressed as to whether IPRs present a barrier to technology development, diffusion and transfer in developing countries, whether the IP system is an essential mechanism for technology development and diffusion, and the scope and implications for technology diffusion of existing international standards, including the provisions of the TRIPS Agreement, including the flexibilities provided under that Agreement. Some proposals have been made that would lead to significant adjustments to the IP system, particularly concerning the grant and exercise of patents on green technologies. More generally, discussions are posing questions about the scope of existing standards, and the options that can be exercised within the framework of those standards, both in terms of national legislation and in terms of innovative structures for managing and sharing IP rights.

Discussions concerning climate and technology therefore present certain practical questions about the nature, scope and range of flexibility within existing legal standards, particularly within the TRIPS Agreement. This paper seeks to provide a factual background to this debate, identifying relevant TRIPS standards and setting them in the context of the climate change negotiations. It does not seek to promote, interpret, comment upon, or refute any particular position or analysis.

Several forms of IP are potentially relevant to climate change mitigation and adaptation initiatives: patents, trademarks, especially certification marks, trade secrets/knowhow, plant variety rights, and the suppression of unfair competition. However, the climate change discussions touching on the IP system have principally concerned patents.

* This document has been prepared as an informal note to provide background for policy discussions by Antony Taubman and Jayashree Watal of the Intellectual Property Division of the WTO Secretariat under their own responsibility and without prejudice to the positions of WTO Members and to their rights and obligations under the WTO. No position on climate change or intellectual property issues is advanced, advocated or commented upon in this paper, and no views on the legal interpretation of TRIPS or any other legal instrument are proposed. In this form, it should not be cited or reproduced. Comments are warmly welcomed and can be sent to jayashree.watal@wto.org

This paper is structured as follows:

- an outline of relevant provisions of the TRIPS Agreement and related instruments.
- some conclusions vis-à-vis the IP issues raised in multilateral discussions on climate change.

A. TRIPS PROVISIONS RELEVANT TO TECHNOLOGY AND CLIMATE CHANGE

The WTO was established on 1 January 1995, when the package of trade agreements negotiated in the Uruguay Round came into force. The TRIPS Agreement is part of this 'single undertaking' of international trade law which was legally binding on original WTO Members once the WTO came into being, and to which later WTO Members must adhere when acceding to the WTO. However, grace periods were agreed to give Members additional time to give effect to TRIPS provisions, the duration of this period depending on their economic status. For developed country Members the delay allowed was for one year up to 1.1.1996; for developing country and transition economy Members it was up to 1.1.2000¹; and for least developed country Members this period has been extended from an original deadline of 1.1.2006 to 1.7.2013, with a possibility of further extensions upon duly motivated requests.² Therefore, LDCs are not bound by TRIPS to provide patent protection until mid-2013,³ and there is provision for this grace period to be further extended.

TRIPS incorporates and builds further upon pre-existing standards outlined in international IP treaties that are administered by WIPO, notably the Paris Convention for the Protection of Industrial Property (including patents, trademarks, designs) and the Berne Convention for the Protection of Literary and Artistic Works (on copyright).

TRIPS provisions on objectives and principles relating to IP protection

TRIPS stipulates that the objective of the protection and enforcement of intellectual property rights should be to both promote innovation and facilitate the diffusion of technology, balancing legitimate interests in a socially beneficial manner.⁴ This provision (Article 7) reflects the search for a balanced approach to IPR protection in the societal interest, taking into account the interests of creators and inventors and the interests of users of technology. IPR protection is

¹ Other than for product patents for fields of technology not already covered such as pharmaceuticals, where the relevant date for developing countries was 1.1.2005 for developing countries.

² However, national treatment and most-favoured-nation treatment have to be provided for whatever level of IPR protection that is already available. For product patents for pharmaceuticals, the relevant date for LDCs is 1.1.2016. TRIPS Council Decision (IP/C/25) extended the transition period for least-developed country Members of the WTO until 1 January 2016 in regard to the protection and enforcement of patents and rights in undisclosed information in the area of pharmaceutical products. To complete this measure, a decision by the General Council (WT/L/478) waived the otherwise applicable provision on exclusive marketing rights in Article 70.9 for the same period.

³ And until 2016 for patents on pharmaceutical products (see footnote 2).

⁴ Article 7 sets out that intellectual property protection "should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations".

expected to contribute not only to the promotion of technological innovation, but also to the transfer and dissemination of technology in a way that benefits all stakeholders and that respects a balance of rights and obligations. In addition, Article 8 recognizes the right of WTO Members to adopt measures, to protect, *inter alia*, not only public health and nutrition but also the public interest in sectors of vital importance to their socio-economic and technological development, provided those measures are consistent with TRIPS (for instance, in not being discriminatory). This provision also recognizes that Members may need to take appropriate measures (again provided they are TRIPS-consistent) "to prevent the abuse of intellectual property rights by right holders or the resort to practices which unreasonably restrain trade or adversely affect the international transfer of technology."

In 2001, Ministers of all WTO Members issued the *Doha Declaration on the TRIPS Agreement and Public Health*. This Declaration highlights the importance of the objectives and principles of TRIPS for the interpretation of its provisions. Although the Declaration does not refer specifically to Articles 7 and 8 of TRIPS, it refers to "objectives" and "principles", words that are the titles of these two articles respectively.

While TRIPS lays down general standards for the protection of intellectual property, achieving this "balance" under national laws and in practice is a matter for domestic policymakers and legislators to establish, through an appropriate mix of law, regulation and administrative measures within the policy space defined by the TRIPS Agreement, including through the use of flexibilities in the application of TRIPS provisions.

The most relevant IP standards for the protection of climate-friendly innovations are to be found in Section 5 (on patents) and Section 7 (on undisclosed information) in Part II of the TRIPS Agreement. Several other relevant provisions are dealt with briefly at the end.

1. Patents

TRIPS provides for general standards that national patent systems must comply with, but it does not supplant or serve as such a system; no patents are 'protected' or 'granted' under TRIPS. And in national systems, patents are not automatically issued or granted for eligible inventions. In order to get a patent, an inventor or his/her representative has to file a patent application in each jurisdiction in which he or she wants protection, and has to fulfil certain substantive and formal requirements before a patent is granted. Clearly, applications to patent specific inventions are rarely, if ever, filed in all possible jurisdictions; the majority of inventions are patented in a relatively small number of countries. Patents are territorial, meaning that a patent granted in one country has no legal effect in another. Therefore, if no patent is applied for or granted in a particular jurisdiction, there are no restrictions on making, using or selling the patented technology in that jurisdiction. Consequently, in the great majority of developing countries and least-developed countries, much "patented" green technology is likely already to be in the public domain, i.e. free to be used without legal constraint (provided there are no regulations, such as environmental laws, that prevent its use). A patent in one jurisdiction is also independent of any corresponding patent in any other country. This independent status means that the application, grant, rejection or revocation of a patent in one jurisdiction has no implication for the status of a patent on the same invention in any other country.⁵

⁵ This principle is set out in Article 4bis of the Paris Convention, incorporated by reference into the TRIPS Agreement.

(a) Basic TRIPS standards on patents

As a general principle, WTO Members are obliged under Article 27.1 to make patents available to applicants for any invention, whether product or process, in all fields of technology, provided three criteria are met, namely that the invention is new, non-obvious or involves an inventive step and is useful or industrially applicable. Some exclusions to this rule are permitted, but are not required: these are discussed below.

This principle means that anyone interested in obtaining a patent for an invention must have the legal means to do so in every Member's jurisdiction irrespective of whether the invention is a product or a process (for example, whether it is a new reflector/concentrator system in solar power or a new process for storing heat longer) and irrespective of the field of technology (for example, whether it pertains to chemistry or mechanical engineering). Members cannot, therefore, exclude from patenting whole classes of inventions in fields of technology (apart from the specific exceptions in TRIPS, discussed below). For example, this standard would preclude Members from legislating blanket exceptions for inventions pertaining to renewable energy technologies or other designated fields of environmental technologies, although it doesn't mean any claimed invention in the environmental field need be considered eligible for a patent – eligibility for a patent grant is considered case by case against the established criteria.

WTO Members are further obliged not to discriminate in the availability of patents or in the enjoyment of patent rights on the basis of:

- *the field of technology*

For example, depending on the circumstances it may be considered discriminatory for Members to exclude from patent grant an entire field of technology such as bio-fuels, or to provide for special exceptions to patent rights only in one field of technology. TRIPS dispute settlement has clarified that *differential* treatment of different fields of technology does not automatically mean *discriminatory* treatment. Thus some technology-specific mechanisms do exist – for instance, special disclosure requirements for patented microorganisms (provided for under the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purpose of Patent Procedure).

- *place of invention*

For example, it may be considered discriminatory for Members to exclude from patent grant an invention on the basis that it was developed in one specific country or group of countries; or in specific circumstances to implement limitations on patent rights solely for inventions made in certain countries.

- *whether the invention is made locally or imported*

Similarly, it may be considered discriminatory for Members to provide a certain kind or level of patent protection for only locally produced inventions, or in specific circumstances to allow limitations or exceptions to patent rights on patented inventions solely on the basis that they are made abroad.

(b) Permissible exclusions from the scope of patentable subject matter

TRIPS sets out **three optional exceptions** which Members can use to exclude subject matter from the grant of patents, when this matter would otherwise be eligible for patents. In other words, there are certain categories of subject matter that can be entirely excluded from patent protection – if a Member so chooses – even if it would otherwise be considered new, non-obvious and useful, and a genuine invention. These exceptions are described below:

(i) *An exception for ordre public or morality.*

Article 27.2 permits Members to exclude from patentability subject matter inventions that are considered to be contrary to *ordre public* or morality.⁶ In elaborating this general rule, Article 27.2 specifically mentions inventions that are contrary to human, animal or plant life or health or seriously prejudicial to the environment. However, an important proviso is that the use of this exception is subject to the condition that the commercial exploitation of the invention must be prevented and that this prevention must be *necessary* for the protection of *ordre public* or morality. This provision does not allow exclusions, on environmental or other public policy grounds, from patent grant for inventions that are beneficial or desirable and that are actually permitted to be commercially exploited in a Member's jurisdiction.

For example, suppose an invention, which meets the conditions for patent grant, is a device whose explicit and only use is to de-activate a widely-used instrument that monitors GHG emissions. A Member may be able to justify its exclusion on the grounds that this invention is intended to seriously prejudice the environment. However, Members cannot exclude the invention from patentability on this ground and then allow the sale or other commercial exploitation of this device. This proviso thus prevents Members from excluding from patent protection environmentally sound technologies that they would actively wish to promote and disseminate to benefit the environment.

This provision in Article 27.2 further prohibits Members from excluding from patentability product or process inventions *merely* because their exploitation is prohibited by law. This makes it clear that medical inventions cannot be excluded from patentability merely because, for example, they have not yet received marketing approval from health regulatory authorities under the law. The same would apply to environmentally beneficial technologies or climate change adaptation technologies that are subject to regulatory approval – such as new saline tolerant or drought resistant crops that may need regulatory approval from environmental or health authorities.

(ii) *Certain medical related exclusions*

Under Article 27.3(a), Members can exclude from patentability 1) diagnostic, 2) therapeutic and 3) surgical methods for the treatment of humans or animals. Examples include new surgical techniques or a method of diagnosing or treating certain illnesses. Given that climate change negotiations potentially cover a range of climate change adaptation technologies

⁶ "*Ordre public*" is a French term. It is literally translated into English as "public order" but the French term was preferred because it was felt by some to have a somewhat more precise legal meaning.

with relevance to human or animal health, this optional exclusion may be of interest to policymakers.

(iii) *plants and animals, and biological processes*

Under Article 27.3(b), Members do not have to provide patent protection for inventions that are 1) plants and animals or 2) essentially biological processes for their production. They must, however, provide patent protection for 1) micro-organisms and 2) non-biological and microbiological processes for the production of plants and animals. Where Members do not provide patent protection for new plant varieties, they are required to protect plant varieties through an effective *sui generis* system (i.e. a system created specifically for this purpose). Members also have the option of using a combination of both systems of protection for plant varieties, namely protection by patents and a *sui generis* plant variety right. There is no further explicit guidance in the TRIPS Agreement as to what is to be considered an effective *sui generis* system. A number of WTO Members use the UPOV system of plant variety protection. Some have implemented *sui generis* systems in a way that combines UPOV-style provisions with other systems to protect community rights or farmers' rights over plant varieties developed over a period of time.

The protection of microorganisms may be pertinent to certain climate change mitigation technologies, given their potential role in new energy technologies. New food crops and animal inventions may be relevant to climate change adaptation, raising a potential role for these provisions in the climate change context.

(c) Patent holder's rights

It should be noted that a patent holder's rights are essentially rights to exclude others from doing certain acts. A patent, by itself, does not give its owner a positive right to make, use, sell or import the patented invention as these acts could be governed by other laws, or may fall within the scope of earlier, broader patents.

For example, the owner of a patent on an invention which is a pesticide or a genetically modified crop has the right to exclude others from exploiting the invention without authorization in a territory where the patent is in force, but may still not be able to make or sell the invention in that jurisdiction – or even to conduct field trials - without appropriate approval from the relevant regulatory authority.

Article 28.1 sets out the rights that should be available under national law to the owner of a patent:

- where the subject-matter of a patent is a **product**, the patent owner shall have the right to prevent others from the acts of making, using, offering for sale, selling, or importing for these purposes that product; and
- where the subject-matter of a patent is a **process**, the patent owner shall have the exclusive rights to prevent others not having the owner's consent from the act of using the process, and from the acts of: using, offering for sale, selling, or importing for these purposes at least the product obtained directly by that process.

For example, a patent on a novel, more efficient method of producing a known product, say photovoltaic cells, could be used to prevent the sale of PV cells produced by that method, not to block the sale or use of any other PV cells.

Under Article 28.2, both product and process patent owners shall also have the right to assign, or transfer by succession, the patent and to conclude licensing contracts.

The exercise of the exclusive rights under a patent is also limited by the exhaustion of rights. The term "**exhaustion**" refers to the generally accepted principle in intellectual property law that a right owner's exclusive right to control the distribution of a protected item lapses after the first act of distribution. In many countries, once the item has been put on the market by or with the consent of the right owner, the exclusive distribution right is "exhausted" (which is why the principle is referred to in some jurisdictions as the "first-sale doctrine") and further circulation of that item can no longer be controlled by the right holder. In regard to the exhaustion of intellectual property rights, including a Member's right to permit parallel imports, Article 6 of the TRIPS Agreement states that a Member's practices in this area cannot be challenged under the WTO dispute settlement system.

The Doha Declaration on the TRIPS Agreement and Public Health makes it clear that the effect of this and other provisions in the TRIPS Agreement on exhaustion is to leave each Member free to establish its own regime without legal challenge – subject to the general TRIPS provisions prohibiting discrimination on the basis of the nationality of right holders. Accordingly, Members can choose between national or international exhaustion. Under national exhaustion, right holders can use their IPRs to prevent importation of protected products from other countries even if they have been put on the market there by them or with their consent. Under international exhaustion, right holders would not be able to do this since their IPRs are considered to have been 'exhausted' by the earlier marketing of the product in the foreign market. It is generally understood that national exhaustion favours market segmentation, whereas international exhaustion facilitates parallel importation of the same product sold at lower prices in other countries. The proponents of international exhaustion argue that such a regime would allow developing country Members to buy proprietary products from cheaper sources, whereas those advocating national exhaustion see market segmentation as a means to maintain differential pricing, taking into account the level of development in each country.

(d) Limited exceptions to patent rights

Article 30 recognizes that Members may allow **limited exceptions** to the exclusive rights conferred by a patent. This provides scope for third parties to use the patented invention without permission from the patent holder and without incurring any liability for infringement. TRIPS does not set out specific exceptions, but rather a general rule that actual exceptions under national law should respect. The rule is expressed as a set of three conditions, usually called the three-step test, which require that any exception to patent rights must:

- be limited;
- not unreasonably conflict with a normal exploitation of the patent; and

- not unreasonably prejudice the legitimate interests of the patent owner, taking account of the legitimate interests of third parties.

These conditions apply cumulatively, each being a separate and independent requirement that must be satisfied. TRIPS negotiators adopted the approach of establishing general principles that national legislators should observe, rather than an exhaustive list that would have set out specific exceptions to be implemented at the national level. Many countries use this provision to provide that certain uses shall not infringe patent rights. Often, limited exceptions to patent rights cover the use of the patented invention for private, non-commercial purposes and for research or experimental purposes (to varying degrees according to national legislation and jurisprudence). This provision has been subject to interpretation by a WTO dispute settlement panel which ruled that the Canadian law allowing generic drug manufacturers to use the patented medicine in order to obtain regulatory approval in order to market the product after patent expiry was consistent with this provision of the TRIPS Agreement. This so-called 'Bolar' exception is potentially of interest in the climate change context. As certain environmental and climate change adaptation technologies in the agricultural and medical fields will be subject to regulatory processes, such exceptions may help accelerate the diffusion of such technologies. By contrast, the panel in this case found that an exception allowing such manufacturers to make and stockpile medicines in unlimited quantities during the patent term was not consistent with this three-step test.⁷

(e) Compulsory licences and government use authorizations

A long-standing international debate has considered the circumstances in which national authorities can grant a non-voluntary or compulsory licence, or a government use authorization to use a patented technology on a wider scale than the limited exceptions discussed above. Patent law has long provided for national authorities, in certain circumstances, to override the wishes of a patent holder and to authorize a third party (or a government agency) to use, produce, import or sell the patent-protected technology. The key provision in TRIPS is Article 31, which does not use the term "compulsory licences" but rather the more general term "**use without authorization of the right holder**". This Article therefore covers both compulsory licences granted to third parties for their own use, and use by or on behalf of governments without the consent of the right holder. TRIPS builds upon the provision in Article 5A of the Paris Convention (itself incorporated into TRIPS). It recognizes the right of Members to authorize compulsory licences and government use authorizations, subject to conditions aimed at protecting the legitimate interests of the right holder that are detailed in Article 31. No restrictions are specified on the grounds for the grant of compulsory licences by national authorities, but national laws typically refer to certain public policy considerations and the need to overcome anti-competitive impacts. This understanding was affirmed in the Doha Declaration on the TRIPS Agreement and Public Health. The Declaration states that each Member has the right to grant compulsory licences and the freedom to determine the grounds upon which such licences are granted. This clarification, for example, usefully addresses views that had sometimes been heard implying that some form of public health emergency was an essential pre-condition for any compulsory licensing. While the TRIPS Agreement, indeed, refers to national emergencies or other circumstances of extreme urgency in connection with compulsory licensing (Article 31(b)), this is only to indicate that, in these circumstances, the usual condition that efforts must be first made to seek a voluntary licence does not apply.

⁷ See WT/DS/114/R available on www.wto.org.

Considering the diverse technologies required for climate change adaptation and mitigation, this understanding among WTO Members together with the text of the TRIPS Agreement itself suggests that Members are in principle free to grant government use orders or compulsory licences for such technologies for other reasons of public interest (which may for example be related to government programs to protect the environment), subject to certain procedural requirements and restrictions, and safeguards for the interests of the patent holder, as briefly outlined below. It must be borne in mind that, unlike voluntary licensing, this is a path that would not involve the cooperation of the right owner and that if there are trade secrets or tacit know-how involved in making the best commercial use of the patented invention, not all licensees would be capable of fully exploiting the invention in the most cost-effective or efficient manner. The main conditions and safeguards to be respected in the grant of compulsory licences (outlined in Article 31) are set out in turn.

- Applications are to be considered on their individual merits (TRIPS Article 31(a))

This means that authorities cannot decide to automatically compulsorily licence an entire category of patents, for example all technologies relevant to renewable energies, without specifically considering each application for a compulsory license on its individual merits. TRIPS does not define these 'merits', but TRIPS Article 31(a) suggests there must be a specific consideration of the need for each grant of a compulsory license, not a pre-emptive blanket rule.

- As a general rule, an unsuccessful attempt must have first been made to obtain a voluntary licence on reasonable commercial terms and conditions within a reasonable period of time before a compulsory licence is granted (TRIPS Article 31(b))

There are three circumstances in which this rule need not be applied: 1) in case of a national emergency or other circumstances of extreme urgency; 2) in cases of public non-commercial use and 3) when a compulsory licence is granted as a remedy in an adjudicated case of anti-competitive practices. The Doha Declaration on the TRIPS Agreement and Public Health clarified that Members have the right to determine what constitutes a national emergency or other circumstances of extreme urgency, it being understood that public health crises, including those relating to HIV/AIDS, tuberculosis, malaria and other epidemics, can represent a national emergency or other circumstances of extreme urgency.

- Scope and duration are to be limited to the purposes for which the license was granted (TRIPS Article 31(c))

The scope and duration of a compulsory licence must be limited to the purpose for which it was authorized. For example, if a compulsory licence has been granted on a patented invention for the purpose of meeting a particular need, the scope and duration of the licence must be limited to what is necessary to achieve this purpose. Compulsory licenses should be liable to termination when the circumstances that justified their creation no longer apply. However, in doing so the legitimate interests of the licensee may be protected, for example any investment that the licensee has made to produce the product under the compulsory licence.

- Licences are to be non-exclusive (TRIPS Article 31(d))

Compulsory licences must be non-exclusive – this is generally taken to mean that the licensee must not have right to exclude the grant of other licences or use of the invention by the patent owner.

- Licences are to be predominantly for the supply of the domestic market of the Member authorizing such use (TRIPS Article 31(f))

Compulsory licences shall be authorized predominantly – but not exclusively – for the supply of the domestic market of the Member authorizing such use. This condition may be relaxed when the government grants a compulsory license to remedy anti-competitive practices. Due to subsequent WTO decisions, this condition is also relaxed to permit compulsory licensing for export of pharmaceuticals to countries lacking sufficient domestic manufacturing capacities and wanting to import generic pharmaceuticals to meet a public health problem. Paragraph 6 of the Doha Declaration identified the potential problems of countries with limited or no manufacturing capacities in making effective use of compulsory licensing. Following the instruction given by the Declaration to seek an expeditious solution to this problem, Members adopted a General Council Decision on the Implementation of Paragraph 6 of the Doha Declaration on the TRIPS Agreement and Public Health on 30 August 2003 (WT/L/540 and Corr.1). This waives certain obligations under the TRIPS Agreement. On 6 December 2005, a further General Council Decision transposed the waivers into a Protocol Amending the TRIPS Agreement (WT/L/641). This Protocol will enter into force when it is ratified by two thirds of the Members of the WTO.

- The right holder is to be paid adequate remuneration (TRIPS Article 31(h))

The right holder must be paid adequate remuneration in the circumstances of each case, taking into account the economic value of the licence. When the grant of a compulsory license is to remedy anti-competitive practices, the need for such a remedy may be taken into account in determining the amount of remuneration (Article 31(k)). This condition has been waived under certain conditions by subsequent WTO decisions related to public health so as to avoid double payment of remuneration.

- Decisions on grant and remuneration are to be subject to judicial or other independent review (TRIPS Article 31(i))

There must be an avenue for any decision relating to the grant of compulsory licences, and any decision relating to the remuneration provided in respect of such use, to undergo judicial review or other independent review by a distinct higher authority or body in the Member's legal and administrative system: where a compulsory license is ordered by a court, this would typically entail an appeal to a higher court; where it is issued by a government agency, there may be an appeal to a court or to an independent higher-level body.

- Certain conditions are to be met in the case of dependent patents (TRIPS Article 31(l))

Where a later patented invention cannot be exploited without infringing an earlier patent (i.e. the case of 'dependent patents'), a compulsory licence may only be granted on the earlier

patent if the invention in the later patent involves an important technical advance. In such a case, the owner of the earlier patent has a right to obtain a cross-licence for the later patent. For instance, if a firm has developed and patented a highly efficient new carbon capture technology, which can only be exploited by using a background technology covered by an earlier patent, that firm could seek the grant of a compulsory license (normally only after trying to negotiate a voluntary license on reasonable terms).

(f) Duration of patents and revocation

Article 33 sets out that the minimum term of protection for patents shall be a period of 20 years from the filing date. It is important to note that Members may make the patent term subject to the payment of renewal or maintenance fees. If these fees are not paid, the patent lapses and the patented subject matter passes into the public domain in that country. For a variety of reasons, the overwhelming majority of patents do not proceed to the full 20 year term and most lapse well before that time. In practice, one should never assume that a patent on a particular technology will run for 20 years: an up-to-date check of the records may well reveal that despite a patent earlier having been granted it is no longer in force. (Equally, many patent applications do not mature into granted, enforceable patents, and the scope of claims as applied for is often narrowed or clarified in the course of prosecution; therefore one should never assume that a patent application as filed will result in a granted patent of the same scope.) Some countries introduce progressively increasing patent renewal fees, in order to build incentives for patent holders only to maintain those patents in force that they are being actively commercialized or otherwise exploited.

Procedures for renewal or maintenance fees shall be reasonable as set out in Article 62 of the TRIPS Agreement on the acquisition and maintenance of intellectual property rights.

Patents may be revoked, for instance on the grounds that they are invalid (for instance, if it transpires that the invention was already developed and published by a third party before the patent application was filed, or if the claimed invention is considered obvious or lacking an inventive step). Article 32 of the TRIPS Agreement adds to the relevant provisions in the Paris Convention⁸ and provides for the opportunity for judicial review of any decision to revoke or forfeit a patent.

There has been a discussion on the interpretation of Article 32 in the TRIPS Council recorded in IP/C/M/8 and IP/C/M/9. Some Members considered that the subject of revocation of patents was dealt with in Articles 27, 29 and 33 of the TRIPS Agreement, meaning that patents could not be revoked by Members except on grounds that would have justified denial of the grant of a patent on the underlying application. According to this view, the TRIPS Agreement precluded a Member from revoking a patent in order to serve other general societal goals, such as promoting technology transfer for environmentally sound technologies. Some others viewed that revocation was dealt with in Article 32 only and that this provision did not

⁸ Article 5A provides that forfeiture of the patent shall not be provided for in a Member to prevent the abuse of exclusive rights except in cases where the grant of compulsory licences would not have been sufficient to prevent such abuses. No proceedings for the forfeiture or revocation of a patent may be instituted before the end of two years from the grant of the first compulsory licence. In addition, importation by the patentee into the Member where the patent has been granted of an article manufactured in any of the Members shall not entail forfeiture of the patent.

restrict the rights of Members to decide on the grounds of revocation subject to the limitations prescribed under Article 5 of the Paris Convention.

2. Trade Secrets ('Undisclosed Information')

The TRIPS Agreement contains certain obligations with respect to undisclosed information that cover both trade secrets and test data, under the general rubric of giving effect to Article 10*bis* of the Paris Convention (on the suppression of unfair competition). Test data includes data on safety and efficacy of medicines, and field trial data on the environmental impact of new pesticides. The protection of such data may be relevant to certain climate change adaptation technologies, particularly for food and health, which may need regulatory approval from the perspective of health, efficacy or environmental impact. However, this paper focuses on technology as such, and thus the protection of trade secrets or undisclosed information is more directly relevant.

(a) Basic obligation and conditions of protection

Trade secrets, including tacit know-how, are covered by the provisions of Article 39.2 of the TRIPS Agreement which obliges Members to protect information that:

- is secret in the sense that it is not, as a body or in the precise configuration and assembly of its components, generally known among or readily accessible to persons within the circles that normally deal with the kind of information in question;

It is not necessarily the case that trade secrets should be only known to one or two persons to be entitled to protection, but they should not be generally known to the public or other persons in the same trade or business. The information as a whole can be secret, such as the chemical formula for a catalyst that converts feedstock to bio-diesel, or the information may be composed of individual pieces of information that may be in the public domain, but the compilation of which is not, such as a law firm's client list.

- has commercial value because it is secret;

The information should be of commercial value to its holder or the holder's competitors and this value would be lost or impaired if the information ceased to be secret. For example, the formula for the bio-diesel catalyst would be of less value to the company if all competitors also had access to it.

- has been subject to reasonable steps under the circumstances by the person lawfully in control of the information, to keep it secret.

What constitutes "reasonable steps" to keep information secret may vary from case to case, mostly depending on the nature and value of the information to be protected. For example, in one case, an issue before a court was whether a chemical company should be required, as a reasonable step, to put a roof over its machinery in the plant in order to protect its secret process of making methanol from aerial photography. The court held that, as such a requirement would be too costly to the company, it was not reasonable.

(b) Rights of a trade secret holder

The TRIPS Agreement requires that a natural or legal person lawfully in control of such undisclosed information must have the possibility of preventing it from being disclosed to, acquired by, or used by others without his or her consent in a "manner contrary to honest commercial practices". According to a footnote to the provision, a manner contrary to honest commercial practices means at least the following practices:

- breach of contract,

An inventor has invented a new catalyst for bio-diesel and hopes that Company A can produce and market the product. He is asked to disclose the invention to Company A to enable it to make the necessary assessment of the potential commercial value of the invention. Before disclosing the invention, the company signs an express contract of confidentiality with the inventor, which provides that the company should respect the confidentiality of the information disclosed by the inventor, and the company should not disclose the information to third parties. If the company finally decides not to exploit the disclosed information, but discloses it to another company, the inventor can sue the company for breach of contract.

- breach of confidence,

Confidence clauses are very popular in employment contracts, which generally provide that an employee should not disclose to any person or company any confidential information he learns in the course of his employment or use the confidential information either for his own benefit or for the benefit of a new employer. The confidence clause will often remain in effect even after the termination of the contract of employment.

- inducement to breach of contract or confidence,

A company induces an employee of a competing company to leave his job and leak the company's trade secrets to him by offering a higher salary.

- acquisition of undisclosed information by third parties who knew, or were grossly negligent in failing to know, that dishonest commercial practices were involved in the acquisition.

A company purchases information from an employee of a competing company, knowing that it is confidential information of the competing company and that the employee disclosing the information would be in breach of contract or confidence. Gross negligence in failing to know that dishonest practices were involved could be proven if the sum paid to purchase the information is much lower than its commercial value.

(c) No finite term of protection

Unlike other intellectual property rights, such as patents and copyright, for which the term of protection is finite, the protection of undisclosed information continues unlimited in time as long as the conditions for its protection continue to be met, i.e. it meets those conditions mentioned above. However, unlike patent protection, there is no protection against a competitor that develops the information independently.

3. Other relevant TRIPS provisions

This section covers several TRIPS provisions on matters other than patents and trade secrets/knowhow that are relevant to climate policy discussions. These include:

- a renewable exemption for LDCs from applying TRIPS obligations, currently up to mid-2013 (apart from basic non-discriminatory principles), and an additional grace period up to 2016 for pharmaceuticals
 - obligations on developed countries to provide incentives for the transfer of technology to LDCs
 - licensing practices or conditions which restrain competition, may have adverse effects on trade, and may impede the transfer and dissemination of technology
 - other forms of IP that may be deployed in addressing climate change challenges (such as trademarks – especially certification marks; plant variety protection; and the suppression of unfair competition)
- (a) Flexibility with respect of transition period for Least Developed Countries

Article 66.1 originally provided LDC Members a transitional period until 1 January 2006, with an extension upon a duly motivated request.

Pursuant to the Doha Declaration on the TRIPS Agreement and Public Health, the TRIPS Council decided in 2002 to extend the transition period for LDCs for certain obligations with respect to pharmaceutical products until 1 January 2016. This Decision can be found in document IP/C/25. Supplementing this Decision, the General Council adopted a waiver for the same period in respect of the obligations of LDC Members under Article 70.9 concerning so-called exclusive marketing rights. Thus, LDC Members availing themselves of the extended transition period are required to provide a "mail-box" if they do not already provide patent protection for pharmaceutical products, but the obligations in respect of exclusive marketing rights for such products have been waived until 1 January 2016. This decision can be found in document WT/L/478.

In 2005, upon the request of LDCs, the TRIPS Council extended the general transitional period for LDCs until 1 July 2013. This Decision calls for enhanced technical cooperation and capacity building by developed country Members and by the WTO in cooperation with WIPO and other international organizations. It provides that LDC Members will ensure that any changes in their laws, regulations and practice made during the additional transitional period do not result in a lesser degree of consistency with the provisions of the TRIPS Agreement. It is without prejudice to the earlier extension with respect to pharmaceutical products and to the right of LDC Members to seek further extensions. This Decision is contained in document IP/C/40.

(b) Transfer of Technology provisions in TRIPS

Article 7 of the TRIPS Agreement recognizes that the protection and enforcement of intellectual property rights should contribute to the transfer and dissemination of technology (see the discussion of objectives and principles above).

Article 66.2 of the TRIPS Agreement requires developed-country Members to provide incentives to enterprises and institutions in their territories for the purpose of promoting and encouraging technology transfer to least-developed country Members in order to enable them to create a sound and viable technological base. The precise nature of such incentives has not been further elaborated upon in the TRIPS Agreement. Examples of incentives reported to the TRIPS Council by developed countries can be found in the annual reports submitted under this provision cited in the annual reports of the Council (IP/C/-/- series of documents).

In 2003, pursuant to instructions given by ministers at the Doha ministerial meeting, the Council adopted a decision on "Implementation of Article 66.2 of the TRIPS Agreement" that put in place a mechanism for ensuring the monitoring and full implementation of the obligations in question. Under this Decision, developed country Members shall submit annually reports on actions taken or planned in pursuance of their commitments under Article 66.2. These submissions are reviewed by the Council at its end of year meeting each year. The review meetings are intended to provide Members an opportunity to, *inter alia*, discuss the effectiveness of the incentives provided in promoting and encouraging technology transfer to least-developed country Members in order to enable them to create a sound and viable technological base. This Decision can be found in document IP/C/28.

Recent workshops held by the WTO Secretariat in the margins of the last TRIPS Council meeting in October 2008, 2009 and 2010 with the participation of LDC and developed country delegations were seen to be a helpful first step for both sides in understanding each other, and included several examples of the transfer of climate-friendly technologies (for example, see report from Australia, European Union, Japan, Norway, Switzerland and the US in document series IP/C/W/536/... and IP/C/W/551).

(c) Licensing practices or conditions pertaining to intellectual property which restrain competition may have adverse effects on trade, and may impede the transfer and dissemination of technology

In concluding the Agreement, Members recognized (in Article 40 of TRIPS) that some licensing practices or conditions pertaining to IPRs which restrain competition may have adverse effects on trade and may impede the transfer and dissemination of technology. They agreed that nothing in TRIPS shall prevent them "from specifying in their legislation licensing practices or conditions that may in particular cases constitute an abuse of [IPRs] having an adverse effect on competition in the relevant market." In line with the principles set out in Article 8 (see above), TRIPS allows a Member to adopt, consistently with the other provisions of the Agreement "appropriate measures to prevent or control such practices," stipulating these may include "exclusive grantback conditions, conditions preventing challenges to validity and coercive package licensing, in the light of the relevant laws and regulations of [the Member concerned]."

TRIPS also provides a mechanism for consultations between Members in the event of violations of laws and regulations relating to the control of anti-competitive practices in

contractual licences. For example, if Country A has cause to believe that its laws and regulations on this matter are being violated by an IPR owner based in Country B, then it can request Country B to enter into consultations, and the requested country is obliged to respond and to cooperate in certain ways.

Where the transfer and dissemination of technologies for climate change adaptation and mitigation are impeded by such anti-competitive practices, these legal options under national law and these consultative mechanisms may be applied to overcome these impediments. As already noted above, Article 31 also deals with compulsory licenses to address anti-competitive behaviour, and Article 8 confirms that Members are entitled to take measures consistent with TRIPS to address such practices.

(d) other forms of IP covered by TRIPS

While the discussions on IP and climate change have focussed on the patent system (and to some extent, knowhow/trade secrets), several other categories of IP covered by TRIPS may also be deployed in addressing climate change challenges. These include trademarks – especially certification marks – and the suppression of unfair competition, as well as plant variety protection that is touched on briefly in the section on patents above.

TRIPS requires Members to give balanced protection to trademarks and geographical indications. These distinctive signs include certification and collective marks which are especially useful in communicating to the consumer certain qualities of goods and services that are relevant to climate change mitigation. Certification marks can be used in commercial products and services that conform with the standards set by a certifying organization. Such certification schemes, for instance on low carbon products, have been established by a range of organizations and government agencies.

TRIPS also applies provisions of the WIPO-administered Paris Convention (Article 10*bis*) that cover the suppression of unfair competition. A recent WIPO study noted that while 'unfair competition' has "diverse usages in different national systems ... some clear principles can be distilled from the international law in this area, principally the Paris Convention. One core idea is that the public should not be deceived as to the quality and the source of the goods they purchase. These broad principles would naturally extend to claims that goods were environmentally friendly, carbon neutral, developed or endorsed by local communities or by environmental authorities, or otherwise consistent with sound management of the environment."

The Paris Convention provisions require Members to prohibit "indications or allegations the use of which in the course of trade is liable to mislead the public as to the nature, the manufacturing process, the characteristics, the suitability for their purpose, or the quantity, of the goods." The reported practice of "greenwashing", marketing based on environmental claims that are unfounded or inaccurate, could be considered such a practice. As WIPO has noted, the "development of the carbon offset economy, and increasing attention by consumers to the carbon footprint of the goods and services they purchase, highlight the need for vigilance against false or misleading statements that may seek to capitalize on consumer concern for the environment while failing to make a positive contribution to climate change reduction."

B. COUNTRIES ACCEDING TO THE WTO

Any transition periods for acceding countries are set out in their protocols of accession. With the exception of least-developed countries, newly acceded countries have generally agreed to apply the TRIPS Agreement as of the date of entry into force of their membership in the WTO.

C. CONCLUSION

This document provides an overview of existing provisions of the TRIPS Agreement and does not seek to advance any particular point of view or interpretation of the text. Nonetheless, some practical observations can be made that are relevant to ongoing discussions relating to IP and climate change initiatives:

- TRIPS obliges WTO Members to provide for patent protection to eligible inventions, but inventors do not generally file or obtain patents in all jurisdictions. This leaves much 'patented' green technology in the public domain in many developing countries and LDCs.
- TRIPS requires developed countries to provide incentives to their own enterprises for transfer of technology to LDCs. In addition, TRIPS sets out that intellectual property protection "should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge. Also, TRIPS positively requires full disclosure of information about how to implement a patented invention – in particular so that the invention can be carried out by a suitably skilled technician.
- On the whole, LDCs do not have any TRIPS obligations – other than respecting non-discrimination principles – until mid-2013, under an agreement among WTO Members that may in principle be extended upon request.
- TRIPS gives Members the option of exclude from the scope of patentability inventions that could cause serious damage to the environment, provided that the commercial exploitation of the technology is also prohibited; this optional exclusion does not cover environmentally friendly technologies as such.
- TRIPS certainly allows Members to take measures to make use of flexibilities, including different approaches to patentable subject matter, limited exceptions for non-commercial research and use for regulatory approval procedures, and government use orders and compulsory licensing, provided these choices are otherwise consistent with its provisions. Reiteration or not of these policy options for any particular sector does not add to or take away from these options.
- Patents can be bought and sold by mutual agreement. Article 28.2 gives patent owners the right to assign or transfer by succession the patent and to conclude licensing contracts. IPRs can have more than one owner and TRIPS does not constrain joint ownership of IPRs.

- The fact that certain technologies are wholly or partially publicly funded technologies does not preclude them from being patented. Similarly publicly funded related know-how may be protected by trade secrets. Owners of such patents or trade secrets are protected in the same way as those who own privately funded patents or trade secrets in WTO Member States. Such owners may voluntarily make their technologies and know-how available in the public domain in a manner that promotes transfer of and/or access to environmentally sound technologies and know-how to developing countries on royalty free terms. For non-voluntary licences, provisions of the TRIPS Agreement apply.
- TRIPS gives Members leeway to take action against anti-competitive practices that impede the transfer and dissemination of technologies.
- TRIPS also provides for limitations and exceptions to patent rights, such as exceptions for limited non-commercial use and private or experimental research, and use for regulatory approval processes; it also provides for commercial scale use of patents by third parties under government use orders and compulsory licenses for public policy reasons, provided certain conditions and procedural safeguards are complied with.
- TRIPS provides for protection against the disclosure, acquisition or use without consent of trade secrets or undisclosed information in a manner contrary to honest commercial practices, where such undisclosed information meets certain conditions. TRIPS also applies Paris Convention provisions on unfair competition which protect against misleading representations as to the quality and characteristics of goods and services – this would apply, for instance, to false claims about the environmental friendliness of products.
- The TRIPS implications of a patent pool will depend on how the pool is set up. There can be voluntary patent licences under Article 28.2 of the TRIPS Agreement and the terms, including on royalty, are left to the licensor and licensee. It is Article 31 of the TRIPS Agreement that primarily sets out the conditions for non-voluntary patent licences. Such non-voluntary licences have to be non-exclusive in that they cannot exclude the patent owner or his agent from exploiting his own invention. The terms of remuneration for such use have to be "adequate in the circumstances, taking into account the economic value of the authorization" as set out in Article 31(h) of the TRIPS Agreement. There is no provision, however, for non-voluntary licences on undisclosed information such as trade secrets or associated know-how under Articles 39.1 and 39.2 of the TRIPS Agreement.
- TRIPS provides that patents shall remain valid for at least 20 years from the filing date. The filing date is the date of the application. It is important to note that Members may make the patent term subject to the payment of renewal or maintenance fees. If these fees are not paid, the patent lapses. Procedures for this shall be reasonable as set out in Article 62 on the acquisition and maintenance of intellectual property rights. In practice, the overwhelming majority of patents lapse well before the theoretical maximum term.
- With respect to revocation of patents by any WTO Member, the Paris Convention, as incorporated into the TRIPS Agreement, provides that forfeiture of the patent shall not be provided for by a Member to prevent the abuse of exclusive rights except in cases

where the grant of compulsory licences would not have been sufficient to prevent such abuses. No proceedings for the forfeiture or revocation of a patent may be instituted before the end of two years from the grant of the first compulsory licence. The TRIPS Agreement adds to the relevant provisions in the Paris Convention and provides for the opportunity for judicial review of any decision to revoke or forfeit a patent.

Thus, there is nothing to constrain Member from reviewing their IPR laws and taking measures to promote the wide diffusion of technologies relevant to climate change adaptation and mitigation, including those covered by IPRs, provided that the provisions of the TRIPS Agreement are complied with, including on the payment of remuneration for non-voluntary licences. If technologies are in the public domain, whether because a patent has not been applied for and granted in that territory (as is often the case in developing and least developed countries), or the patent has expired, there are no constraints in the TRIPS Agreement from using or exploiting that technology.
