



## CLIMATE CHANGE AND INTELLECTUAL PROPERTY RIGHTS<sup>1</sup>

Addressing climate change will require, among other things, a fundamental transformation of the world's technology. Clearly, intellectual property rights play a role in that transformation, whether as a spur for innovation (by protecting the products of that innovation) or as an obstacle to dissemination of new technologies (by granting monopoly rights to the innovators). IISD's work in this area seeks to better define the role and potential of IPRs in addressing climate change. Addressing climate change is one of the central challenges of the global community for the coming decades. In Intellectual Property Rights and Climate Change, Wei Zhuang has produced an excellent, comprehensive, and thought-provoking contribution to discussions of intellectual property rights (IPRs) and climate change. She is to be congratulated. She admirably addresses a set of issues important to the way that technology may be diffused among the countries needing to implement climate change mitigation strategies, yet which face obstacles in innovating or licensing the relevant technologies.

Technology development and switch has been diagnosed as a key element inside the Bali Action Plan. In the negotiations on a global climate treaty the developing countries have put forth ideas and plans to make sure that highbrow belongings rights (IPRs) do not end up a barrier to transfer of weather pleasant era. In this discussion paper, this query of era transfer, highbrow belongings rights are addressed inside the context of climate change. Patent statistics suggests the dominance of developed nations technology. The analysis on specific technology shows that IPRs is an essential problem in improvement and transfer of technology and it is a barrier. Data indicates that although developing countries have made some development, the dominance of developed international locations in terms of patents, royalty and licensing profits and expenditure on Research and Development remains as earlier than. The historic revel in is that more potent IPRs do not usually result in greater technology switch and generation absorption. Hence the argument that developing international locations must offer more potent safety of IPRs to encourage era transfer has to be challenged. The era switch below UNFCCC and Kyoto Protocol has been minimum and insufficient to satisfy the needs of growing international locations. The

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harmonization of IPRs through TRIPS has constrained the options of nations to apply compulsory licensing and competition coverage. TRIPS has not facilitated technology transfer, mainly to Least Developed Countries (LDCs) and the North-South divide in this issue has led to a stalemate. Under those circumstances it is far futile to anticipate that TRIPS by itself will result in extra switch of climate-pleasant technology. Using Common but Differentiated Responsibility precept in era development and transfer is proper. Many proposals and hints were made to stimulate generation improvement and transfer. Montreal Protocol is a success instance this is applicable within the context of climate exchange. The proposals including the proposals made by growing nations deserve a severe consideration and modern answers ought to be located. Humanity does no longer has the luxury of locating answers over a century to remedy issues created with the aid of global weather trade. Developing countries need each improvement and access to technology that will facilitate the transition to much less carbon extensive financial system within the next two or three many years. So, it is far crucial that IP issues do no longer turn out to be a barrier on this transition. The undertaking of climate trade calls for out of the box questioning to locate answers that could make a difference. The IPR problems in technology transfer need to be tackled by using a combination of coverage measures, incentives and bringing in modifications at the worldwide IP regime beneath TRIPS.

Addressing climate exchange is dependent on financial increase that works with, instead of in opposition to the surroundings. Innovative green era solutions can help through permitting us to do extra with much less – be it opportunity energy manufacturing, energy saving, or greener kinds of transportation, agriculture, and forestry. The challenge is to beautify the environment for innovation, whilst enabling faster diffusion of these green technologies to all parts of the world. WIPO's Global Challenges software works with multiple stakeholders to deal with these challenges, with a focus on:

- Hosting WIPO GREEN - a multi-stakeholder platform which ambitions to promote innovation and diffusion of inexperienced technologies.
- Providing reality-based totally facts and goal analysis of relevant highbrow assets (IP) problems to facilitate global coverage talk.
- Contributing IP know-how to UN and other public coverage fora wherein IP and innovation are mentioned in terms of weather alternate.

In climate politics, we are confronted with the huge venture of hastily restructuring the global economy to feature on a completely one-of-a-kind foundation. Such a mission is not possible without a near-entire technological revolution. We will want to correctly produce and shop cheap, clean electricity; to engineer new, efficient machines for each private use and business

manufacturing; and to discover new modes of agriculture able to be feeding humans without destroying the earth. For this modification to be effective, these new technologies must be carried out international. Economic boom within the Global South cannot be based at the identical mechanisms that brought cloth comfort to many within the Global North. Scaling the carbon-hungry economy of the USA worldwide would be a planetary catastrophe. As we build new economies inside the Global South, we need to build them on sustainable foundations, the use of technology this are presently below improvement in rich nations. To acquire this, we can need to create a brand-new mechanism for equitable sharing of technology among the rich countries wherein the generation is developed and the negative countries where the generation is needed. It needs to come as no surprise that most of the research and development paintings occurs in wealthy countries. According to UNESCO, the top ten nations in studies and improvement investment account for 80% of that investment. Thus, research and improvement spending are extraordinarily concentrated to a pick out few areas and states. North America and Western Europe together represent approximately half of all such spending. Of course, innovation is not limited to officially-funded institutional research, but the scale of these organisations manner that an awful lot of the necessary business innovation required for a pro-climate transformation will probable emerge from a handful of rather wealthy nations.

### **What is the effect of this imbalance?**

First, it means that new studies and development is driven through needs and choices of rich countries. Second, its method that the make the most of inexperienced technologies reinforces global wealth inequality. Climate politics need to confront the bottom imperialism underlying the carbon economy: the pollutants emitted via the industrialized global during the last two centuries now chokes the decarbonization coverage of developing states. As we see, inexperienced technology can precisely serve the identical stop, providing a mechanism via which developing nations ought to pay polluters (perhaps dearly) for the potential to continue industrialization. Thus, global capitalism forces nations to balance their wants to growth well known of residing, consisting of better surroundings, with their capability to pay rich countries just like the United States. No be counted how the stability is struck, the technological and monetary manipulate exerted through wealthy countries could result in environmental and human catastrophes.

We can save you this by way of deconstructing the structures accountable for technological embargoes feasible in the first vicinity: highbrow belongings. Intellectual assets, inclusive of patents and copyright, permits rich groups to call for high prices for the use of their innovations, or to truly deny those innovations to others entirely by using refusing to furnish a license. Constructing an intellectual belongings leviathan on the worldwide scale has been an active

challenge of firm agencies for decades now. One of the essential dreams of the now-useless Trans-Pacific Partnership exchange deal was the strengthening of worldwide intellectual assets enforcement, making it simpler for a agency to exert legal muscle throughout oceans and borders. Under neoliberal capitalism, this is an inevitable outcome -- research and development is driven by earnings incentives, not humanitarianism. One of the handiest methods to meet that reason is to enlarge the brief monopoly safety granted by means of patents into other international locations and other markets. Investors trust inside the ability returns of clean-power technology, with mission capitalists putting 5 billion bucks a yr to start-ups on this subject. That cash, however, is invested below the belief that the technology evolved with it will be managed by using the traders.

You would possibly think that a good deal studies is undertaken by scientists at universities and federally-funded laboratories, outdoor this income-maximization logic. In the USA, you'll be wrong. Nearly 70% of national R&D spending become because of non-public industry in 2016, an all-time high reflecting a rising fashion of privatization. Nor is public funding any assure of public advantage. Since the passage of the Bayh-Dole Act in the 1980s, patent law expressly permits and in reality encourages publicly-funded studies corporations to are trying to find personal patents, with the government most effective having patent rights if the funder first waives theirs. Most large universities inside the US now have "technology switch workplaces," which encourage instructional scientists and engineers to transform their research into patentable merchandise that the college can license out for profit. As a result, many fields of studies have come to be a thicket of competing patent claims, as evidenced by way of recent excessive-profile instances across the gene-modifying era dubbed CRISPR. Between 1991 and 2014, the quantity of cash universities crafted from patent licenses multiplied through a aspect of 17.

Patents have provided a strong system for encouraging technological increase. The twentieth century noticed each a robust patent device, with over five million US layout patents granted, and speedy technological improvement inside the United States. Indeed, under capitalism, that is how research should take place -- the promise of future profits incentivizes personal funding through owners of capital. Theoretically, a robust patent system is important in this example, and we need to be wary of undermining it and potentially discouraging investment in R&D. But a key characteristic of the patent device, even when it really works on its very own phrases, is the transient monopoly it grants in exchange for public disclosure. A patent in the US applies for two decades, and the inventor have to reveal all the invention details within the application. The climate does no longer have 20 years. We can't wait till 2038 for new inexperienced technology to end up available and low-cost worldwide. Therefore, we need to be actively running on finding a



new balance between the return on investments into research and the exclusionary rights which can be granted to encourage that funding.

None of that is news to the people at danger -- technology switch and intellectual residences had been key factors of worldwide talks. The UN's 1993 non-binding Agenda 21, a blueprint for sustainable improvement inside the 21st century, included the advice of: "the venture of measures to prevent the abuse of intellectual assets rights, along with guidelines with appreciate to their acquisition thru obligatory licensing." Similar discourse has because surrounded weather talks, however neither the Kyoto nor Paris agreements incorporate any point out of patents or intellectual property rights. As such, no matter massive calls from poorer nations to contain intellectual property alleviation measures, no worldwide framework for addressing this technical imbalance exists for the time being. However, the key position that technological advancement will play in heading off climate catastrophe is reflected within the Paris Agreement's 5-yr assessment structure, which acknowledges that rapid technological progress implies a periodic recalibrating of climate desires. The treatment is apparent: we have to start taking competitive action to interrupt patents that preclude a just transition faraway from fossil fuels, whether nationally or internationally. It is not sufficient to hope that the marketplace incentives a patent presents will stimulate the appropriate technological development, because the timescale of patent safety is just too lengthy for the climate emergency. Action is required quicker as opposed to later. Nor are we able to rely on the rich to be beneficent. Elon Musk, in an generation of sunnier media family members, announced that he could open Tesla's patents and become roundly praised for it. We must view this as comparable to all different billionaire philanthropy: a worthy gesture wholly too small to make the vital distinction. Unsurprisingly, Musk endured looking for patents on different components of his enterprise, such as battery production, suggesting that his earlier dedication to "open supply hardware" become certainly marketing.

Instead of counting on the benevolence of the abnormal tech baron, we can open patents immediately. This both at once addresses the troubles that stand up while a patent is abused and discourages future abuse. There are two prison mechanisms which make this possible within the United States. The first is a term inside the Bayh-Dole Act known as "march-in" rights. This gives the federal authorities the right, for publicly funded inventions, to "march-in" and license the patent to other producers of its choosing. Thus, the patent exclusivity is broken. One condition which need to be met to justify this motion is that "movement is important to alleviate health or safety desires." Climate alternate is amongst the biggest public "health or protection needs" which could likely exist, so there may be sufficient reason to agree with that the prison basis for this type of patent seizure has been met.

The legal mechanism is less direct and lies inside the law that defines the United States government's liability for patent infringement. Under US law, the remedy for a patent holder in response to authority's patent infringement is healthy in federal courtroom for "reasonable" reimbursement. Rather than save you using a generation, all a patent holder can ask for is that compensation, which can be well under the quantity they could have extracted from the market. This approach can be described as "asking forgiveness, not permission." Rather than invoke any direct claim on the patent (because the authorities have for Bayh-Dole march-in rights), the government can use the generation without delay and pay damages later. Although this can mean that the government desires to at once be worried inside the production, the regulation is clear that contractors or others acting with government authorization are blanketed. The net result of both prison strategy is the identical: the authorities is directly able to capture the applicable intellectual property and authorize its use through different parties. Turning this from a case-via-case technique to a streamlined, uniform manner includes creating a deliberative frame which, in consultation with the populations and governments of poorer countries, identifies technology with excessive capacity whose deployment is hampered by using intellectual belongings holders. (Note that this hampering can arise no longer just due to intransigent rights holders, however because of complex situations, as within the CRISPR case, that make it unclear who truly holds the rights. Government patent use lets in us to cut these Gordian Knots.) The enterprise chargeable for this identification would pick patents which might be counter-effective to weather development. After identity, a compulsory license may be issued to appropriate commercial actors. These may be either personal corporations within the US that are willing to paintings on decrease profit margins, much like the pharmaceutical case of popular drug manufacturers, or corporations' distant places. The latter answer can be ideal, as it encourages the growth of industries within the different us of a, but the decision can be made based at the case-by means of-case evaluation of capable contractors.

One chance that should be managed is that, as mentioned earlier, profit is the motivation that drives non-public capital into research. An overly aggressive patent-breaking regime ought to cause constrained technological development, which might be counterproductive. Ultimately, this contradiction is everywhere inside the entire patent machine. Patents laws beneath capitalism should be balanced among intense enforcement, which stifles using era, and severe laxity, which provides no incentive for non-public capital. As lengthy as private capital stays the dominant source of studies money, an immediate method which specializes technologies and precise bad actors can both help the weather and proactively discourage abusive patent behaviour.

In a few approaches, this war of pastimes resembles the recurrent debate round intellectual assets and prescription drugs, particularly when we recollect the crisis that emerges while drug patents are bought after which used to dramatically boost fees. In response to those abuses, many have asked that the National Institute for Health invoke its patent-use rights to undermine this exploitation. However, the NIH has continuously declined to use march-in rights in response to requests for charge manage or to growth get entry to to capsules -- indeed, no federal organization has ever invoked Bayh-Dole march-in rights, notwithstanding this degree in idea being the counterbalance to permitting public finances to supply personal intellectual belongings. Perhaps the concept of commencing patents seems manifestly not possible beneath a central authority as shielding of businesses as ours. This kind of expropriation, after all, cuts right to the income because that propels capitalism. However, forcible authorities patent use has been deployed through the USA authorities, just now not for the gain of the unwell. The Department of Defence has invoked authorities patent rights twice, once for the manufacturing of night time-imaginative and prescient goggles it wanted for the duration of the primary Gulf War and as soon as for the production of lead-unfastened "inexperienced bullets." Although personal businesses sued overusing those technologies, the military turned into able to effectively invoke its authorities patent use rights. It will come as no wonder to readers on the left that the American authorities prioritizes excessive navy spending over healthcare and weather, however we need to view this now not as a miserable anecdote but a possibility. What we do for battle, we can do for weather -- taking the precedent set with the aid of the army as a guide. We must be advocating for weather policies which are as formidable as the instant calls for, as companies like The Climate Mobilization call for. Leftist rhetoric (which include that of Alexandria Ocasio-Cortez) requires a "Green New Deal," promising a mass mobilization, green jobs, and economic progress reminiscent of FDR-style social democracy. Others, which include The Climate Mobilization itself, invoke World War II, over again in which a civilizational disaster demanded financial and political reorientation, and speak about the vital climate mobilization in the one's terms.

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All of these are first-class ancient precedents to invoke. However, we ought to be cautious to keep away from a entice wherein climate movement is restrained to big public expenditure; even though prices are key. We have to also be inclined to rethink our financial members of the family and rearrange our priorities of rights and privileges, along with non-public assets and highbrow property, to the identical diploma that we'd if we had been mobilizing for conflict or economic recuperation. That way rethinking the monopoly of the patent. It approaches considering how technological functionality created via our organizations and research institutions is sent, and

whether active measures are had to redress it. Clearly, the criminal framework exists for worldwide technological harmony. What is lacking is the political pressure to make this framework actual. At first approximation, it will require what all climate politics requires -- the construction of a famous movement that holds governments responsible for climate inaction and demands immediate modern method. For global patent-breaking, we need to also make sure that this motion is devoted to internationalism. No country can recognition best on its very own climate policy, ignoring the economies of different nations international. We should use this to argue that we've an responsibility to use our scientific capacity for the benefit of the planet, and that that is incompatible with the contemporary operation of the patent device that prioritizes brief-term earnings over fast proliferation of inexperienced technology. One of the most thrilling and comparatively untapped political forces that might make this modification is an organized movement among scientists, engineers, and other technical employees. These workers, who produce technology each in terms of abstract information and the physical artifacts themselves, hardly ever very own the intellectual assets they produce. In latest months, agencies like Science for the People and the Tech Workers Coalition have all started to prepare these people round the ethical uses of statistics technology, main organizations like Google, Amazon, and Microsoft to answer for his or her cooperation with the military or ICE. If these workers can encourage a renewed radicalism in open-source design, they might form the nucleus of a new sort of research infrastructure which insists on its efforts reaping benefits the earth, in place of the bosses.

Patent-breaking on my own received repair weather. It is an ecomodernist fallacy to consider that if only we invent the proper device, we can resolve the weather disaster. Patent-breaking accomplished nowadays, however, accomplishes dreams. First, no matter our beliefs, there is a physical global we ought to act in now. We need to act quickly to avoid "technological lock-in," a sample where our investments nowadays set us on guides for the future, inclusive of the development of pipelines that imply destiny natural fuel production. Every green era or sustainable infrastructure we build now buys us extra time for increase and progress as we work toward complete decarbonization. Second, social transformation starts by means of bridging the machine we have now, in which studies is performed to maximize the market returns to an organization, with a gadget where research may be finished to advantage humanity with an emphasis on what precise a technology can do in preference to what it sells for. It is a bridge whose foundations lie in modern law, and whose mechanisms we can implement with a combination of famous stress to act on climate, worldwide demands, and the guide of technological workers themselves.



In weather politics, we must act on every occasion scale right now: we ought to think about emissions within the subsequent year while simultaneously restructuring our economic system over the route of the next thirty or 40 years for whole decarbonization. The weather crisis necessitates instant, actionable coverage that leads obviously into an extended-time period decarbonization plan. Systems of medical solidarity like patent-breaking can form the basis for transferring past the original frameworks of highbrow assets. If we take weather mobilization critically, these are the with ease-deployed projects and plans which we must encompass in our first volley of actions.

**Nuclear centrepiece-** Prime Minister Narendra Modi saw the agreement on nuclear energy as the “centrepiece” of the new cooperation with the US and one that could deliver clean energy. What appears to have done the trick was the US side backing down on a major sticking point: previously it had insisted upon a level of tracking of the nuclear material supplied to India beyond that required by the International Atomic Energy Agency. “Whoever worries about the future generations has a responsibility to be conscious about climate change adopt practices and policies which will ensure a good life and good environment for future generations”. The Indian side reciprocated by coming up with an administrative solution, a “legal memorandum” to get around India’s strict liability laws that have deterred US suppliers. According to the joint statement issued by the two leaders, the US will help India gain membership of the Nuclear Suppliers Group — a group of nations that aims to ensure that their exports avoid contributing to the proliferation of nuclear weapons. Not being part of this, and various other international regimes, has until now blocked India from gaining access to missile and other sensitive technology. On climate change, Modi refused to be swayed by the US-China deal announced in November to reduce China’s greenhouse gas outputs. Under the deal, China, the world’s biggest emitter of these gases, agreed to cap its emissions by 2030, while the US, the second largest emitter, pledged to cut emissions by 26—28 per cent below 2005 levels by 2025.

India, Modi said, is a sovereign country and “no pressure from any country or any person has any effect on it”. But he was quick to add that he recognised that there is pressure from climate change and global warming. “Whoever worries about the future generations has a responsibility to be conscious about climate change [and to] adopt practices and policies which will ensure a good life and good environment for future generations,” he said.

**India’s special circumstances-** If India, the world’s third largest emitter, dithers on cutting greenhouse gas emissions, it is because of its special circumstances. For a start, US-China trade

stands at US\$500 billion a year — five times the value of India’s trade with the US. India trails far behind China in terms of historical and current per capita emissions. According to US think-tank, the World Resources Institute, one in four Indians lacks access to electricity. And the World Energy Outlook 2014 says India’s energy demands will overtake China’s over the next ten years. [2] India needs emission space for a few more decades plus support from developed countries to build green industrial capacities. This is where the US is now stepping in with a pledge to invest in India’s ambitious plan to increase its solar energy capacity to 100 gigawatts by 2022 — that would be ten per cent of the country’s projected energy mix.

Cooperation on Paris deal- This year, the US and India will also closely cooperate to deliver a successful agreement in Paris on climate action. As India continued to shy away from making firm commitments on reducing emissions, Obama canvassed India’s support for a credible Paris agreement. “No country,” he told Modi, “is going to be more important in moving forward a strong agreement than India.” India’s own stance has been that UN Framework Convention on Climate Change principles should be followed. These include prioritising poverty eradication and the idea that developing nations should be allowed to emit carbon as they develop now, just as developed countries did during the industrial revolution.

**Patent protection-** Perhaps the icing on the cake of Obama’s visit was a pledge by Modi that India would accept suggestions made by a joint working group on intellectual property rights. That was in response to a complaint by Obama that US corporations found it difficult to do business with India because of inadequate patent protection. The joint statement said “both countries reiterated their interest in sharing information and best practices on intellectual property rights issues, and reaffirmed their commitment to stakeholders’ consultations on the policy matters concerning intellectual property protection”, and that the two leaders had “agreed to strengthen bilateral cooperation in the health sector, including distribution barriers and patent quality”. Just how this would work remains to be seen. India has consistently pointed out that its domestic intellectual property laws fully comply with the TRIPS (Trade-Related Aspects of Intellectual Property Rights) agreement administered by the World Trade Organisation. And Anand Grover, director of the influential Lawyers Collective, says changing the present regime would hurt India’s generics drug industry, which provides cheap essential medicines to the world. Clearly, the Modi government will need to find creative ways to circumvent existing law to accommodate the promises made on intellectual property and nuclear liability or take these issues back to parliament.



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