ITEM 10: IP AND INNOVATION: SUSTAINABLE RESOURCE AND LOW EMISSION TECHNOLOGY STRATEGIES

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10.1 Japan

178. We have prepared some slides and print-outs are placed outside so for everyone to see.¹

179. The Japanese Delegation would like to give a short presentation on this topic.

180. Slide 2 shows the changes in the number of patent filings to the Japan Patent Office in this field of technology, which relates to energy, resource saving, environment and social infrastructure. We can see that the number has almost doubled in the past eight years, which supports the claim that this is a quickly growing field of technology.

181. Next, I would like to make three assumptions concerning some characteristics of technology in this field.

182. The first characteristic is that there is a very wide range of techniques, varying in complexity and effect. Let us say we want a certain effect, for example, the purification of water. The specific technique can range from a simple filtering device to a huge water purification plant. This may not necessarily be high-tech. Thus, the potential licensee would have to select from a broad range of specific techniques, as well as the targeted effect. This could cause a "matching problem", that is, the difficulty in finding the right technology for the right region, which I will discuss later.

183. The second characteristic is that we can find different techniques having the same effect. This means that there would be competition among techniques. Thus, in this field of technology, it would be difficult for a certain patent holder to block innovation, since it would only benefit competitors having techniques with similar effects.

184. The third characteristic is the importance of know-how. Many techniques in this field require know-how to select and integrate the elements which comprise the technique in order for it to work efficiently and be cost-effective. Thus, know-how, often protected as trade secrets, is the key factor for innovation in this field.

185. Next, based on my previous assumptions, I would like to discuss some ideas to accelerate local innovation.

186. First, we could increase competition among techniques, in other words, among potential licensors and investors, which would in turn lower the price of licences. Since licensors provide the technology and the investors provide the capital necessary for innovation, a licensor/investor-friendly environment would promote local innovation. Such environment would include effective IP protection which would help to alleviate the risks involved in investments made to diffuse technology.

187. Second, in order to speed up local innovation, we would need to deal with the "matching problem". This is a problem that we also face even in Japan. There is no simple solution, and we will need to be patient. However, we can think of ways to move forward. Considering the vast number of technologies available, the basic idea is to use a "needs-oriented" approach. It would probably be easier for the potential licensee to narrow down the technology based on their objectives. It would be helpful to have information tools to search the technology and potential licensor.

188. Here, patents have a very important role. Patents define techniques to be searched in databases and link them to their holders. The holders will also have the crucial know-how to work the techniques.

189. It also would be helpful to develop the human resources to do the search and matching. This is an area which international cooperation could be useful.

¹ See Room Document RD/IP/10.
190. Third, it would also be helpful if the patenting process would timely grant patents.

191. So, would we bring IP to work for innovation? I mean we need to use IP in this area. Slide 5 shows some efforts related to the ideas shown on slide 4.

192. There are free patent databases, including those provided by the Japan Patent Office, WIPO, and I haven't listed it here, but the European Patent Office also has a very useful patent database. These can be searched using English, and also the WIPO database, in the EPO database, uses machine translation technology so it can be searched in many different languages.

193. There are also technology databases, including those provided by UNIDO Investment and Technology Promotion Office Tokyo, and from the Global Environment Centre Foundation. These are only in Japan. I think there are more you can find out throughout the world.

194. With regards to timely patent examination, the Japan Patent Office provides accelerated examination for green technology and collective examination of inventions related to a certain product, both are free of charge.

195. With regards to human resource development and other cooperation in this field, various government offices and organizations in Japan have international cooperation schemes, including those already reported in our document, IP/C/W/610.

196. We believe these IP efforts, along with a licensor/investor friendly environment, have the potential to speed up innovation.

10.2 European Union

197. We are very happy to contribute once more to the key point of this agenda item of this Council and today we start with a couple of questions and our perspective of how these questions can be answered. So how will we tackle challenges like climate change, energy supply, the scarcity of resources and the impact of demographic changes? How will we improve health and security and sustainably provide water and high-quality, affordable food?

198. In Europe, we believe that innovation plays a key role to respond to these questions. The EU assigned a central role to innovation to underpin the smart, sustainable and inclusive growth of the Europe 2020 Strategy.

199. Innovation is about promoting growth and ultimately benefiting societies. Innovation is not just research or technology development and its applications. It encompasses both research-driven innovation and innovation in business models, design, branding and services that add value and respond to people's needs. It is about building and changing a whole system: products, processes, markets and organizations. It is about reaching the users, involving the suppliers as well as the consumers everywhere, across borders, across sectors, and across institutions.

200. Innovation is also about inclusiveness. Achieving the objective of transformative economies and societies requires the involvement of different actors in the innovation cycle (academia, public and private sector, civil society, etc.). In this perspective, not only major companies are important, but also small and medium enterprises in all sectors and the social economy and citizens themselves – what we often refer as "social innovation" – also matter. Cooperation throughout the innovation chain, including international cooperation between countries, is also very important.

201. In this context, the relevance of innovation also in relation to sustainability is evident. The sustainability agenda puts people at the centre and calls for working together to promote sustained and inclusive economic growth, social development and environmental protection. Rio+20 also acknowledged the potential contribution of green economy to achieving sustainable development.

202. A recent report by the Green Growth Best Practice initiative assessed the lessons from experiences of pursuing green growth across all levels of government and all regions. It pointed at
green innovation policy and labour market and skills development policies as a pre-requisite for a transition to green growth in many countries.

203. This report highlights that a "green transformation" requires more than technological innovation and needs to be complemented with open, social and financial innovation. Finally, the report illustrates a clear pay-off of Government investment in green innovation as government investment in green research and development successfully translates into development and commercialization of break-through green technologies.

204. All of this provides a clear call for fully integrating innovation in development.

205. The role of innovation and technology for the implementation of the sustainable development goals. Here I would like to talk about the creation of a favourable policy environment which should include reforms to tackle fragmentation; modernization of education systems at all levels and capacity building in countries that still lag behind in the innovation chain; enhanced cooperation between science and business; and increased international cooperation in research and innovation by opening and national research programmes.

206. The UN's sustainable development goals also recognize the importance of research and innovation for agriculture and food security, clean energy, vaccines and medicines. In this context, research cooperation among countries will be central to ensure the co-creation of solutions as well as knowledge sharing. Ultimately, this would favour the access to and ownership of the research results generated by all actors involved.

207. The discussion often concentrates on the transfer of technologies through trade and gives relatively less attention to the transfer of knowledge and know-how that is possible through research cooperation. Innovation also entails a different use or application of existing technologies.

208. Research and innovation cooperation is often more important than commercial aspects of the technology transfer process in the field of promising, but less mature technologies, or technologies that need to be adapted to local conditions.

209. By jointly identifying areas of research and innovation cooperation it is possible to set the basis for technology facilitation. Also, the exchange of knowledge between regions of the world confronted with similar problems can contribute to create economies of scale that are equally important for technological deployment.

210. There is another aspect of technological innovation and research cooperation that is often overlooked. This is the use of technologies such as space-technology and in situ monitoring can support the implementation of sustainable development goals through the provision of data and reliable geospatial information for monitoring progress against their targets. Initiatives like the Global Earth Observation System of Systems (GEOSS) that was launched following the 2002 World Summit on Sustainable Development in Johannesburg and in which also the EU participates, can make an important contribution in this respect and to achieve the "data revolution" needed to support the post-2015 agenda.

211. The EU's research programmes are among the most open in the world and promote cooperation with non-EU countries (both industrialized and emerging economies, and developing countries) taking into account their different research and innovation capacities. Through these programmes, the EU has supported a number of sustainable development-related projects and international cooperation activities in different areas and across different disciplines, ranging from sustainable development governance to sector-specific activities.

212. Also Horizon 2020, our current programme for research and innovation, recognizes the need for increased international research cooperation efforts and enhanced science-policy dialogue. Sustainable development is an overarching objective of our Horizon 2020 programme.

213. In recognition of the importance of knowledge circulation, open access has been identified as a mean to improve knowledge circulation and thus innovation. On this basis, open access will be mandatory for EU-funded research results produced with funding from Horizon 2020 – the new EU programme for research and innovation.
Let me give you some examples of the programmes that are engaged with many Members of this TRIPS Council.

The first one is eartH2Observe. This is a programme that links to water. The eartH2Observe project will support efficient and globally consistent water management and decision making by providing comprehensive multiscale (local, regional, continental and global) water resources observations.

There are several LDC Members in this programme, including Bangladesh and Ethiopia. The EU contribution is around €9 million. The technology transferred includes applications of local and global hydrological models.

We also have an EU-India research and innovation cooperation on water technology. Together with India, we launched a pilot initiative on water related challenges. Two examples of joint projects that resulted from this coordinated calls are:

- The ECO-India project that aims at developing innovative, cost-effective and sustainable approaches for producing potable water and treating wastewater at community level, focusing in particular on arsenic-affected water-stressed regions in India. The project consortium represents a world-class interdisciplinary research team from several research institutes and SMEs in Europe, India and Israel.

- The project on Natural water systems and treatment technologies to cope with water shortages in urbanized areas in India, or NaWaTech project. It aims to explore, assess and enhance the potential of natural and technical water treatment systems in order to improve their performance and reliability to cope with water shortages in India.

I would also like to refer to a couple of programmes that are managed by our member States and more detail will be available in the written submission. One of them is the Climate Technology Innovation Centres. This is a programme which the UK has provided since December 2013, over £19 million to support the establishment of nine Climate Innovation Centres. Climate Innovation Centres provide targeted services such as finance and training. They assist the private sector to profitably develop innovative technology and business solutions to domestic energy, resource and environmental challenges.

Another programme is promoted by Sweden: the DemoEnvironment Programme gives the opportunity to use proven modern environmental technology solutions that are new to their countries. 2012 and 2013 projects include, *inter alia*, air environment and renewable energy demonstration project in Inner Mongolia and China; waste management and renewable energy project in Namibia and Indonesia; and water and sanitation planning grant in South Africa.

To conclude let me briefly address another project funded and pursued by Sweden. It is the Electrical Distribution Management Training. This programme enables networking among professionals in the field of electrical distribution and facilitates future technology transfers by potential partnerships and cooperation. It has run since 2007 with a 145 participants of which more than 70% came from LDCs, such as Ethiopia, Gambia, Liberia, Malawi, Mozambique, Rwanda, Sierra Leone, South Sudan, Tanzania, Uganda, and Zambia.

30 projects in different countries have concerned rural electrification. In total around 230,000 households and other consumers have benefited from these projects. 41 projects in different countries have concerned loss reduction whereas the loss of electricity has been reduced by 15%. 18 projects have concerned improvement of customer services, mostly in in Tanzania. 12 projects have concerned renewable energy, such as small scale hydropower, wind power, solar energy and bio-energy. These are just some examples of programmes that have been pursued in this area and where intellectual property and innovation contribute to the goals that we are discussing today.
10.3 United States

222. We welcome this opportunity to co-sponsor agenda item 10 on IP and Innovation: Sustainable Resource and Low Emission Technology Strategies. We thank Canada, the European Union, Japan, Singapore, Switzerland, and Chinese Taipei for also co-sponsoring this item today.

223. This item offers TRIPS Council delegations the opportunity to share experiences and exchange best practices, including regarding ways they have sought to meet energy demands, while addressing the quantity of energy consumed, the nature of energy supplied, and the impacts of using various energy sources, including how IPRs can advance technological innovation that conserves natural resources, including where they are exhaustible.

224. Exhaustible natural resources include coal, oil, natural gas, uranium, iron ore, copper, nickel and other minerals. If depleted, these resources cannot be restored. When they are gone, they are gone.

225. Depleting such resources is a monumental concern, but it is not the only concern. A related concern involves resources whose consumption leads to the depletion of other resources, including as a result of harmful emissions. Certain fuels, for example, when consumed, reduce clean air and the ozone layer.

226. Resource consumption and related by-products, such as waste and emissions, can have a variety of significant deleterious effects on the environment, including drought, deforestation, extinction, environmental degradation, ozone depletion, and pollution of water, of land and of air.

227. For example, 12 million hectares are lost per year from drought and desertification, where 20 million tons of grain could have been grown, and arable land loss is 30 to 35 times the historical rate. These patterns lower greenhouse gas and carbon dioxide absorption, but also create additional challenges to food security.

228. The consequence of failure is stark. The importance of success is immense, not only for our generation, but for generations to come.

229. Here is where innovation, and the IP that sustains it, offers one of many possible opportunities. Together, IP and innovation provide a critical response as part of national and international strategies to address the common challenge of resource sustainability.

230. As we heard in today's side event, IP is critical for investment and collaboration, scalability and optimization for sustainable resource technology innovation and diffusion.

231. Technological innovation can play a critical role in conserving exhaustible natural resources and limiting the negative impacts related to resource consumption. We will focus today on renewable resource and low emission technologies.

232. As opposed to exhaustible natural resources, renewables are resources that can be replenished naturally. Some of these resources, like sunlight, air, and wind, are continuously available, subject to certain constraints, and their quantity is not noticeably affected by human consumption.

233. In turn, renewable and related technologies include biofuels, biomass, carbon capture, energy efficiency, fuel cells, geothermal, hydro/marine, low emission, solar photovoltaic, solar thermal, and wind.

234. But, the development and diffusion of such critical technologies cannot be assumed. Like the resources these technologies conserve, sustainable resource and low emissions technologies can be exhaustible or inexhaustible, depending on the innovation environments that surround them.

235. We can neither presume that resources are infinite, nor can we presume that these technologies will be endlessly forthcoming. While many of these technologies are available today, many more are under development. Without the appropriate enabling environment for innovation, we may never know what game-changing technologies in this area may have yet to be imagined.
236. Such technologies must be sustained, such innovation must be conserved. As we will discuss, IPR enables renewable innovation. Conversely, technological stagnation and resource exhaustion go hand in hand.

237. Many inventors and many countries have risen to this challenge. In fact, since the WTO TRIPS Agreement entered into force, patenting rates – including patent applications and patents granted – for clean energy technologies have increased by approximately 20% per year, which far outpaces patenting rates for fossil fuel technologies. The most intensive patenting growth rates occurred with respect to biofuels, carbon capture, hydro/marine, solar photovoltaic, and wind.

238. As in the TRIPS Agreement, the importance of innovation has been confirmed in other international venues. In September 2011, for instance, the UN Secretary General Ban Ki-moon launched the Sustainable Energy for All initiative, which includes innovation as a key priority. And in December 2015, UN Members concluded the Paris Agreement, which states emphatically that "[a]ccelerating, encouraging and enabling innovation is critical for an effective, long-term global response to climate change and promoting economic growth and sustainability".

239. Indeed, clean and renewable energy has matured and grown in the last decade. In 2014, total global investment of $278 billion was made in the renewable energy sector, marking a 55% increase from the global investment in 2009 of $178 billion.

240. Similar trends are evident in many countries and regions around the world. In Latin America, for example, the level of renewable energy implementation is significant at 29%, although the energy needs of the region grew by 76% between 1995 and 2010. Yet, such needs may explain the significant growth in patent applications for adaptation technologies – including desalination, off-grid water supply, remote energy services and weather-related technologies – in the Latin American region, which have increased by 51% on average per year since 2000.

241. Africa has also made significant accomplishments. While the regions share of total clean energy patents remains relatively low, a study by the United Nations Environment Program and the European Patent Office concludes that there is a relatively high level of clean energy innovation occurring in Africa, where energy storage/hydrogen/fuel cell technologies account for 37% of patents for such innovation and renewable energy technologies account for 25% of patents on such technologies. The African growth rate for mitigation technologies is 59%, and the average rate for patent applications for adaptation technologies is 17% per year.

242. The United States is also doing its part too. For example, the Patents for Humanity Program is a United States Patent and Trademark Office (USPTO) initiative, which recognizes innovators who use game-changing technology to meet global humanitarian challenges, including resource conservation.

243. The programme provides business incentives for reaching those in need: winners receive an acceleration certificate to expedite select proceedings at the USPTO, as well as public recognition of their work. The Programme showcases how patent holders with vision are pioneering innovative ways to provide scalable and sustainable solutions for those in need. Nearly all of the winners work actively in countries around the world.

244. While the scope of this programme extends beyond the use of natural resources, such use is a key priority for the programme. For example, two of the five selection criteria are sanitation and household energy.

245. The programme began in 2012, with ten awards and six honourable mentions. Two of the six award winners were in clean technology space.

246. One of the winners, for example, was Procter & Gamble (P&G) developed a small, inexpensive packet of powder that makes dirty, unsafe water clean to drink. Over the last decade, P&G has set up over 120 partnerships with NGOs, local and national governments and health organizations to deliver the packets to those in need. To date, P&G has invested more than $35 million and delivered over 5 billion litres of clean drinking water, preventing an estimated 200 million days of illness and helping to save nearly 30,000 lives.
Beyond the Patent and Trademark Office and the Patents for Humanity Programme, the United States is engaged in numerous renewable energy technology initiatives.

The US Department of Energy operates a multitude of programmes, including by the Office of Energy Efficiency and Renewable Energy, covering geothermal, solar, water, wind and other renewables. For example, its Technologist in Residence programme strengthens lab-industry relationships to support industry needs and leverage the national lab network to clean energy R&D.

It is important to stress that many of these and other US programmes have a strong international component. The Department of Commerce, for example, operates two programmes of particular relevance – the Renewable Energy and Energy Efficiency Exporter Portal and the Environmental Solutions Export Portal. Through these portals, the Department provides a one-stop-shop for all of the support the Department provides exporters of these goods and services, including trade missions, trade shows, market analysis, counselling and other assistance to US renewable energy and energy efficiency technology exporters.

Significantly, another programme is the Enhanced Capacity for Low Emissions Development Strategies Programme (E-CEDS), which takes an economy-wide approach at achieving sustainable growth. Led by the US Agency for International Development and the US State Department, the programme brings together expertise of multiple US agencies, and others to provide technical assistance with over 25 partner countries on emission-lowering strategies.

In conclusion, these are but a few of the numerous policy initiatives and case studies exemplifying US and international sustainable resource and low emission technology strategies.

Innovation, sustained by IPR, features prominently throughout. As we have demonstrated today and in previous statements under this agenda item, IPR protection and enforcement are essential to promoting innovation in sustainable resource and low emission technologies.

Conversely, we cannot consider natural resource scarcity without assessing innovation scarcity. Without effective IPR protection and enforcement, R&D capacity can be severely diminished, technology transfer arrangements are often discouraged, and investment in innovation may be significantly reduced. Without innovation, sustained by IPR, we face the very real risk of a technology drought, leaving our energy demands, our environmental obligations, and perhaps most importantly, our stewardship responsibilities for our children unmet.

To sum up, IPR is a critical part of a sustainable innovation strategy. With IPR, innovation can be a renewable resource.

This delegation is pleased to join the United States and other Members in sponsoring Agenda Item 10. We also very much appreciate the opportunity to share and exchange with other Members best practices in using innovation to tackle issues on global warming.

I shall start by giving you a short overview of the innovative efforts my government is making in the area of green energy. Then, I shall go on to describe the six elements of our National Energy Programme, and bring you up-to-date on the development of new energy. After that, I shall report on where we have got to on Green Patent applications. And, finally, I wish to pass on to you some recommendations regarding IP and Green technology strategies.

As you are probably aware, our economy is one of those that is very dependent upon international trade. Demand for energy has increased significantly in the last 20 years. And, being an island with its own independent electricity grid, and without any gas pipelines, we are extremely reliant upon imported energy, which accounts for over 98% of energy demands. In the most recent Submission of our Intended Nationally Determined Contribution, we have committed to an economy-wide target of reducing greenhouse gas emissions by 50% from the "business-as-usual" level by 2030.
258. We have launched the "National Energy Programme (NEP)", which sets out to integrate resources from different sectors, to create an interactive platform for cooperation between industries, public sectors, academia and research institutes, with the specific aim of achieving three key objectives: energy security, energy efficiency and cleanliness.

259. The NEP consists of six elements, namely: energy conservation; alternative energy; smart grid; offshore wind power and marine energy; geothermal energy and gas hydrate; carbon reduction and clean coal.

260. In terms of energy conservation, it is designed to optimize energy efficiency by reaching a dynamic balance between energy management and the supply chain, such as the smart grid, renewable energy, etc.

261. With respect to alternative energy, the aim is to lower the utilization of fossil fuel by the active development and promotion of its replacement with clean energy. The policy objective is to lower carbon-dioxide emission by 2025 down to the same level as that of the year 2000.

262. In addition, we are hoping to reinforce the development of offshore wind and ocean power, then achieve by innovative methods to a level of domestic power production of 2.1 billion kWH (kilowatt hour) and carbon reductions of 1.3 million tonnes by the year 2020.

263. I would now like to describe, if I may, some of the key achievements of the Industrial Technology Research Institute (ITRI), which is the pre-eminent R&D think-tank for our industry.

264. In order to meet the needs of sustainable development, the Green Energy and Environment Laboratories of ITRI has devoted its resources to developing renewable energy; energy efficiency; alternative energy; and energy management.

265. Let me give you some examples: firstly, an energy scenario simulation tool, which goes by the name of the Taiwan 2050 Calculator, provides the data and information for public energy education, policy communications, the public debate of the energy issues, discussion of the future energy mix, energy resource research, and energy strategy-development and policy-making.

266. Secondly, there is a product called ButyFix®, which is the main effort to reduce our carbon footprint by switching from the use of fossil fuels to bio-fuels.

267. Thirdly, to help our hi-tech industries to minimize air pollution, the ITRI has also developed something called the New Local Scrubber (NLS), which very effectively cleans the hi-tech exhaust stream by use of new technologies, such as a low-temperature PFC catalytic reactor.

268. Last but not least, I would now like to show you a few short clips on the High-Efficiency Calcium Looping Technology (HECLOT), by limestone, which can increase calcification efficiency.²

269. Now, I just want to take a moment to consider the linkage between intellectual property (IP) and green technology innovation. Our numbers of patent applications on green technologies have been increasing at a remarkable rate since the year 2000. Most of the inventions involve LED illuminations and then hydrogen/fuel cell technology (accounts for 10.1%). This indicates the high level of maturity already reached in our development of green technology. I would also like to mention that, in order to constantly encourage the development of relevant green technologies, any patent applications relating to technologies for developing or improving energy conservation, new sources of energy, renewable energy vehicles, technologies for carbon reduction and resource saving, all qualify for filing in the Accelerated Examination Programme (AEP). A total of 82 applications involving green technologies were filed through the AEP in 2015.

270. So, one thing we know is certain, plenty of innovative thinking is required to cope with climate change when formulating an energy strategy, wherever it is. Furthermore, with our eyes firmly set on achieving a "win-win" situation for both the economy and the environment, we are

² The video clip can be accessed at: https://www.itri.org.tw/eng/Content/MsgPic01/Contents.aspx?SiteID=1&MmID=620651711540203650&Msi d=621024013054352667
committed not only to developing core, top-level patents, but also to helping with their commercialization in high-tech industries through innovative business models.

271. Before finally concluding, Mr Chairman, I would just like to emphasize the importance of IP & Innovation by quoting the words of our new Minister, Dr Chih-Kung Lee, of the Ministry of Economic Affairs, at his first press conference after recently taking office on 20 May. Dr Lee mentioned his attendance at a Global S&T Meeting in 2002 in the United States, where he heard Mr Thomas J. Donohue, President and CEO of the US Chamber of Commerce, talking about the distinctions between invention and innovation. Mr Donohue defined the former as "putting resources or money into creating new knowledge", and the latter as "turning that knowledge into money or resources". These two driving forces facilitate a positive cycle, enabling the entire economy to generate more resources and knowledge. Though it has been 14 years since he originally heard these remarks, they still ring very true to Minister Lee. In the future, he intends to lead my Ministry "towards reaching the goal of generating more positive cycles in terms of government-industry-academia cooperation, and policies to achieve positive results".

272. I hope this gives you a flavour of the huge importance we attach to innovation in the green industry. We very much look forward to hearing from other delegations about their current policies in this regard, and to learning from their own success and experience.

10.5 Canada

273. Canada is pleased to co-sponsor the IP and Innovation agenda item on sustainable resource and low emission technology strategies.

274. Clean technologies are a key component of Canada's approach to promoting sustainable economic growth and will play a critical role in the transformation to a low carbon economy.

275. During the recent United Nations Climate Conference, COP-21 in Paris, alongside 194 other participating countries, Canada agreed to take steps to support the transition to a low carbon economy by limiting global temperature increases to less than 2°C above pre-industrial levels.

276. Also at COP-21, Canada announced its participation in the launch of the Mission Innovation Initiative, a clean technology initiative that partners 20 countries as well as leading representatives from the private sector. The initiative seeks to double government investment in clean energy research and development over the next five years and to spur private sector investment in clean technology.

277. Canada's clean technology industry consists of over 800 companies, mostly comprised of small and medium-sized enterprises which operate in every region of Canada in areas such as oil and gas, mining, power generation, transportation, agriculture, forestry and forest products, as well as water and energy efficiency.

278. This industry directly employs 50,000 Canadians and generates over 12 billion Canadian dollars – that is US$9.2 billion in revenues per year. 68% of Canadian clean technology companies are exporters which generate export revenues of more than 6 billion Canadian dollars or US$4.5 billion per year.

279. As part of Canada's recent March 2016 Federal Budget, the Canadian Government proposed to provide over 1 billion Canadian dollars – that is US$760 million over four years beginning in 2017-2018 to support the development of clean technology including in the forestry, fisheries, mining, energy and agriculture sectors.

280. Turning to IP-specific policy initiatives, Canada continues to encourage policies that stimulate the creation and diffusion of technologies to respond to environmental challenges. In 2011, the Canadian Intellectual Property Office moved to accelerate the prosecution of patent applications relating to environmental or green technologies within the Canadian IP system in order to expedite the commercialization of technologies that could be useful in the mitigation of environmental threats or to conserve the natural environment and resources.
In order to be granted access to the expedited examination service for green technologies, a patent applicant must submit a declaration stating that their application relates to technology, the commercialization of which would help to resolve or mitigate environmental impacts or conserve the natural environment and resources. No additional fee is required for advancing the examination of patent applications related to green technologies.

These amendments are intended to assist in stimulating the creation and diffusion of technology and to encourage and protect innovation and technology transfer by providing quick access to Canada's IP regime. The amendments further assist in contributing to an effective response to environmental challenges and helping to ensure that patented environmentally beneficial inventions reach the marketplace more rapidly.

Since these amendments in 2011 participation has increased with a rising number of applications for expedited examination each year. In addition to the amendments to the patents rules, the Canadian Intellectual Property Office also maintains a database of all patent applications that currently benefit from expedited examination under this initiative. Designed to facilitate access to information on green technologies, this database assists those seeking to licence or partner with green technology innovators and therefore serves to accelerate the diffusion and commercialization of green technologies.

To conclude, Canada would like to highlight the importance of green technologies and product development, as well as the important role of the IP system. In this regard, as we collectively face environmental challenges including climate change, we look forward to learning more from other Members' experiences in this important policy area.

**10.6 Switzerland**

We wish to thank the co-sponsors and the previous delegations for their interventions and presentation of national experience and best practices in the area of Clean Technology Strategies.

We hope to add some further aspects to the Council's discussion and are going to give you a brief summary of some initiatives and institutions that Switzerland has in place to foster clean technologies. The initiatives promote - in the wider context - sustainable development. Some of them go back to the sustainable development plan of the United Nations, with objectives specified in the Johannesburg Plan of Implementation in 2002 and the UN framework Convention goals on Climate change of 1992.

For the development of new and significant energy-efficient solutions to happen, unremitting efforts are required. The objective of substantially reducing the use of natural resources and harmful effects of economic growth on the environment cannot be achieved without resorting to special mechanisms that effectively incentivize investment and risk-taking. Intellectual property, including the patent system, plays a crucial role in the developments of clean technology and associated business models. This was also well demonstrated by panelists in our panel event on IP and Innovation at noon.

The following are examples of measures taken by the Swiss Government promoting innovation in clean-tech. They all are designed to contribute to a sustainable and resource-efficient economy.

Switzerland puts a major focus on the evaluation of opportunities for research and innovation in the field of clean technologies. Back in 2002, at the time the Johannesburg Plan was agreed, Switzerland drafted a national Sustainable Development Strategy which put an emphasis on the equilibrium between three pillars of sustainable development: the economy, the society and the environment. The strategy's concept is to involve all key stakeholders in the relevant processes, i.e. the cantons, municipalities, civil society and the private sector.

Part of the fulfilment of the Sustainable Development Strategy is the Clean-Tech Masterplan. It was developed in 2011 as a coordination and communication tool across government and institution boundaries, and should optimally position the Swiss economy in the global growth market for resource-efficient products, services and renewable energy. The Masterplan aims at
promoting innovation in the clean-tech area, efficient coordination among scientific, business, government and policymaking sectors, while ensuring an effective intellectual property system.

291. Other strategies pursued by the federal Government to promote innovation in the environmental sector are the Energy Strategy 2050 and the Green Economy Action Plan. These are complementary legal instruments that contribute to the fulfilment of innovation policies for a sustainable and green future.

292. We will not go into detail of the mentioned strategies, but would like to give you two examples of platforms which effectively support innovation in clean-tech.

293. EMPA, the Swiss Federal Laboratories for Materials Science and Technology, is an innovative research institute of the Federal Institute of Technology in Zurich. It has a particular expertise in clean-tech projects which are carried out in cooperation with private enterprises. EMPA conducts technology research and development activities which focus on new ideas in the areas of environmental, energy, and sustainable building technologies. The institution is considered an innovation hub and facilitator for Switzerland's economy and industry.

294. One of EMPA's major goals, besides facilitating a safer and more sustainable living environment, is to generate innovation in the form of intellectual property assets. This can best be achieved by working in cooperation with business partners. EMPA contributes to various innovative projects which make use of all kinds of materials. A good example are EMPA 's timber-based innovations which are developed in its Department of Applied Wood Materials. The timber projects combine the latest developments in wood research with expertise in modern wood construction. With one eye on the goal of broadening the range of applications for the renewable resource, the researchers give wood completely new functions and improve the properties of wood-based materials.

295. The protection of intellectual property generated in those projects is of paramount importance to EMPA. Through an efficient technology transfer system, EMPA helps turn research results into marketable innovations. It registers new research results as IPRs early on and offers them in a package to interested industrial partners for commercial usage. The concept allows for the cooperative development of new discoveries and facilitates the launch of innovative products on the market.

296. A further example are flexible solar cells which have recently been developed with a new record of efficiency for converting sunlight into electricity. The new kind of solar technology shall provide for more cost-effective solar electricity. The technology is currently awaiting scale-up for industrial applications.

297. Another example of a concept for effective promotion of innovation in the area of clean-tech is the "Minergie" label, a Swiss low energy standard. The label is mutually supported by trade and industry, the Swiss Confederation, the Cantons, as well as the principality of Liechtenstein. The label is a registered trademark.

298. The initiative for the Minergie standard and label was launched in 1994. The corresponding trademark is owned by a Swiss association. The label is widely used, also beyond the border of Switzerland. The association supports the development of innovative sustainable solutions for the construction of buildings, for related services and components. They all have to meet a high standard of energy-efficiency in order to obtain the Minergie certification. The label is designed as a quality label to promote sustainable technologies for new and refurbished low-energy-consumption buildings. And it shall promote the consumer's trust in the products and services bearing the Minergie label.

299. In conclusion, it can be noted that the successful transition to a greener economy requires innovation-friendly framework conditions, including a solid IPR regime, as well as a strong commitment on the part of science, enterprises, investors, and society overall. The policy measures for the attainment of a green economy presented in our intervention are designed to achieve such framework conditions and to ensure a continued engagement of the relevant players. The engagement for sustainable development is a long-term process which necessitates
cooperation between all levels of government with partners from business, civil society and science.

300. Switzerland hopes that the examples presented have provided Members with a brief and useful overview of some of Switzerland's initiatives for the development and diffusion of clean technology.

301. We look forward to hearing from other Members how they address the issue at the national and international level – and we would be interested to learn more also in the next Council meeting, should any delegations wish to come back to this agenda item at a later point of time.

10.7 India

302. My delegation would like to thank the delegations of the European Union, Japan, Switzerland, the United States and others for tabling an agenda item on "IP and Innovation: Sustainable Resource and Low Emission Technology Strategies".

303. At the outset, I would like to urge sponsors of ad hoc agenda items on IP and Innovation to submit a brief paper so that other Members would know what exactly that will be discussed so they could contact the capitals and get the appropriate information to participate actively in the TRIPS Council on this agenda item.

304. Intellectual Property is only one element in a larger innovation ecosystem and IP laws alone do not promote technology development. According to the Trilateral Study by WTO, WHO and WIPO on "Promoting Access to Medical Technologies and Innovation: Intersections between public health, intellectual property and trade:

"Patent law is not a stand-alone innovation system. It is only one element of the innovation process, and one which can be deployed differently in diverse innovation scenarios. Patent law has little bearing on many other factors that lead to the successful development of technologies, e.g. the nature and extent of demand, commercial advantages gained by marketing and ancillary services and support, commercial and technical viability of production processes, and compliance with regulatory requirements, including through effective management of clinical trials data."

305. The Trilateral Study also highlights that Innovation in medical technologies for neglected diseases suffers from market failure as conventional IP-based incentives do not correspond with the nature of demand for treatments of these diseases. To overcome the market failure of the IP system for neglected diseases, the trilateral study mentions about open innovation structures such as Open Source Drug Discovery (OSDD) model of India's Council of Scientific and Industrial Research (CSIR) and collaborative research such as WIPO Research Sharing Innovation in the Fight Against Neglected Tropical Diseases. The study also talks about the concept of delinking price of the final product from the costs of R&D by "push" mechanisms such as grant funding and tax credits for investment in R&D and by "pull" mechanisms that offer rewards for the final outcome of R&D of certain products like milestone or end prizes.

306. India declared the decade of 2011-2020 as the Decade of Innovation. The spirit of innovation has to permeate all sectors of economy from universities, business and government to people at all levels. India has announced a new national IPR policy last month to stimulate a dynamic, vibrant and balanced IPR system in India to:

• foster creativity and innovation and thereby, promote entrepreneurship and enhance socio-economic and cultural development; and

• focus on enhancing access to healthcare, food security and environmental protection, among other sectors of vital social, economic and technological importance.

307. The Paris Agreement on Climate Change was adopted in December 2015 with a central aim to limit an average global temperature rise to well below 2°C above pre-industrial temperatures. The Paris Agreement acknowledges and recognizes the development imperatives of India and
other developing countries. The Agreement has unequivocally acknowledged the imperative of climate justice and has based itself on the principles of equity and common, but differentiated responsibilities. The Agreement differentiates between the actions of developed and developing countries across its elements.

308. In the run up to COP-21, India submitted its Intended Nationally Determined Contribution (INDC) to the UN Framework Convention on Climate Change (UNFCCC) in October 2015, which provides, inter alia:

- to reduce the emissions intensity of its GDP by 33% to 35% by 2030 from 2005 level;
- to achieve about 40% cumulative electric power installed capacity from non-fossil fuel based energy resources by 2030;
- to create an additional carbon sink of 2.5 to 3 billion tonnes of CO2 equivalent through additional forest and tree cover by 2030.

309. India has also adopted several ambitious measures for clean and renewable energy, energy efficiency in various sectors of industries, achieving lower emission intensity in the automobile and transport sector, non-fossil-based electricity generation and building sector based on energy conservation. Thrust on renewable energy, promotion of clean energy, enhancing energy efficiency, developing climate resilient urban centres and sustainable green transportation network are some of the measures for achieving this goal.

310. The renewable energy technologies contribute to better air quality, reduce reliance on fossil fuels, curb global warming, add jobs to the economy and, protect environmental values such as habitat and water quality. Solar power in India is poised to grow significantly with Solar Mission as a major initiative of the Government of India. A scheme for development of 25 Solar Parks, Ultra Mega Solar Power Projects, canal top solar projects and one hundred thousand solar pumps for farmers is at different stages of implementation. In November 2015 an International Solar Alliance was launched in Paris with 121 solar resource rich countries, including India lying fully or partially between the Tropic of Cancer and the Tropic of Capricorn. This alliance will promote joint efforts through innovative policies, projects, programmes, capacity building measures and financial instruments to mobilise more than US$1,000 billion of investments by 2030 that are needed for massive deployment of affordable solar energy. International Solar Alliance headquarters are being anchored in India.

311. India is one among the 20 countries that launched the Mission Innovation in Paris in November 2015 to reinvigorate and accelerate public and private global clean energy innovation with the objective to make clean energy widely affordable. This has already been mentioned by my Canadian colleague. I conclude by quoting from our Prime Minister Narendra Modi’s statement during the launch of the Mission Innovation in Paris:

"Innovation is vital for combating climate change and ensuring climate justice ... We need research and innovation to make renewable energy much cheaper; more reliable; and, easier to connect to transmission grids. We can make conventional energy cleaner. And, we can develop newer sources of renewable energy. This is a global responsibility to our collective future. Our innovation initiative should be driven by public purpose, not just market incentives, including on intellectual property. That also means strong public commitment by suppliers to developing countries. That will make clean energy technology available, accessible and affordable for all. ... Innovation must be backed by means to make it affordable and ensure adoption."

10.8 Australia

312. The Australian Government is in caretaker mode pending a national election. In this context and subject to caretaking conventions, Australia is intervening to share information about past policies and practices as regards sustainable resource and low emission technology strategies. This information is conveyed without committing any incoming government to any future action. With this understanding, Australia welcomes this exchange of national experiences and best practice on
how technological innovation can drive economic growth hand-in-hand with emissions reductions and sustainable resource management.

313. We recognize that climate change poses significant challenges for the global trading environment as well as for people and economies more generally. Continual innovation and economic adaptability will be critical to meeting these challenges. Effective and balanced intellectual property laws and policies form part of a broader suite of measures Australia has adopted to support transition to a lower emissions economy and a more climate resilient growth.

314. Effective IP frameworks help incentivize innovation and create entrepreneurs, businesses and companies to invest their capital, build markets, new products and services, and share their knowledge and skills to foster follow-on innovation.

315. For example, Australia is using science and technology to unleash the economic potential of our oceans. In October 2015, Australia called on innovators, entrepreneurs, NGOs and academics to rethink how advances in aquaculture could provide solutions that promote economic development and environmental sustainability. This aquaculture challenge runs until the end of June with the winners awarded 3 million Australian dollars to develop their innovations.

316. Australia has also supported emerging technologies to make the leap from demonstrations to commercial use. Intellectual Property Australia offers fast-tracking patent examination for green technology. This initiative aims to help green innovators find a fast track to the marketplace by offering priority to environmentally friendly technologies in the patent application system.

317. Australia has sought to foster collaboration to meet the challenges of a changing climate and finite natural resources base. In particular, we have promoted the sharing of knowledge and technology to boost climate resilience and foster clean energy use especially in the Indo-Pacific region.

318. As Members know, we report annually on the initiatives that we have in place to promote and encourage technology transfer by institutions and enterprises fulfilling our commitment in Article 66.2 of the TRIPS Agreement. These include projects undertaken by Australia's leading science and research organizations. A good example is the Australian Centre for International Agricultural Researchers Resilient Farming Systems Intensification project in Bangladesh. Working with farmers, researchers and institutions, this project is introducing agricultural technologies and conservation agricultural principles that increase the resilience of small-holder farmers to climate change. The results data technologies and impacts that emerge from this and other Australian centres for international agricultural research development projects are published.

319. Registered intellectual property is used only when it assists in disseminating research results in the interests of helping those in the Indo-Pacific region to adapt their farming, fishing or forestry practices to a variable climate.

320. Australia is also on track to become a supporter of WIPO Green under our recently extended fund and trust arrangement with the World Intellectual Property Organization. This initiative seeks to contribute to green technology, innovation and transfer, including by connecting green technology providers and seekers. Our contribution will target our Pacific neighbours and promote transfer of green technologies to meet their specific environmental needs.

321. Clean energy will play a key role in global efforts to reduce emissions and grow national economies. Australia has also been supporting climate change adaption and mitigation efforts in a number of developing countries, especially in the Indo-Pacific region. We were pleased to have lent our support to the first Pacific project financed by the Green Climate Fund. This project aims to improve urban water supply and waste water management in Fiji.

322. Australia has also contributed to the World Bank Energy Sector Management Assistance Programme. Our contribution will enable ten Pacific Island countries to integrate solar and wind power into electricity grids while maintaining reliability, affordability and adequacy of supply.
323. In concluding, Australia has recognized the importance of effective and balanced intellectual property settings to promote R&D capacity and incentivize investment in climate resilient and sustainable resource solutions for our common future.

324. We have welcomed information shared by other Members in this discussion and encourage others to join us in sharing their best practices and lessons learned.

**10.9 Bangladesh**

325. We sincerely thank all the sponsors of this agenda item. We are extremely happy to see the advancements between different technologies in different sections and I congratulate every Member which has spoken and presented its developments in various areas.

326. We all know that renewable energy technologies and technologies related to climate change, gene technology for food security, medical sectors and agricultural produce secured for various sustainable development needs are very expensive and considered to be high end.

327. We vehemently thank their inventors and their defenders for their achievements. However, the IP regime in LDCs are markedly different from IP regimes in developed countries. We will see that, as the days go by, the population using these technologies will be more in developing countries and LDCs than the population in developed countries. Just for the sheer number, just yesterday we saw that by 2050 we will have to increase food output by 70% for our 10.5 billion people.

328. Here the LDCs are the worst victims of climate change, food insecurity, lack of medicine and healthcare. For this we have TRIPS Article 66.2 and 67 which we hope that the developed countries will generously use to share their technologies with us. I thank, once again, all the proponents.

**10.10 China**

329. China would like to thank all of those Members for making presentations on this topic. These presentations showed how IP strategies could facilitate technology development which will contribute to our collective efforts to achieve the targets set out under the Paris Agreement on Climate Change.

330. China notes that the Paris Agreement also established a technology framework to promote and facilitate enhanced action on technology development and transfer in order to support the implementation of the Agreement. Presentations made by some Members also referred to how some projects, including some capacity building activities had been initiated to help developing Members improve their capacity to make response to climate change. China would like to encourage Members, especially developed countries, to share more experience in this regard in this Council.

**10.11 Korea, Republic of**

331. I would also like to thank the co-sponsors for this initiative and their interesting presentations.

332. Our delegation wants to share some policies on sustainable resources and low emission technology strategies. Korea has made efforts to strengthen its IP competitiveness in major technology industries which contribute to the development of sustainable resources and low emission strategies.

333. To be specific, Korea has introduced an accelerated examination process for green technologies in order to help companies acquire patent rights earlier. Applicants can request an accelerated examination of patent applications for any form of eco-friendly technology that minimizes the emission of greenhouse gases or pollutants. Some examples include greenhouse technologies, energy efficient technologies, clean technologies, low energy technologies, environmentally friendly and recycling technologies.
334. In addition, the Korea Intellectual Property Office is carrying out projects to support companies that own sustainable resources and low emission technologies, such as solar powered technology and green cars. These companies can be provided with professional consultations on IP management strategies and analysis results of patent-related information, including application trends and disputes surrounding green technologies.

335. Our delegation looks forward to having another opportunity to share some facts of these policies in the future.

10.12 European Union

336. We have been working hard on possibilities to make these debates more focused and more targeted and maybe also more interesting and more inclusive. I would say out of the Chairman's proposals, one that we can certainly support is this possibility to make comments at the subsequent session. I think that could make the debate richer for those who do not have the possibility to prepare when the first presentations are made.

337. Regarding the other two proposals, we are considering them carefully and we will come back to this maybe at the next session.

10.13 South Africa

338. Perhaps just to get back to some of the comments made by the Chairman during his summary. South Africa intervened last week in the informal meeting. I think one of the issues was whether or not agenda items should be accompanied by some sort of summary of the issue to be discussed when a Member introduces such a topic. Of course, we have heard very carefully what the Secretariat had said, that in, well, as it was stated, 50% of the cases, Rule 4 of the Working Procedures has been followed where there was some sort of information being presented. In other cases, this was not necessarily followed. So just to consolidate, South Africa was of the view that, from a practical perspective, it is better for anyone introducing a new topic to circulate with it some information so that Members can prepare and participate.

339. We have also spoken about rules of engagement, that is the issue of inclusivity, the issue of balance and so forth. In line with that, we reiterate our statement that from a practical point of view, it is better to circulate additional information so as to make discussions more practical.

340. Perhaps on a last issue, the proposal to roll over perhaps certain discussions to our next meeting: we have not discussed that directly in the informal meeting, but I think this delegation will have some sort of concern because it is not that we talk about regular items here. We talk about an ad hoc item that is inscribed for a particular meeting. Should we roll these over to a next meeting? I think we do create at least, from a practical point of view, some sort of permanency so this delegation would have some sort of concerns in respect of how this is done. For the record we state that this would have to specifically require consent from the Membership if that practice should be adopted.

10.14 Chairman

341. I take note of your comments that ad hoc issues cannot roll over to another meeting unless it is agreed in this room because it has been promoted to be a permanent agenda item. I was just wondering whether this particular issue can nevertheless be considered for the next November meeting or you have total reservation although no one was arguing that now we can start the negotiations. Those who are proposing here now, they are sharing things, they are observing in the process of trying this area of sustainable resource, production and consumption. This came from Paris and I think it is subject to that to be considered in this Council, but before you do that you start educating each other and share experiences that can be useful to the membership. Maybe you can take the floor, and clarify what was said at the last meeting, and then today your position on whether this particular topic can be taken up at the Council’s meeting in November again or not, you have the right to say no.

342. The other comments you made also are very pertinent and we will ask the Secretariat to take care of that so that we do not get into things that make some Member States uncomfortable.
The Secretariat around me is to advise me on how best to handle situations like the one that was brought up by the South African delegation.

10.15 South Africa

343. I think South Africa was very clear at the informal last week. Of course, we have to follow rules. If there are rules and practices, these rules and practices must be applied to the extent possible.

344. Now having stated opposition specifically on the point of roll over – whether or not the current agenda item may be considered at the next TRIPS Council meeting – I believe it will set a precedent that perhaps may compromise our ability to manage ad hoc items. From that perspective. This delegation is not in favour of actually having this particular item rolled over. Not because we are of the view that the topic is not important. I think all of us agree that the topic is important, but of course, from a rules-based perspective, we believe it is more cogent that any proponent or any delegation that wishes to suggest a particular topic do that for a future agenda, but under the current agenda we don’t believe that it is practical for us to agree that this particular matter should roll over.

10.16 Secretariat

Given that we had this discussion in an informal meeting, I just wanted to clarify for the record the advice that the Secretariat gave in the informal meeting. Indeed, the practice is that sometimes Members submit documentation together with their request for an item, sometimes not, but the Rules of Procedure of the General Council, that are also applied by the TRIPS Council, do not require documentation. It is therefore not a matter of whether Members are complying with the rules of procedure or not.

10.17 India

345. I would like to support the statement made by South Africa. We ask the sponsors of the agenda item to submit relevant documentation so that the Members could understand what is the background of such an item so that they could get input from their respective capitals and take active participation in the discussions in the TRIPS Council. I think it will make the discussion more inclusive by hearing views from other Members also on such agenda items.

346. We fully support South Africa that this rolling over should not be done either. It would set a precedent for the future. Though we also agree with South Africa that the current agenda item is very interesting and stemming out of the COP-21 Paris Conference.

10.18 Bangladesh

347. As per rules, procedure and practice, nobody is stopping any Member to propose any agenda item, so instead of taking a decision to roll over, let us wait for any Member to propose this for the next TRIPS Council, as this has always been done before. So if any Member feels that this agenda item should be discussed in the next TRIPS Council, let us wait for a request.

348. I also support that background material or proposal be distributed in advance so that delegates can effectively contribute to the discussion.

10.19 Brazil

349. I would just like to add my voice to South Africa, India and Bangladesh. Regarding the questions on the procedure, specifically as Bangladesh rightly said, was exactly the comments we were going to make. It would be important to know whether this agenda item that is an ad hoc item, will be included in the agenda of the next meeting before we decide on having a rollover of the subject. We also understand and agree that it would be useful to have information beforehand so delegations can prepare. My delegation also has plenty of experience to share on the green technology and would be very glad to share with the Members. Therefore, it would be useful to have the information way prior to the meeting.
10.20 Chairman

350. If you want to bring an ad hoc item, you are the one who is going to do it. For us, the Secretariat, we will look at the programme and then include the ad hoc item as requested. If your ad hoc item was on today’s agenda, following it up at our next meeting would establish a precedent which, according to South Africa, would not be appropriate. This said, if you have other things to share with us, you are welcome because this is a dynamic world. We are not going to hide in rules and not say new things even if they are not committing anybody. We want to learn on new things on what IP issues that might be foreseen for the future. This is important, dynamic and intellectual because we learn from each other. We are not going to roll out anything, we are not going to suggest another item as Secretariat or Chair, but we are not going to say no to ad hoc issues either if a Member is proposing. It is up to you.