WORLD TRADE ORGANIZATION

Council for Trade-Related Aspects of Intellectual Property Rights

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COUNCIL FOR TRADE-RELATED ASPECTS OF INTELLECTUAL PROPERTY RIGHTS

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ITEM 11 INTELLECTUAL PROPERTY, CLIMATE CHANGE AND DEVELOPMENT

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AGENDA ITEM 11: INTELLECTUAL PROPERTY, CLIMATE CHANGE AND DEVELOPMENT

11.1 Ecuador

198. In March 2013 we informed the Council of Ecuador's intention to hold a discussion on this issue at the present meeting. The proposal that you just mentioned is based on the opening paragraph of the preamble to the Marrakesh Agreement, which lists among its guiding principles, the objective of sustainable development and the protection and preservation of the environment. This is followed up in the Doha Ministerial Declaration of 2001, paragraphs 6, 31 and 33, which reiterate Members' commitment to achieving those objectives and principles, and the need to ensure appropriate coordination between the WTO Agreements and multilateral environmental agreements (MEAs).

199. In fact, in the Preamble to the TRIPS Agreement, there is recognition of the importance of technology transfer to developing countries, which is then confirmed in Articles 7 and 8 of the Agreement. These Articles refer to the need for the development and transfer of technology, in order to create sound and viable foundations for protecting public health, nutrition, and here I stress, to promote the public interest in sectors of vital importance to their social, economic and technological development.

200. Thus, these provisions and principles are an attempt to prevent the abuse of IPRs and indeed limit or restrict practices that unjustifiably go against the international transfer of technology. This use of technology and transfer thereof are a fundamental aspect, in Ecuador's view, of the fight against climate change and adaptation to and mitigation of its harmful effects. Hence the timely dissemination and transfer of technology are essential for achieving that objective and constitute in our view one of the major challenges facing the international community in its response to this very serious issue. Indeed, discussions in forums concerned with environmental protection and preservation highlight the fact that lack of information, excessive protection, inappropriate enforcement and abuse in many instances of IPRs, particularly patents, are factors which may constitute a barrier to accessing environmentally friendly technology, particularly for developing countries. We believe that this is a valid argument and therefore we would like to share some ideas on the options concerning IPRs and their link to climate change in the context of the multilateral trading system, such as automatic granting of rights to voluntary licensing, use of TRIPS flexibilities, and regulating licensing costs*, inter alia*.

201. Specifically, as is well known, the debate on efforts focusing on mitigation and adaptation to climate change has been and continues to be discussed within the United Nations Framework Convention on Climate Change (UNFCCC) and the key thrust of the negotiations is and has been the principle of common but differentiated responsibility. In addition, it has been agreed that countries should promote and cooperate in the development, application and dissemination, including transfer of technologies, of practices and processes that aim to control, reduce or prevent emissions of greenhouse gases. At the same time, the UN General Assembly has adopted several resolutions on the protection of the global climate for present and future generations, and the promotion of new and renewable sources of energy.

202. In spite of these principled commitments, it has not been possible to adopt any specific resolution concerning the role of IP and in this discussion on climate change, mitigation and adaptation.

203. In view of this, and in what could be a very useful contribution in our view to the multilateral trading system, to global strategies to enhance access to environmentally friendly energies, to improve energy efficiency and to speed up at global level the dissemination of renewable energy technologies from an IP standpoint, Ecuador is submitting this communication to raise a number of concerns about the relationship between IP, climate change and indeed development. In this context, we urge Members to review possible restrictions and barriers to accessing environmentally friendly technologies within this organization. This is nothing new but we would like to remind you of two submissions from the delegations of India and China in the regular and special sessions of the WTO Committee on Trade and Environment, at the end of the 1990s and more recently in 2011, stating that IPRs should not to become a barrier to technology transfer to developing countries.

204. At the same time, Bolivia and Venezuela, in a formal submission to the special session of the Committee on Trade and Development, introduced the issue of IP and access to environmentally safe technologies. It is clear that such an issue raises concern among Members. Accordingly, and with a view to achieving concrete international cooperation, reflecting fair and balanced trade between countries, we believe that it is of vital importance that these technologies, in particular relating to the use and implementation of environmentally safe technologies for the adaptation or mitigation of climate change, produced by CO_2 emissions, should be considered as public goods, since because of their nature and objectives they are intended to promote overall global social welfare through the adaptation and mitigation of the harmful effects of climate change.

205. The current submission is an attempt to underscore the existing flexibilities in the TRIPS Agreement relating to environmentally sound technologies (ESTs) and initiate a review process to consider making more flexible some disciplines concerning their patentability. Such technologies could have environmental benefits for all and could become effective tools to implement public policies, enabling governments and states to adapt and mitigate the harmful effects of climate change, in particular with regard to developing countries. We raised a number of examples that could be assessed by the Council, for instance, a reaffirmation of the existing flexibilities in the TRIPS Agreement, a review of Article 31 of the TRIPS Agreement to determine which of its provisions may excessively restrict access to and dissemination of ESTs, particularly paragraph (f) of Article 31, evaluation of the regulation of voluntary licensing and the conditions thereof related to such technologies; consideration on the basis of the concept of public interest on a case-by-case basis; the exemption from patentability of inventions the exploitation of which is vital for the dissemination of ESTs. We could also evaluate Article 33 of the TRIPS Agreement to establish a special reduction in the term of protection for a patent in order to facilitate free access to environmentally sound technologies.

206. And finally, the possible inclusion of a mechanism in the TRIPS Agreement to promote open and adaptable technology licensing for results obtained from research into climate change financed through public funds and related to ESTs.

207. We believe that IPRs are a *conditio sine qua non* for the promotion of innovation and promoting broad use of industrial applications. But it is very clear that for many countries, in particular for developing countries where ESTs are most needed for the adaptation and mitigation of harmful effects of climate change, the patent system as it is at the moment could restrict the dissemination of such technologies, either through the creation of monopolies or the abuse of rights by rights holders or the excessive additional costs from paying royalties for voluntary licensing of ESTs.

208. In terms of future steps, we believe that this submission sketches out a framework for sparking a discussion, which will provide Members with the opportunity to debate the issue of the relationships between IP, climate change and development. Such an issue should not be limited to discussions and negotiations in a single forum such as the UNFCCC, but because of its very nature, it should be discussed in other forums such as the WTO and this Council.

209. Finally, in emulating the positive practices that Members have agreed upon in the past, Ecuador believes that achieving a declaration concerning climate change in the context of the forthcoming Bali Conference is feasible. In this context, we refer delegations once more to the document cited at the beginning of the meeting and we are fully available should Members have any questions or doubts on this issue.

11.2 Cuba

210. Cuba welcomes the presentation of Ecuador's document, which we consider highly relevant since Article 7 of the TRIPS Agreement under "Objectives" states that the protection and enforcement of IPRs should contribute to the promotion of technological innovation and to the transfer and dissemination of technology.

211. However, it has been noted that, at times, IPRs have become an obstacle to accessing technology, thus seriously undermining the appropriate balance that should exist between the interests of IP right holders and the public interest.

212. Cuba is thus of the view that a discussion on the transfer of ESTs should be welcomed within this Council, in order to be able to propose solutions, which will from a perspective of WTO rules and without interfering in the mandates for climate change of other international agencies, this with a view to making a contribution to the general international efforts aimed at ensuring access to ESTs.

213. As regards patented ESTs, developing and least developed countries need to make use of all the flexibilities available in the TRIPS Agreement, without restrictions. One particularly advisable option would be to use compulsory licensing otherwise than as an exceptional policy in the event of a country facing a health emergency.

214. It would be desirable to reach consensus on a declaration concerning the flexibilities in the TRIPS Agreement and access to ESTs. We could also look into options such as the regulation of voluntary licensing and specific exemptions from patentability.

215. Cuba fully supports the pursuit of discussions on the basis of the elements introduced by Ecuador.

11.3 Indonesia

216. Indonesia would like to thank Ecuador for submitting its communication on IP, Climate Change and Development (document IP/C/W/585) to be discussed by Members at this meeting.

217. The world is now facing great challenges. As we can see and feel it around the globe, temperatures and sea levels are rising, and seasons are shifting. These natural phenomena show the changing of our world which, according to many reliable sources, may adversely affect our planet, environmentally as well as economically.

218. This situation has become a common concern, and it should draw necessary attention of the international community to respond. We believe everybody should give its contribution to what we, as the citizens of the globe, are facing now. Countries should be open to discuss and find any appropriate solutions, from general to even more specific, to support necessary actions to counter or combat the challenges.

219. From IP standpoints, we believe IP can and should positively contribute in being responsive to these challenges, rather than function as a barrier. Technology and its transfer may play an essential role for countries, especially developing countries, which generally lack access to ESTs, in performing adaptation and mitigation actions. This communication should be perceived as an invitation for this Council to start a discussion on how IP can contribute supportively and positively in combating the adverse effect of climate change.

220. To conclude, Indonesia welcomes Ecuador's submission and is open to discussion on this important issue. Lastly, Indonesia welcomes any positive decisions or declarations, subject to consensus by all Members, to be delivered at MC9 in Bali, that reflect the common needs and interests of all WTO Members.

11.4 China

221. China thanks Ecuador for circulating the document and its introduction of the document today.

222. Global climate change has had a profound impact on the existence and development of mankind, and is a major challenge facing all members. It is the common interests of the whole world and it is absolutely an urgent and long-term task for us all to fight against climate change. UNFCCC and its Kyoto Protocol have been universally recognized as the primary channel to address climate change, and the principle of common but differentiated responsibilities has been established as the basis for closer international cooperation.

223. In combatting the climate change challenge, ESTs are an important tool and should better serve the common interests of human beings. In this regard, developed and developing countries are deeply interdependent with each other in order to better combat rising temperature, extreme

weather of all kind, and all other abnormal situations which seem to be a non-exhaustive list currently. We need to enable the developing countries to have access to climate-friendly technologies. IP law and policy should provide a better environment and enough policy space for the transfer and dissemination of environment-friendly technologies from developed countries to developing countries.

224. China welcomes the Ecuador's proposal to discuss this issue at this Council in this context. In our view, nothing in the TRIPS Agreement prevents its existing general flexibilities from its application to the environment-friendly technologies. With respect to the new flexibilities proposed in the communication, without prejudice to our final position on the points in the communication, China would like to engage in the further evaluation and discussion among Members.

11.5 India

225. My delegation welcomes the inclusion of this Agenda Item and also appreciates the submission made in this respect. We feel that the issue is of critical importance in reconciling the TRIPS Agreement with the demands made to implement Multilateral Environmental Agreements, mandatory national standards and voluntary international standards, where such implementation involves the use of environmentally sound technologies and products covered by IPRs. Since we have not been able to analyse the proposal in detail, our comments would be preliminary.

226. The central role of technology transfer to developing countries as well as the development of endogenous technology in these countries were recognized at the 1992 Rio Summit, as well as in its related conventions including the UNFCCC. It was recognized that technology transfer had to be undertaken beyond the commercial arena, and that a pro-active role of public policy at national and international levels is required to enable developing countries to obtain access to environmentally sound technologies and products. Although technological innovation is only part of the overall solution to climate change, it is in fact an essential aspect of it. For moving towards a green economy and to serve the objective of restricting global warming, it is necessary to overcome the dilemma between the need for widespread and rapid diffusion of knowledge and climate technologies to developing countries; and the need for incentives for technological developments and innovations.

227. In this regard let me point out two important contributions made by India, namely WT/CTE/W/82 and TN/TE/W/79, to the discussions in the Committee on Trade and Environment as a part of the issues relating to market access. Through these contributions, India has highlighted the fact that although the TRIPS Agreement provides a good framework for protecting innovation including ESTs, it creates monopolies resulting in high prices for green technologies and acts as a barrier to their diffusion in developing countries. India therefore proposed the need for reducing the patent duration for these technological innovations or to have a relook over the provisions of Article 31, so it does not become a barrier in issuing compulsory licences in exceptional cases. It also talked of innovative mechanisms such as the Doha Declaration on the TRIPS Agreement and Public Health or cooperative R & D to delink the cost of R&D, so that there are no barriers in the diffusion of these technologies.

228. On any principle of equity, industrialized countries have to bear a large share of the burden. They are historically responsible for the bulk of the accumulated greenhouse gas emissions and this alone suggests a greater responsibility. They also have high per capita incomes, which give them the highest capacity to bear the burden. They are technically the most advanced, and to that extent best placed to provide environmentally sound technology to developing countries at fair and favourable terms and conditions.

229. Let me conclude by saying that it is high time that global efforts towards a cleaner world do not get hindered because of the barriers posed by multilateral agreements such as the TRIPS Agreement or by efforts by some Members to protect narrow commercial interests. We therefore welcome the contribution by Ecuador as a starting point for discussions and possible future solutions.

11.6 Plurinational State of Bolivia

230. Firstly, I would like to begin by thanking the delegation of Ecuador for having put forward this proposal for this meeting.

231. Bolivia shares the concerns and the views expressed in document IP/C/W/585 submitted by Ecuador. Indeed, in 2011 Bolivia also made a proposal along the same lines in the Committee on Trade and Environment.

232. A fundamental principle of the Rio Declaration on Environment and Development is Principle 7, which reaffirms that "in view of the different contributions to environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command." This is a critical principle that should guide all our negotiations related to sustainable development and any results achieved in the TRIPS Council on this issue. The Rio Declaration forms part of the treaty context within which the reference to the objective of sustainable development in the first preamble of the WTO Agreement was formulated.

233. Patents limit the possibility for developing countries to adopt ESTs and produce environmental goods themselves since patent holders, mainly concentrated in developed countries, are able to raise the costs of access or deny it altogether. Given the unprecedented mobilization of technologies required to address the environmental crisis – in every sector and every country and in short time-frames than ever before– the existing flexibilities in relation to patents and other IPRs must be reinforced and further expanded to ensure that the technology needs of developing countries are met, making it possible to achieve sustainable development while checking the environmental crisis.

234. We therefore welcome the proposal made by Ecuador to produce a Ministerial Statement declaring environmental technologies to be public goods, and urging the world community to take full advantage of the flexibilities envisaged in the TRIPS Agreement to enable countries to adopt the measures needed to address the current environmental crisis. This should be part of the WTO's contribution to the fight against the effects of climate change.

11.7 Bangladesh

235. We appreciate the delegation of Ecuador having put forward its proposal and for putting a very pertinent issue of the time on the table. We recognize the evolving challenges emanating from multiple environments and difficulties. At the same time we also understand and strongly believe that the TRIPS Agreement has a critical role to play in combatting these challenges. Bangladesh considers positively the underlying rationale and objective as laid out in the document and believes that this Council has ample scope to contribute. We welcome further consultation on this issue and express our readiness to constructively engage towards finding an appropriate solution of such an important issue.

11.8 Nepal (for the LDC Group)

236. Needless to say that climate change has become a serious issue and its adverse impact needs no more explanation. The poor and the least developed suffer most as they lack capacity and technology to adapt. Those who do not have technology do expect and need support from those who do have, and technology transfer is therefore crucial in the fight against the adverse impacts of climate change. The submission from the delegation of Ecuador does have appeal in this sense. It explores how flexibilities in the IP framework can be best used and can be further broadened so that IP does not become a barrier, but rather facilitates access to technology. Nepal welcomes the discussion the proposal from Ecuador has generated.

11.9 Rwanda

237. Rwanda would like to welcome the presentation made by Ecuador of document IP/C/W/585. Indeed access to ESTs by all, rich and poor, in order to collectively address global climate change

is very important for the planet. There is a need for an IP regime that is appropriate to address this important issue, hence the relevance to bring this debate into this Council. I would like to welcome the suggestions made by the proponent on pages 4 and 5 of the paper as to how to address this issue. And we hope that Members will be open to engage in this debate.

11.10 Brazil

238. Brazil would like to thank the delegation of Ecuador for raising this important debate on climate change in the context of the IP system contribution to adaptation and mitigation efforts.

239. Brazil would like to recall the principle of common but differentiated responsibilities that has led the international community in the debates on UNFCCC in their efforts to curb the effects of climate change. We also understand that developing countries have an important role to play in their efforts for adaption and mitigation objectives in fighting climate change.

240. Brazil has compromised in an effort of reduction of between 36% and 38% of reduction of greenhouse gas emissions until the year 2020. This is reflective of the role that we understand countries, not only developed countries; have in tackling the climate change challenge.

241. The TRIPS Agreement is the result of negotiations that struck a delicate balance between the objectives of fostering innovation and promoting public interest in sectors of vital importance to socioeconomic and technological development. One basic principle embodied in this Agreement is that the protection of IP should contribute not only to technological innovation, but also to the transfer and dissemination of technology, to the mutual benefit of producers and users of technological knowledge and in a manner conducive to social and economic well-being;

242. In this sense, the use of flexibilities provided for in the TRIPS Agreement is essential to ensuring that the objectives relating to social and economic well-being will be met. This has a special meaning in the context of potential impacts of climate change in all societies.

243. Many countries have used flexibilities in a way to foster the development of ESTs. Brazil's Institute of Industrial Property is also taking steps in this direction, promoting a pilot project to accelerate the examination of EST patents, in order to allow the swift introduction of patented products in the market.

244. An accelerated examination can play an important role to make ESTs available; nonetheless the quality of patent examination is even more relevant to this debate. In this regard, low quality examination hinders innovation and generates unnecessary costs to users of the patent system, limiting the resources at disposal for the development of environmentally sound technologies

245. Brazil supports in general the discussion of these themes in the TRIPS Council and we would like to share more of our views in future discussions on this subject.

11.11 Saudi Arabia, Kingdom of

246. Saudi Arabia would like to thank Ecuador for its proposal. Saudi Arabia shares Ecuador's view that technology transfer is a pertinent issue, especially for developing and least-developed countries. However, discussions relating to climate-change measures and related technologies should be undertaken under the UNFCCC, which is the relevant expert forum. Moreover, Saudi Arabia would like to highlight the following two points: firstly, the commercialization and dissemination of key technologies for the environment is an important issue for both developed and developing countries. This issue is currently under discussion in the Committee on Trade and Environment under the first part of paragraph 32 of the Doha Declaration, the effect of environmental measures on market access. Secondly, we note that the negotiations under paragraph 31(1) of the Doha Declaration on the relationship between existing WTO roles and specific trade obligations set out in multilateral environmental agreements are taking place in the CTE Special Session. Therefore related issues should be discussed in that negotiating body.

11.12 United States

247. The United States welcomes the opportunity to exchange views on this critically important issue. We agree with Ecuador that addressing climate change is a global challenge of the highest order, and that green technology innovation is essential to the response. Where our views diverge is with respect to the nature of that response. In our view, the global community faces an innovation imperative, and IPR is an indispensable catalyst in driving innovation addressing greenhouse gas emissions and climate change adaptation and mitigation efforts.

248. IPR not only incentivizes that innovation, it promotes technology transfer in these goods and services. This view is supported by a significant body of research, economic analysis and other data, which demonstrates that green technology innovation is happening, that voluntary technology transfer is occurring and that IPR plays a significant and positive role in promoting both activities.

249. We not only question the premise of Ecuador's recommendations and the limited data on which they rely, but also believe those recommendations would undermine, rather than advance, Ecuador's intended objective of promoting green technology innovation and technology transfer.

250. Turning first to the innovation imperative, there is little debate that the global community faces a monumental challenge and that innovation is critically important to surmount it. Technological change is paramount in the quest to find alternatives to fossil fuels. For example, as the Harvard Project on International Climate Agreements concluded, the development and transition to fossil fuel alternatives "… necessitates a suite of policies to provide the proper incentives for technological change. These policies will drive invention, innovation, commercialization, diffusion, and utilization of climate-friendly technologies."[12]

251. In addition, innovation is an economic necessity to overcome the costs of the climate change response. Studies have demonstrated that innovation will achieve substantial cost reductions in adapting to and mitigating the effects of climate change. For example, researchers in a paper entitled "Global Energy Technology Strategy: Addressing Climate Change", concluded that the cost of using currently available technologies to stabilize current CO2 levels would be over $20 trillion greater than with expected developments in energy efficiency, hydrogen energy technologies, advanced bio-energy, wind and solar technologies.[13]

252. Another report from the Brookings Institution finds that technological innovation presents the potential to reduce costs of CO2 stabilization by over 50%.[14] For these and other reasons, it is time to unleash a tide of innovation, rather than risk turning off the tap. Indeed, as we heard today at the side event, IP is an important driver of social innovation and promotes low-cost green technology solutions. Where there are divergent views in this room, however, is with respect to who is innovating and how to promote that innovation.

253. In terms of the origin of innovation, there are many sources, including the public and private sectors and universities in both developed and developing countries, contrary to the claims made earlier in this item.

254. To begin, the private sector is the engine for innovation, which is particularly true with respect to green technologies. The United Nations Environment Program reports, for example, that 60% of the clean energy technology financing in 2009 came from private sources.[15] Another report on "International Climate Technology Strategies" confirms that 60% of the financing and 70% of the global R&D comes from private sources.[16] Likewise, the OECD has found that the private sector

[12] Aldy, Joseph, and Stavins, Robert, "The Role of Technology Policies in an International Climate Agreement", The Harvard Project on International Climate Agreements, 2008, p. 1.

[13] Edmonds, JA; Wise, MA; Dooley, JJ; Kim, SH; Smith SJ; Runci, PJ; Clarke LE; Malone EL; Stokes GM, "Global Energy Technology Strategy: Addressing Climate Change," Global Energy Technology Strategy Program, May 2007, p. 39.

[14] Newell, Richard "A U.S. Innovation Strategy for Climate Change Mitigation" Discussion Paper 2008-15. Hamilton Project, Brookings Institution, Washington D.C., p. 14-15.

[15] UNEP, "Global trends in Sustainable Energy Investment 2010." 2010, p. 25.

[16] Newell, Richard, "International Climate Technology Strategies", The Harvard Project on International Climate Agreements, October 2008, Discussion Paper 08-12, p. 6.

is responsible for nearly two-thirds of R&D funding in OECD countries.[17] It is notable that the percentage of private sector R&D funding in China is now almost 75%, according to UNEP.[18]

255. The second largest funding source is governments at roughly 30%. One study suggests that half of that funding is transferred to universities, other non-profit research institutions and industry.[19] Universities, of course, play a critical role in the innovation pipeline, not only in terms of research, but also in terms of producing researchers and scientists that will drive tomorrow's green technology discoveries. And it is important to note here that the different sources of innovation do not work in isolation. Public-private cooperation, including industry-university collaboration, is a key feature of the innovation landscape.

256. Finally, green technology innovation is not limited to the developed world, as Ecuador suggests. Many developing countries have robust R&D policies for green technology innovation. According to the 2013 Global R&D Funding Forecast, the Asia region drives global R&D funding spending at US$554.6 billion. This is a US$36 billion increase over 2012 and a US$67.5 billion increase over 2011. Latin America accounts for the second largest R&D spending, followed by the United States, Europe, China and Japan.[20] R&D spending is, therefore, diverse, decentralized and global.

257. Growing patent registrations also provide an important indicator demonstrating the growing intensity of green technology innovation occurring around the world in the area of climate change adaptation and mitigation. For instance, a Copenhagen Economics study entitled "Are IPR a Barrier to the Transfer of Climate Change Technology" concludes that the growth rate of patent registration for carbon abatement technologies in emerging market economies (up by 545%) far outpaces that in the developed world. At this pace, emerging market economies will soon equal the patenting activity found in developed countries.[21]

258. WIPO Patent Cooperation Treaty (PCT) applications confirm this trend. For example, in 2011 the highest volume of those applications came from East Asia.[22] This is notable given that only five years ago North America was the main region of origin of PCT applications. Regarding individual company applicants, the first and third ranked applicants, in terms of total PCT applications filed in 2011, are headquartered in developing countries.[23] Moreover, individual developing countries are specializing in specific green technology sectors. According to a joint report of UNEP, the European Patent Office and ICTSD, India is among the top five countries for solar photovoltaic technologies, while Brazil and Mexico share the top two positions in hydro-marine technologies.[24]

259. In an in-depth analysis of the solar photovoltaic, biofuel and wind sectors, John Barton demonstrates significant developing country leadership in green technology innovation, including Brazil, Malaysia and South Africa for biofuels, and China and India for solar PV and wind.[25] Ecuadorian innovation should also be acknowledged here. We note that Ecuadorian inventors have filed 50 patent applications in the United States, including several relevant to today's discussion, such as an energy-saving LED-based lighting devices and a solar radiator. Likewise, entities from Ecuador filed 27 PCT applications in 2011 and 31 such applications in 2010, an increase of 29 applications from 2009.[26]

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[17] OECD, "Main Science and Technology Indicators, 2010/2", 2011, p. 18.

[18] UNEP, "Global trends in Sustainable Energy Investment 2010." 2010, p. 18.

[19] Newell, Richard, "International Climate Technology Strategies", The Harvard Project on International Climate Agreements, October 2008, Discussion Paper 08-12, p. 6.

[20] Battelle, "2013 Global R&D Funding Forecast", R&D Magazine, p. 3.

[21] Copenhagen Economics, "Are IPR a Barrier to the Transfer of Climate Change Technology?", January 2009, p. 18

[22] WIPO, "PCT: The International Patent System: 2012 Yearly Review." 2012, p 10.

[23] WIPO, "PCT: The International Patent System: 2012 Yearly Review." 2012, p. 10.

[24] UNEP, EPO, ICTSD, "Patents and Clean Energy: Bridging the Gap Between Evidence and Policy", 2010, p. 4.

[25] Barton, John, "Intellectual Property and Access to Clean Energy Technologies in Developing Countries: An Analysis of Solar Photovoltaic, Biofuel and Wind Technologies", ICTSD, Issue Paper No. 2, December 2007, p. viii.

[26] WIPO, "PCT: The International Patent System: 2012 Yearly Review." 2010, p. 29. WIPO, "International Patent Filings Set New Record in 2011," *Annex 5: PCT International Applications by Country,* 5 March 2012, available at: http://www.wipo.int/pressroom/en/articles/2012/article_0001.html.

260. So, given the realities of this dynamic and complex innovation environment, the fundamental question becomes how do we best promote continued advances in green technology by all innovators, including the private sector, universities and others in developed, developing and least developed countries? As we will discuss, the literature to date strongly suggests that IPR protection and enforcement remain a key tool to promoting such innovation.

261. Rather than repeating the US position today, which is well known to Members, our intervention focuses on the wealth of data supporting our position. Specifically, the literature cites numerous positive and necessary contributions of IPR, including incentivizing innovation, attracting foreign direct investment, increasing wages, retaining and cultivating a high-skilled work force, stimulating university research, and promoting technology transfer. Likewise, the literature largely concludes that, in the context of green technology, IPR does not have negative implications with respect to the cost or transfer of such technology. We will take these seven examples of the contributions of IPR to green technology innovation in turn.

262. First, IPR protection incentivizes innovation. In their OECD paper entitled "Technology Transfer and the Economic Implications of the Strengthening of Intellectual Property Rights in Developing Countries", Park and Lippoldt use regression analysis to address this question and conclude that "IPRs can directly stimulate local innovation [in developing countries] as well as indirectly by stimulating the transfer of technologies that foster local innovation."[27] Park and Lippoldt further conclude that "[d]eveloping country patent applications (by both residents and non-residents) and expenditure on R&D (as a percentage of GDP) tend to have a positive and significant relationship to the strength of patent rights". Likewise, Richard Newell explains in his paper entitled 'International Climate Technology Strategies", that that patents and other forms of IPR "… can thereby stimulate innovative activity that might not otherwise take place or at least not as intensely."[28] Notably, in their economic analysis of IPR, foreign direct investment, and industrial development, Branstetter and Saggi conclude that strengthening IPR protection in developing countries increases the rate of innovation.[29]

263. Conversely, weakening IPR protection negatively impacts innovation. For example, the World Energy Council paper on environmental innovation, IPR and sound environmental policy for climate change concludes that companies will simply not invest R&D resources into markets without effective IPR protection.[30] Aldy and Stavins concur, stressing that the fear of patent infringement and other IPR violations may seriously discourage private sector R&D in countries with weak IPR protection and enforcement.[31] This is echoed by the WTO Working Group on Trade and Technology Transfer Secretariat, which concludes that a weak IPR regime could hinder FDI.[32]

264. Second, IPR protection also attracts critical investment needed for innovation. Here, the data overwhelming confirms that IPR is a key determinant in FDI related to green technology. As the World Energy Council explains, IPR protection generally is a pre-requisite for investment in technology.[33] In a Background Note for the WTO Working Group on Trade and Technology Transfer, the Secretariat cites several studies and concludes that "… a strong IPR regime is an important factor in attract [sic] of investment by high technology firms." The Note goes on to find that the nature of such FDI also evolves as countries continue to improve their IPR regimes, moving from exports to FDI and finally to licensing. [34] Lee and Mansfield[35] , Nunnenkamp and

[27] Park, Walter and Lippoldt, Douglas, "Technology Transfer and the Economic Implications of the Strengthening of Intellectual Property Rights in Developing Countries", OECD Trade Policy Papers No. 62, OECD, 2007, p. 4-5.

[28] Newell, Richard, "International Climate Technology Strategies", The Harvard Project on International Climate Agreements, October 2008, Discussion Paper 08-12, p. 25.

[29] Branstetter, Lee and Kamal, Saggi, "Intellectual Property Rights, Foreign Direct Investment, and Industrial Development", Working Paper 15393, National Bureau of Economic Research Working Paper Series, October 2009, p. 4.

[30] World Energy Council, "Energy Sector Environmental Innovation: Understanding the Roles of Technology Diffusion, Intellectual Property Rights, and Sound Environmental Policy for Climate Change", p. 9.

[31] Aldy, Joseph, and Stavins, Robert, "The Role of Technology Policies in an International Climate Agreement", The Harvard Project on International Climate Agreements, 2008, p. 6.

[32] "Trade and Transfer of Technology", Background Note by the Secretariat, WTO Working Group on Trade and Technology Transfer, WT/WGTTT/W/1, April 2, 2002, p. 21.

[33] World Energy Council, "Energy Sector Environmental Innovation: Understanding the Roles of Technology Diffusion, Intellectual Property Rights, and Sound Environmental Policy for Climate Change", p. 9.

[34] "Trade and Transfer of Technology", Background Note by the Secretariat, WTO Working Group on Trade and Technology Transfer, WT/WGTTT/W/1, April 2, 2002, pp. 22-23.

Spatz[36], and Branstetter et al[37], all reach similar conclusions. It is important to note here that FDI is not only essential for innovation, it is also critical for economic development, including in developing countries. One study concludes that such FDI accounts for over 25% of GDP in those countries.[38]

265. Third, IPR protection can raise real wages for innovative companies in developing countries. In their economic analysis, Branstetter and Saggi incorporate labor market effects of IPR reform into their model. According to their calculations, strengthening IPR protection in developing countries raises real wages. In addition, they conclude that the purchasing power of those employed in such developing countries actually increases.[39]

266. Fourth, IPR facilitates retention and training of a high-skilled work force. On this point, one of the most notable conclusions of the Secretariat Note for the Working Group on Trade and Technology Transfer addresses an additional positive labor market effect of IPR reform, involving the retention of high-skilled workers. Citing McGrath, the Secretariat explains that FDI decision makers evaluate the IPR landscape in a given market in determining whether and how to invest in a particular country. Stronger IPR protection may counsel in favor of R&D rather than assembly, for example, which in turn enhances that country's access to green technology. With access comes diffusion "… as a strong IPR regime alleviates the brain drain problem for developing countries by giving high qualified individuals the possibility to work in their home country."[40]

267. Fifth, IPR protection stimulates university innovation. The World Energy Council explains, for instance, that academic and research institutions use patents as assets to transform their inventions into licensing income and then to invest in further research.[41] WIPO's SME Division confirms the crucial role of patents and licensing for university research in providing incentives to researchers and universities to seek ways of exploiting their inventions and to actively seek industry partners to commercialize their inventions.[42] Another study concludes that "university technology transfer is mainly a system of disclosure, patenting, licensing, and enforcement of patents and licences."[43]

268. And this leads us to the sixth positive contribution of IPR protection, which is that it fosters green technology transfer and diffusion. Here, there is a diverse and immense amount of data supporting this conclusion. Indeed, member countries of UN Framework Convention on Climate Change, concluded in 2002 at the Marrakesh Conference of the Parties, that protecting IPR is part of the enabling environment for green technology transfer.[44] World Bank and WTO Secretariat[45] publications have drawn the same conclusion. For example, a World Bank study on trade and climate change finds that encouraging technology transfer "needs" IPR protection, and notes a

[35] Lee, Jeong-Yeon and Mansfield, Edwin, "Intellectual Property Protection and U.S. Foreign Direct Investment", *Review of Economics and Statistics*, Vol. 78, 1996, pp. 181-186.

[36] Nunnenkamp, Peter and Spatz, Julius, "Intellectual Property Rights and Foreign Direct Investment: A Disaggregated Analysis," *Weltwirtschaftliches* Archiv Vol. 140, No. 3, 2004, p 393-414.

[37] Branstetter, Lee; Fisman, Raymond; Foley, C. Fritz; and Saggi, Kamal, "Do Stronger Intellectual Property Rights Increase International Technology Transfer? Empirical Evidence from U.S. Firm-Level Panel Data", *Quarterly Journal of Economics*, Vol. 121, No. 1, pp. 321-349.

[38] World Energy Council, "Energy Sector Environmental Innovation: Understanding the Roles of Technology Diffusion, Intellectual Property Rights, and Sound Environmental Policy for Climate Change", p. 9.

[39] Branstetter, Lee and Kamal, Saggi, "Intellectual Property Rights, Foreign Direct Investment, and Industrial Development", Working Paper 15393, National Bureau of Economic Research Working Paper Series, October 2009, p. 4.

[40] "Trade and Transfer of Technology", Background Note by the Secretariat, WTO Working Group on Trade and Technology Transfer, WT/WGTTT/W/1, April 2, 2002, p. 25.

[41] World Energy Council, "Energy Sector Environmental Innovation: Understanding the Roles of Technology Diffusion, Intellectual Property Rights, and Sound Environmental Policy for Climate Change", p. 11, citing Idris, K; and Arai, H., "The Intellectual Property-Conscious Nation: Mapping the Path from Developing to Developed", WIPO, p. 28.

[42] SME Division, "Research and Innovation Issues in University-Industry Relations", Background Information Document, WIPO, p. 4.

[43] Allen, M., "A Review of Best Practices in University Technology Licensing Offices", *The Journal of the Association of University Technology Managers*, Vol. XIII , 2001.

[44] Decision 4/CP.7, "Development and Transfer of Technologies; Annex: Framework for Meaningful and Effective Actions to Enhance the Implementation of Article 4, Paragraph 5 of the Convention", FCCC/CP/2001/13/Add.1, November 2001.

[45] "Trade and Transfer of Technology", Background Note by the Secretariat, WTO Working Group on Trade and Technology Transfer, WT/WGTTT/W/1, April 2, 2002, p. 25.

case study in which a country's weak IPR regime acts as an impediment to the expansion of clean technology markets within its borders.[46] And a wealth of economic literature concurs as well. Citing over 220 studies, Johnson and Lybecker's literature review on environmental technology dissemination shows that stronger IPR protection enhances technology transfer.[47] Park and Lippoldt's regression analysis for the OECD demonstrates the same conclusions,[48] as does Brainstetter et al.'s empirical study of technology transfer within multinational enterprises.[49]

269. Conversely, IPR does not impede technology transfer as has been suggested. Here again, there is considerable supporting data. Johnson and Lybecker's literature review confirms this conclusion, relying on a wealth of analysis involving green technology transfer.[50] Regarding that literature, another report concludes that the "… criticism of IPRs as a barrier to technology not only lacks economic and analytical foundation and rigor, but ignore the essential character of IPR protection in promoting innovation and enabling technology uptake, both generally and specifically in the case of clean energy technology."[51]

270. Finally, IPR does not inherently make green technologies more expensive[52], as has also been asserted. This is because of the nature of the sectors involved, which are highly competitive, competing not only within the sector, but also between alternative sectors as well as with incumbent non-green technologies. With respect to solar PV, biofuels and wind, for instance, Barton concludes that competition between patented products results in price points being brought down and significantly limiting the extent to which royalties and prices can increase.[53] In a separate study, he finds that costs assignable to IPR are likely to be very small, because of competitive structures in those sectors. Moreover, manufacturing costs account for a large part of the total cost of such products, with R&D accounting for only a small portion.[54]

271. In summary, our review of the literature raises serious questions regarding the premise on which the paper we are discussing today is based. The paper's contentions that green technology innovation is limited to developed countries and that IPR increases costs and is a barrier to technology transfer are not supported by the evidence. In fact, a wealth of data shows that the opposite is true – that innovation has diverse origins, including developing countries, and that IPR protection promotes innovation and transfer, without substantially raising costs. For these reasons, we have serious reservations regarding the paper's proposals, and are not in a position to support its recommendations.

272. We continue to view strong IPR protection as an environmental as well as an economic imperative, providing critical developmental benefits for developing and least developed countries

[46] Environment Department, "Warming Up to Trade? Harnessing International Trade to Support Climate Change Objectives", Economic and Sector Work, Sustainable Development Network, the World Bank, 2007, pp. 11 and 56.

[47] Johnson, Daniel; and Lybecker, Kristina, "Challenge to Technology Transfer: A literature Review of the Constraints on Environmental Technology Dissemination", Colorado College Working Paper 2009-07, July 2009, pp. 3-4.

[48] Park, Walter; and Lippoldt, Douglas, "Technology Transfer and the Economic Implications of the Strengthening of Intellectual Property Rights in Developing Countries", OECD Trade Policy Papers No. 62, OECD, 2007, p. 4-5.

[49] Branstetter, Lee; Fisman, Raymond; Foley, C. Fritz; and Saggi, Kamal, "Do Stronger Intellectual Property Rights Increase International Technology Transfer? Empirical Evidence from U.S. Firm-Level Panel Data", Quarterly Journal of Economics, Vol. 121, No. 1, p. 323.

[50] Johnson, Daniel; and Lybecker, Kristina, "Challenge to Technology Transfer: A literature Review of the Constraints on Environmental Technology Dissemination", Colorado College Working Paper 2009-07, July 2009, pp. 3-4.

[51] World Energy Council, "Energy Sector Environmental Innovation: Understanding the Roles of Technology Diffusion, Intellectual Property Rights, and Sound Environmental Policy for Climate Change", p. 11, citing Idris, K; and Arai, H., "The Intellectual Property-Conscious Nation: Mapping the Path from Developing to Developed", WIPO, p. 28.

[52] *See* Johnson, Daniel; and Lybecker, Kristina, "Challenge to Technology Transfer: A literature Review of the Constraints on Environmental Technology Dissemination", Colorado College Working Paper 2009-07, July 2009, p. 4.

[53] Barton, John, "Intellectual Property and Access to Clean Energy Technologies in Developing Countries: An Analysis of Solar Photovoltaic, Biofuel and Wind Technologies", ICTSD, Issue Paper No. 2, December 2007, pp. viii and x.

[54] Barton, John, "Mitigating Climate Change Through Technology Transfer: Addressing the Needs of Developing Countries", Energy, Environment and Development Programme, Programme Paper 08/02, Chatham House, October 2008, p. 9.

in particular. Such protection is essential to facilitate access to, and transfer of, today's technologies and to promote tomorrow's innovation.

11.13 Japan

273. This delegation welcomes the opportunity to discuss the topic of IP in terms of how it facilitates the transfer of environmentally rational technology.

274. To start with, this delegation does not consider the existing IP protection system to be a barrier to technology transfer. Rather, we firmly believe that adequate IP protection forms a solid and stable foundation that leads to direct investment and technology transfer. This, in turn, is expected to lead to the development and dissemination of environmentally sound technology.

275. We think that the current international frameworks set up for IPRs are basically well-balanced in terms of the goals of both stimulating technological innovation and facilitating technology transfer. In particular, further technological innovation is necessary focusing on mid- and long-term solutions to reducing green-house-effect gas emission.

276. However, the proposal by the delegation of Ecuador contained in document (IP/C/W/585) includes initiatives and assertions that would undermine the current IP protection system, for example, reorienting the world IP regime (paragraph 14), considering environmentally sound technologies as "public goods" (paragraph 15), revision of the framework for the protection of IPRs (paragraph 16), adoption of a provision authorizing exemption from patentability (paragraph 17d), asserting that patent system as currently designed can restrict the dissemination (paragraph 19). We cannot support such initiatives and assertions that may deter development, dissemination and transfer of technology, including environmentally sound technology, because they would lower the incentive for innovation.

277. Under these circumstances, this delegation is not in a position to support adopting the declaration at the Bali Ministerial Conference as mentioned in paragraph 23 of Ecuador's proposal.

11.14 European Union

278. In response to Ecuador's intervention on the contribution of IP to facilitating the transfer of environmentally rational technology, the European Union would like to contribute to the debate with the following comments:

279. IP may not play as important a role as some seem to think in the transfer of technology in the climate change alleviation context. Other factors have to be taken into consideration, especially as Ecuador refers to LDCs and the most vulnerable developing countries.

280. In LDCs, patents are not protected because they are not filed in these countries (no obligation to do so via TRIPS) and there is small market value for private business which is the proprietor of the technology. Therefore, companies are free to use these inventions in these countries. A considerable quantity of key technology is already in the public domain. Moreover, very recent, sophisticated technology would not necessarily be suitable for their specific country context as regards basic infrastructures and organization.

281. Other important elements to take into consideration are the lack of financial resources, high investment costs, subsidies and tariffs, all of which are considered greater barriers to accessing technology than IP protection.

282. Similarly, "There are a number of characteristics and circumstances of developing nations that hinder innovation: a lack of scientists and researchers, brain drain, small market size, the lack of infrastructure, importantly telecommunications infrastructure, the quality the business environment and governance conditions, bureaucratic climate and the formal/informal regulations regarding economic transactions, cash-strapped governments and inability to make public investments in research and infrastructure." (Colorado College Working Paper, 2009 – see below in list of quotes)

283. As the report on patenting and climate change mitigation technology from EPO, UNEP and ICTSD show, the main factors impeding technology transfer are access to the real know-how from the source companies (including access to trade secrets), access to suitably skilled staff, scientific infrastructure, and favourable market conditions. The patent system can therefore support technology transfer as without patents to protect their products and processes the source companies may be reluctant to engage in technology transfer and associated investments.

284. I would like to quote from a study carried out by DG TRADE in 2009 entitled "Are IPR a barrier to the transfer of climate change technology". This study is available and I will also provide the links. Some excerpts:

- "The study finds no argument in favour of extending the use of TRIPS provisions on compulsory licensing to climate change technologies."
- "IPR protection is not the main barrier preventing the transfer of environmental technologies to developing countries."
- "dismantling or weakening the IPRs system would not only hinder the access of developing countries to costly technology, it would also hinder the access to low cost technology as IPR protected technology is also to be found among the low abatement cost technologies."

285. Another study entitled "Intellectual Property Rights: The Catalyst to Deliver Low Carbon Technologies", carried out by The Climate Group in 2008, indicates that:

- "Intellectual Property Rights (IPRs), particularly patents, will be a catalyst, not a barrier, to creating and deploying low-carbon technologies."
- "Objections to IPRs are usually caused by a lack of understanding of their role."
- "Threats to strong IPRs, such as easily-obtained compulsory licensing, are likely to be a strong disincentive to invest."

286. Another study by the Centre d'Economie Industrielle (CERNA) entitled "Invention and Transfer of Climate Change Mitigation Technologies on a Global Scale: A Study Drawing on Patent Data" (also from 2008 reports) found that:

- "Innovation in climate change technologies is highly concentrated in three countries — Japan, Germany and the USA — which account for two-thirds of total innovations in the thirteen technologies. […] Surprisingly, the innovation performance of emerging economies is far from being negligible as China, South Korea and Russia are respectively the fourth, fifth and sixth largest innovators."
- "Do these new technologies cross national borders? The export rate—measured by the share of inventions that are patented in at least two countries—is around 25%. This sounds small, but it is only a few per cent below the rate for all technologies. International transfers mostly occur between developed countries (75% of exported inventions). Exports from developed countries to emerging economies are still limited (18%) but are growing rapidly. This suggests a huge potential for the development of North-South transfers. Although China, Russia and South Korea are major innovators, flows between emerging economies are almost non-existent. Accordingly, there also exists a huge potential for South-South exchanges — particularly given that these countries may have developed technologies that are better tailored to the needs of developing countries."

287. The Colorado College Working Paper "Challenges to technology transfer: A literature review of the constraints on environmental technology dissemination" from 2009 says:

- "While developing nations frequently claim that strong intellectual property rights on carbon abatement technologies hinder developing countries' greenhouse gas abatement efforts, it has been shown that IPRs do not constitute as significant a barrier as claimed since a variety of technologies exist for reducing emissions. In many cases, IPR protected technologies are not necessarily more costly than those not covered."

- "There are a number of characteristics and circumstances of developing nations that hinder innovation: a lack of scientists and researchers, brain drain, small market size, the lack of infrastructure, importantly telecommunications infrastructure, the quality the business environment and governance conditions, bureaucratic climate and the formal/informal regulations regarding economic transactions, cash-strapped governments and inability to make public investments in research and infrastructure."

- "Technology transfer is enhanced by stronger levels of patent protection, while acknowledging the necessity of complementary factors such as infrastructure, effective government policies and regulations, knowledge institutions, access to credit and venture capital, skilled human capital, and networks for research collaboration. Economic studies have found that while IP protection facilitates trade flows of patented goods into large and middle-income nations, but has no impact on poor countries."

288. A final study I would like to quote again from the International Centre for Trade and Sustainable Development, from a paper entitled "Innovation and Technology Transfer to Address Climate Change: Lessons from the Global Debate on Intellectual Property and Public Health" from 2009. According to this study:

- "It is generally assumed that the originator pharmaceutical sector is highly dependent on strong patent protection, mainly because of the high cost involved in developing novel drug therapies and the low cost of reverse engineering these new drugs. Preliminary research suggests that most AERs/MTs industries may be less dependent on strong patent protection, and/or that patents are less likely to cause significant bottlenecks in the development and transfer of these green technologies. While it is premature to come to a definitive conclusion because researchers are only now focusing on the evidence, there is some basis for anticipating that IPRs will present fewer risks for developing countries in the context of climate change than for public health."

- "Assuming that TRIPS Agreement flexibilities are well understood among experts, negotiations regarding a Declaration on IPRs and Climate Change arguably would be time-consuming and disruptive in the absence of significant foreseeable "payoff". Some have argued that the Doha Declaration was the product of a specific set of concrete circumstances requiring redress, and that there is no comparable set of circumstances evident in the climate change arena."

289. To conclude, we do not believe that a change to the IPR system is required, such as exclusions from patentability or systematic compulsory licensing. The TRIPS Agreement provides for flexibilities that offer possibilities to the countries seeking to use technology.

290. The EU and its Member States spend huge amounts of money in projects entailing cooperation and elements of technology transfer to LDCs and developing countries, as can be seen in its annual reports to this forum.

291. Therefore, instead of considering changes in IPR legislation, it is far more useful to focus efforts on more operational initiatives, aiming for instance at facilitating technology transfer, disseminating information on relevant (off-patent) technologies, developing mechanisms such as patent pools (to be operated on a voluntary basis), etc.[55]

[55] Web links to the studies quoted:
DG Trade study: "*Are IPR a barrier to the transfer of climate change technology?*" (2009): http://trade.ec.europa.eu/doclib/docs/2009/february/tradoc_142371.pdf
The °Climate Group's paper "*Intellectual Property Rights: The Catalyst to Deliver Low Carbon Technologies*" (2008): http://www.theclimategroup.org/_assets/files/Intellectual-Property-Rights.pdf
CERNA study "*Invention and Transfer of Climate Change Mitigation Technologies on a Global Scale: A Study Drawing on Patent Data*" (2008): http://www.cerna.ensmp.fr/images/stories/file/Poznan/final_report_090112.pdf
Colorado College Working Paper "*Challenges to technology transfer: A literature review of the constraints on environmental technology dissemination*" (2009): http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1456222

11.15 Canada

292. Canada would like to thank Ecuador for its communication on the contribution of IP to facilitating the transfer of clean technologies.

293. In the view of this delegation, concerted and cooperative action to develop and deploy clean technologies, in a way that respects IPRs, is critical to achieving long-term, low-carbon growth and sustainable development. We point, for example, to the ongoing productive work under the UNFCCC, including the Technology Mechanism, which is aimed at facilitating the acceleration of technology development, cooperation, and transfer in support of mitigation and adaptation actions.

294. With regard to the TRIPS Agreement, Canada notes that a fundamental objective of the IP system and rights is to provide an incentive to support the private-sector innovation which is critical to ensuring the continued development of technologies. For instance, the cleantech sector continues to develop innovative solutions to deal with climate change-associated problems. Such innovative solutions are rewarded through the commercialization of their products, which can in turn foster additional innovation and contribute to the knowledge base that can be built upon for developing environmentally sound technologies.

295. Patents have an important role to play in the dissemination of technology. For example, as patent applicants are obliged to publish the details of their inventions in exchange for patent protection, published patents are a rich resource in technical and scientific information accessible to all via patent office databases, stimulating further research and development.

296. Canada believes that addressing the challenge of climate change must respect IPRs that allow innovative clean technologies to emerge in the first place. In our view, the wide array of studies as well as the numerous successful initiatives and mechanisms addressing climate change-related capacity building and technology transfer, for example in the UNFCCC and elsewhere, help to demonstrate that balanced IP regimes are not an obstacle to the transfer of environmental technologies, rather they are an incentive. It must be recognized as well that access to technology is also heavily dependent on other external factors outside of the IP realm such as access to a skilled workforce, adequate infrastructure, and favourable market conditions.

297. Canada has appreciated hearing the views of other Members at today's TRIPS Council meeting and looks forward to continued dialogue on these issues.

11.16 Switzerland

298. Switzerland shares the concerns of Ecuador regarding the harmful effects of climate change. Switzerland agrees that the utilization of new and also yet to be developed technologies will play an important role in the fight against climate change as well as the use and transfer of such technology between developed and developing countries and vice versa.

299. At this stage, Switzerland has a few initial remarks on the communication by Ecuador and a number of questions. In paragraph 4 of its communication, Ecuador mentions a concern of a "lack of information" which constitutes "a kind of barrier" to access to the relevant technology. In Switzerland's view, the patent system contributes to the sharing of information about innovative technology. Patent applicants are required to disclose their invention at an early stage in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art. The process of patenting a new technology thus results in a sharing of information that would not happen if the inventor instead chose to keep his invention as a trade secret. Could Ecuador elaborate on its concern about lack of information and indicate specific cases where the existing tools and procedures of the IP system, as also provided in the TRIPS Agreement, have actually posed a problem?

300. We would like to refer to the report "Patents and clean energy technologies in Africa", which was recently published by the UN Environment Programme (UNEP) and the European Patent Organization (EPO). It summarises a number of recent studies and sheds light on many of the questions raised in Ecuador's paper. For example it shows and provides detailed data on the

ICTSD paper "*Innovation and Technology Transfer to Address Climate Change: Lessons from the Global Debate on Intellectual Property and Public Health*" (2009): http://ssrn.com/abstract=1433579

information function of the patent. According to the report, the patent system "allows the creation of powerful search tools that facilitate the retrieval of technological information in areas such as environmentally sound technologies." (page 31 of the report).

301. In the same paragraph 4 of its submission, Ecuador mentions cases of "excessive protection" which are said to "constitute a kind of barrier" to access to the relevant technology. What does Ecuador understand under "excessive protection"? My delegation agrees that IP needs adequate and not excessive protection. In terms of protection of inventions and patents, Switzerland is in favour of high quality patent examination and also supports relevant efforts undertaken currently in WIPO. Does Ecuador have specific examples in which this so called "excessive protection" created a barrier to access to the relevant technologies in environmentally sound technologies and where the existing tools and procedures to remedy an abuse of IP rights – as also foreseen in the TRIPS Agreement – have failed?

302. As clearly indicated in the UNEP/EPO report, quality-oriented patent systems with state of the art searches on technology and substantive examination of the invention on its compliance with the patent law produce appropriate results. For example, only half of the patent applications filed with the EPO are actually granted, and the majority of those granted have their scope of protection reduced during the substantive examination process. International cooperation in the IP area, not only at the multilateral level such as in WIPO, but also at regional IP agency level (participation e.g. of African agencies/patent offices in the EPO's validation scheme for patents; report page 11), including the sharing of best practices (page 14), helps to achieve high quality patents.

303. Still with regard to paragraph 4 of Ecuador's submission, it is further mentioned that problems exist with "inappropriate enforcement" of IPRs which constitute a kind of barrier" to access to the relevant technology. It is not clear to my delegation what is exactly meant by the term "inappropriate enforcement". The question of how courts should deal with baseless litigation essentially needs to be answered by the national law. Under Swiss law, any party against whom an unnecessary litigation case is brought can claim full damages and all costs of such litigation have to be borne by the plaintiff who illegitimately initiated such an action. This has a clear deterrent effect. Could Ecuador elaborate on what it means in its communication when referring to "inappropriate enforcement" and give examples where the existing tools and procedures to prevent such abuse, whether national or international, have actually failed?

304. In paragraph 6 of Ecuador's submission, it is proposed that a system of "automatic granting of rights through voluntary licensing" should be put in place. While to Switzerland, a tension - if not a contradiction - seems to exist between voluntary licensing and automatic grant of rights. Having said that, Switzerland certainly agrees with Ecuador that the advantages of cooperative, voluntary licensing are evident: a voluntary licence can be obtained faster than a compulsory licence; it is cheaper and more effective, since through the partnership with the licensor important know-how may also be transferred. Accordingly, a voluntary licence offers an efficient, solid and sustainable basis for technology transfer, whether in the domain of environmentally sound technologies or any other field of technology.

305. In short, the role of innovation is thus key, now and in the future, to addressing the challenge of developing better environmentally rational technology. Such innovation must be incentivised – and that is where patent protection plays a crucial role. In the field of environmentally rational technology as in other fields of technology, patent protection also for incremental innovation is important, as it is the first step towards and thus often a prerequisite for breakthrough inventions.

306. The UNEP/EPO report on Patents and Clean Technology in Africa explicitly confirms on page 14 that the patent system is designed to support technology transfer: "The patent system provides a legal framework to support technology transfer through licensing agreements, and without patents to protect their products and processes, the source [innovator] companies may be reluctant to engage in technology transfer and associated investments."

11.17 Australia

307. Australia would like to thank Ecuador for placing this item on the agenda. We welcome the opportunity to talk about IP, climate change and development.

308. Australia is making a direct contribution to global efforts to tackle climate change by partnering with other countries bilaterally and multilaterally to support them to build capacity to reduce emissions and take action towards adapting to the impact of climate change. As detailed in our most recent report under Article 66.2 of the TRIPS Agreement, many of the initiatives by the Australian government to support technology transfer are related to climate change. I would like to draw your attention to a couple of examples from that report.

309. Australia's International Climate Change Adaptation Initiative provides $A328.2 million over five years (2008-2013) to fund programmes and activities that assist vulnerable countries, particularly small island States and developing and least developed countries, adapt to the unavoidable impacts of climate change. One of the objectives of the initiative is to "improve scientific information and understanding, including where appropriate, through technology transfer". The funding has supported a number of projects involving scientific training, capacity building and knowledge transfer to least developed countries. For example the A$A32 million Pacific-Australia Climate Change Science and Adaptation Planning aims to develop the capacity of scientists, decision-makers and planners from 14 Pacific island countries and Timor-Leste to access and apply climate information and tools to identify and develop in-country adaptation responses.

310. Australia is providing approximately A$A34 million to Australian and international non-government organisations in the Pacific, Timor-Leste, the Philippines and Vietnam under the Community-based Climate Change Action Grants Programme. The programme is helping to build the resilience of communities to the impacts of climate change through community-based disaster risk reduction, food and water security, agricultural productivity and ecosystem-based adaptation activities. Support has been provided for projects in least-developed countries in the Pacific and South-East Asia, including Timor-Leste, Kiribati, the Solomon Islands, Tuvalu and Vanuatu.

311. Most projects have a component dedicated to the transfer of small-scale technologies, such as climate resilient agricultural technologies to improve long-term food security.

312. Australia firmly believes that a strong and balanced IP system is a fundamental ingredient in the development and proliferation of climate-change technologies. A strong and balanced IP system is the key to development of climate change technologies because it provides investors an opportunity to recoup the investments necessary to bring ideas to the marketplace. It ensures innovators can obtain the rewards from their research and development, and can fund further research. It promotes further innovation through access to information, new technologies and content.

313. A strong and balanced IP system is also the key to the proliferation of climate change technologies because in this increasingly linked and competitive world, innovative firms and foreign investors generally opt for locations with relatively strong IP laws and this can have a long term beneficial economic impact.

314. Australia recognizes that there are divergent views on the role of IP in the development and proliferation of climate change technologies. Australia is willing to work with Members in this forum or perhaps more appropriately building on the work underway in WIPO, on concrete, practical suggestions that could contribute to the dissemination of climate-change technologies without distorting the IP system. Ideas may include:

- establishing a central repository or searchable data base of climate change technology prior art and patent and design information to promote and disseminate climate-change technology information; or

- development of international model licensing arrangements that are mutually beneficial to the licensors and licensees;

- Australia is supportive of recent WIPO initiatives that promote the sharing of knowledge on environmentally sound technologies. Initiatives such as WIPO's International Patent Classification Green Inventory and WIPO GREEN allow stakeholders to determine which green technologies exist – an important first step in initiating technology transfer.

315. We do not share the view that IP is a barrier to the transfer of climate-change technologies or that the solution to increasing technology transfer is to reduce IP protection. Removing the prospect of material reward from research and development initiatives, could discourage investment in climate-change technology development in the first place.

316. Therefore, more specifically in relation to Ecuador's proposal, we thank Ecuador for the proposal. We would like the opportunity to consider further the proposal in more detail before providing more specific comments.

11.18 New Zealand

317. New Zealand joins others in thanking the delegation of Ecuador for the addition of this agenda item. We welcome the chance to engage in a robust policy discussion on this important issue.

318. We note the concerns raised by Ecuador that the current IP framework as established by TRIPS can hinder the ability of vulnerable and least developed countries to access certain environmentally sound technologies for purposes of climate change mitigation and adaptation.

319. However, in the area of environmentally sound technologies, most patents do not provide their owners with exclusive market power due to the presence in the market of close substitutes, many of which may be off-patent. Even where an environmentally sound technology is a "breakthrough" invention with no close substitutes, there will likely still be alternative technologies available.

320. New Zealand considers that IPRs can play an important role in fostering innovation, including in relation to incentivising the development of new environmentally sound technologies. Likewise, however, the TRIPS Agreement already contains a number of important flexibilities that can be used by Members in appropriate circumstances to address potential abuses of IP rights.

321. Existing mechanisms consistent with the TRIPS Agreement are likely to be sufficient to deal with any problems arising from the abuse of patent rights. For example, a failure to supply an invention on reasonable terms and conditions within a reasonable time period, or outright abuses of patent rights, could be remedied by the issue of a compulsory licence, as permitted by Article 31 of TRIPS.

322. In light of this, New Zealand's view is that tinkering with the TRIPS Agreement is neither necessary nor desirable to facilitate the transfer of climate change-related technologies.

11.19 Ecuador

323. I would like to express thanks for the extensive statements made by a number of Members. This has been very interesting. We see that they have done some detailed and serious homework following a course of logical reasoning. There is so much information that it is hard to know how to react. But there are studies on all sides and we think this is a debate that will enable us to take these studies even further. For the next session, I shall be making a much more detailed presentation.

324. Just a few points and specific reactions to some of the elements that we have heard around the room. Perhaps my information is not the most up-to-date, but what does strike me is that over a period of six or seven years, the balance in the development of technology has changed so much. With regard to environment-related technology, some countries have become the greatest producers or creators of technology, while others have slipped back in a short period of time. This is a striking development. My information says, for example, that renewable energies technology is concentrated - in percentage terms of the patents - in some very specific countries. I would say that roughly more than 70% of these patents are primarily concentrated in four or five countries.

The information we have heard seems to be the opposite of the information that I have. And therefore it is worth discussing. We need to have an in-depth debate about these issues.

325. On wind and solar technologies, some very specific countries have an extremely large number of patents, and their companies are amongst the main producers of these technologies. I am not saying there are not developing countries that do not also have this technology and they are not developing it. My information, however, would indicate that the majority of these businesses are from countries that have a longstanding history of technological development, which we do not have in Ecuador. I am very pleased to see that there are 59 patents registered by Ecuadorian innovators/inventors, and if that is true that would mean that they have managed to overcome all the economic obstacles that they encounter in such registration. Surely, this has been done in the United States, but we could go into greater detail to see which innovators have actually succeeded in patenting their technology in the United States.

326. In terms of air pollution, I understand that this is an area where the technology is handled by a very limited number of countries, which are not developing countries, and not even the so-called emerging countries. I think we could delve much further into these subjects. I think we need more detailed studies regarding statistics, indicating who is patenting more, which technologies are the object of more patents, and on the hypothesis that the balance has changed so radically over the past six or seven years.

327. There may have been a misunderstanding. We are not saying that an IP regime is an obstacle. But it could be - and this is an important semantic distinction. I am not asserting this. There are certain elements that could, in a specific area of technology, constitute a hindrance. As we said in our paper, we are talking about public goods. The fact is that climate change is a problem affecting us all alike, and that if technologies developed to address this harmful phenomenon are concentrated in high-technology countries, those of us with fewer resources cannot have easy access. I am not saying that we do not have access. I am talking about ease of access, as we have limitations in accessing these technologies. Once again this is an issue of semantics that needs to be borne in mind, and I think this is a reaction to some of the points raised by my colleague from Switzerland. We could go into what is implied in each assertion in these paragraphs, but this already referred to in our discussions in the UNFCCC.

328. Ecuador's communication is seeking to encourage discussion of the subject at this and future meetings. For example, in reference to high royalties, one example I have at hand is that in 2010 India had to pay US$2.3 billion in royalties linked to climate change technologies. I wonder if Ecuador would end up paying this level of royalties at some time in the future in an attempt to purchase or to produce these technologies. I am not sure that we have the financial resources. We have considerable limitations on our resources and we have to deal with this. I am sure this is also been debated in the climate change negotiations in the United Nations.

329. There are cases where the patent right holder refuses to licence the patent. Of course a right holder is entitled to refuse. That is what an exclusive right means. But if licensing is refused, what can we as countries do in the face of such a situation. An obligatory licensing system would be the response, but there may be other options that we need to consider. We also have some unreasonable conditions when licences are requested, although it is hard to obtain details of such cases. Further issues are the ever greening of patents for different uses which often comes up on environmental technologies and the increase in legal disputes such as the smart phone court cases around the world. I do not know whether we need to address all these issues as well, but these are some of the points which we feel should be taken up.

330. We had initially proposed a declaration but what I do draw from today's discussion is that further debate is necessary. Ecuador would like to make the proposal here that on the post-Bali programme there be the continuation of a wide-ranging debate amongst Members on the implications of climate change, the results of which should be sent to the General Council to be considered between now and the next Ministerial Conference. I think this is something that we can all agree could be part of the post-Bali programme as something for the Ministers to decide. I would be grateful to all Members for their support and you can count on Ecuador's contribution in that regard.

11.20 Plurinational State of Bolivia

331. I do not want this discussion to go on for too long. But in the light of the excellent discussion that I have heard this afternoon, I wanted to take the floor. I have heard all the bibliographic references that a number of colleagues from different countries mentioned, but unfortunately I could not see any reference to the Special Rapporteur on the Right to Food for the Human Rights Council, for example, or to the special rapporteur on access to medicines. Those are references that are very interesting, and I am going to read something that the Special Rapporteur, Olivier de Schutter has said on the right of food: "The protection of IPRs in agriculture is an obstacle rather than an incentive for innovation". That type of reference should be looked at as well because that is a very neutral type of information, which may be more neutral and objective than some of the references that have been cited, which sometimes have a specific interest at heart. With regard to royalties and the effect on trade, you can see, as a result of the trade balance of countries from Africa and Latin America, how much they pay in royalties and how much they receive from royalties. And you see if IP is so successful, then we should really all be benefiting from it and not just a few who are benefiting from the existence of monopolies from these royalties. So these are statistics that are very important to look at and the IMF probably has quite a lot of publications on that. Each country will have its own idea about its trade balance in this respect. I would like to support what has been said by my distinguished colleague. I think it is very important to consider for post-Bali this particular issue and the focus of the negotiation is of course taking place within the UNFCC.

11.21 United States

332. First, with respect to Ecuador's preliminary responses to some of the information that we and others have identified today. I think we have obviously many unanswered and open questions and so we are looking forward to hearing citations and some data to support many of these assertions. As to references to special rapporteurs' reports, we would welcome looking at those, particularly those addressing climate change issues. With respect to the suggestion about a work programme post-Bali, we are not in a position to support that at this time. I think Ecuador is perfectly within its rights to suggest agenda items and we look forward to having further discussions on this issue in this Council. We would be happy to continue to engage on that basis. But we cannot support a decision of today, particularly in light of the real questions we have about the basis on which recommendations have been proposed.