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Possible Elements of an Enhanced Institutional Architecture for Cooperation on Technology Development and Transfer under the UNFCCC

Submission by Third World Network

Introduction

1. This submission proposes the establishment and operationalization of an effective **Institutional Architecture for Technology Development and Transfer** under the UNFCCC. The technology architecture would ensure the full, effective and sustained implementation of the Convention, as regards the relevant commitments relating to the development, application, transfer and diffusion of technologies, practices and processes to support action on mitigation and adaptation.

Mandate

2. An enhanced technology architecture is mandated and supported by Articles 4.1(c), 4.3, 4.5 and other articles of the Convention. It would build on and implement relevant COP decisions, as well as the work and recommendations of the Expert Group on Technology Transfer and national Technology Needs Assessments.

Principles

3. Enhanced action on technology development and transfer to support action on mitigation and adaptation must (1) make technology accessible to developing countries at most affordable cost, and (2) assist developing countries to develop their own technologies.¹ The following are **Principles** for enhanced action on the transfer and development of technology under the Convention. The architecture shall:

- Ensure the accessibility, affordability, appropriateness and adaptability of technologies required by developing countries for enhanced action on mitigation and adaptation;
- Ensure provision of full incremental costs of technology required to support developing countries to implement measures covered by Article 4.1 of the Convention;
- Evaluate the adequacy and predictability in the flow of funds for technology transfer and appropriate burden sharing among the developed country Parties;
- Support technology development and transfer in all relevant sectors, including the energy, transport, industry, agriculture, forestry and waste management sectors; and
- Operate under the authority and guidance of and be fully accountable to the Conference of Parties.

Institutional arrangements

4. There is need for a more effective, operational and implementation-oriented body to speed up the development and transfer of technologies to implement the Convention and meet the climate challenge.² A more effective technology architecture could include the following **Institutional Arrangements**:

- **Subsidiary Body on Technology:** A subsidiary body paralleling the SBSTA and SBI could be established to assist the Conference of the Parties in the assessment and review of efforts under the Convention for the

development, application, transfer and diffusion of technologies, practices and processes to support action on mitigation and adaptation. This body would involve participation by all Parties and comprise government representatives who are experts on matters related to technology transfer and climate change. The Subsidiary Body could be supported by an executive committee of government representatives elected to provide strategic guidance on an on-going basis.

- **Technical Assessment Committee:** A committee of technical experts, building on the experience of the Technology and Economic Assessment Panel of the Montreal Protocol, could be established to provide regular expert guidance on matters relating to the Convention's actions on technology development and transfer, and to synthesize information provided by Technical Panels (below) and provide regular assessment of technology-related matters to Parties.
- **Technical Panels:** A set of technical panels could be established to support the Technical Assessment Committee, building on the Montreal Protocol's experience of Technical Options Committees. These focused panels of experts could operate on a sectoral and cross-sectoral basis. Sectoral panels could address issues relating to technology development and transfer in relevant sectors such as those identified in Article 4.1(c). Cross-sectoral panels could address "cross-cutting" issues such as: technology needs assessments and information; intellectual property cooperation; enabling policies and measures; economic and financial issues; capacity building; and monitoring and assessment.
- **Technology Fund:** A new technology fund would be established as part of the enhanced financial mechanism within the Convention (see TWN submission on a Multilateral Financial Structure for Climate Change under the UNFCCC). The sources and uses of funds will be guided by the above institutions (subsidiary body, planning committee, technical panels) and by a Technology Plan of Action. (Details of this Fund and Plan of Action are in separate sections below).

5. The work of the current Expert Group on Technology Transfer would be assumed by these bodies to ensure the institutional capacity required to significantly enhance efforts on technology development and transfer, while building on the significant accomplishments of the EGTT.

6. The **Functions** of these institutional arrangements could include: providing advice, guidance, and recommendations to Parties; coordinating actions by different international stakeholders and governments; promoting communication and sharing of information and knowledge; monitoring and assessing the progresses in ensuring the full implementation of the Convention's provisions relating to technology development and transfer; and guiding and supervising utilization of the Convention's technology fund based on public finance.³

A Technology Fund: Financing technology development and transfer

7. The technology architecture would complement and support an enhanced financial mechanism for the Convention, operating under the authority and governance of the COP. Specifically, it would guide and supervise the utilization of technology-related funding applied through a new **Technology Fund** established within the Convention's enhanced financial mechanism, and linked to the technology architecture that is proposed here.

8. The fund, based on public finance from developed countries, would be established and used to support the development and transfer of technologies.⁴ Together with the associated institutional arrangements, it would ensure that a significant amount of public finance from developed countries plays a leading role in guiding and attracting private financial resources into the development, diffusion and transfer of technologies, including by supporting incentives to the private sector through various policy instruments with impacts on capital market.⁵ Among other things:

- The fund would operate as a single window facility within the UNFCCC financial mechanism and would support research, development, deployment and transfer of technologies as well as the enhancement of developing countries' endogenous capacity.
- The policies relating to the Fund, including the uses to which the funds are put, will be guided by the technology architecture (i.e. the Subsidiary Body on Technology, the Technical Assessment Committee and the Technical Panels, and by the Technology Plan of Action.

- Funding for technology (as well as for other central functions of the financial mechanism such as supporting adaptation) will be “new and additional” financial resources over and above ODA.⁶ The major source of funds will be derived from the public sector, which may be supported with market-based and private sources as agreed by the COP.⁷
- An indicative list of incremental costs could be agreed up-front by Parties. Drawing on the experience of the Montreal Protocol’s Multilateral Fund, these could include institutional strengthening, networks for knowledge sharing, preparation of country programs, awareness and training of officials, support for policymaking, etc.
- The funding needs of the mechanism could be evaluated independently. Parties could agree to regular replenishments of the mechanism to ensure the adequacy and predictability in the flow of funds for technology transfer and an appropriate burden sharing among the developed countries.

Technology Plan of Action: Supporting all stages of technology cycle

9. Realizing the full potential of technology will require mechanisms across all the stages of the technology cycle. This involves retrofitting old facilities, deploying existing climate-friendly technologies, incentivising emerging technologies and financing research into new technologies.⁸ Technology transfer has been a part of the UNFCCC process from the outset, but the actual achievements are limited.⁹

10. Technology transfer is now one of the pillars of the Bali Action Plan, and measurable, reportable and verifiable technology transfer is, *inter alia*, a precondition to enabling and supporting nationally appropriate mitigation actions in developing countries. Efforts are therefore required to accelerate the process of technology development, transfer and deployment for enabling adaptation and mitigation.

11. Achieving this requires a **Technology Plan of Action** to support developing countries at all stages of the technology cycle as required by Article 4.1(c) of the Convention.¹⁰

- **Research.** Efforts are required to accelerate research and invention through scientific and technical cooperation at the level of scientists and institutions, including through South-South collaboration. An action plan should include efforts to establish a **Global Network of Centers of Excellence** in research, development and pilot testing of identified climate-relevant technologies through public-private partnerships. Efforts are also required to strengthen research in the public domain, including through open platforms for collaboration and sharing. Enhancing the research capabilities of developing countries is a key element of enhancing their endogenous capacity to adapt, apply and replicate technologies.
- **Development.** Efforts are also required to accelerate the rate at which technologies are developed and brought into effect, through means such as **Initiatives for Joint Development of Technologies** with sharing of intellectual property rights. Consortia involving the public and private sector, including financing structures with cost sharing, could ensure that new technologies are made available to developing countries at affordable prices. A **Technology Cooperation Framework** should encourage joint public sector funding of research and development, and the products that emerge should not have patents attached, but instead all firms or agencies should have access to the technologies and rights to make the technologies so that they can be most widely deployed.
- **Transfer and diffusion.** Technology transfer is a specific responsibility of Parties under the Convention and is thus distinct from purely market-based transfer arrangements. Global financing is thus required for technology transfer, including for the public procurement of intellectual property rights and other means to ensure the affordability of technologies, products and related services. As noted below, ensuring transfer and diffusion on fair and favorable terms will require a range of conditions to be met, and barriers to be removed.

12. To support implementation of the Convention, the Technology Action Plan should encompass all the key elements of the technology transfer issue – the identification of technology needs, identification of technologies, technology assessment, financing of transfer, capacity building for development of endogenous technology, and concrete programmes for diffusion and use, and institutions to be responsible for implementation.¹¹ It must also address the financial requirements and barriers to scaling up technology development and transfers as well as the various financing options, the capacity required by developing countries to transfer and deploy technologies, and the means to reduce financial, technical and other risks.¹²

Enhancing access and affordability of technologies

13. As noted in the recent G5 declaration at the 2008 G8 Hokkaido Toyako Summit:

Affordable access to adaptation and mitigation technologies, achieved through a suite of funding mechanisms, investment structures and policy tools, is a key enabling condition for developing countries to tackle climate change. We call on the international community to work towards a strengthened scheme for technology innovation, development, transfer and deployment, and a comprehensive review of the intellectual property regime for such technologies in order to strike an appropriate balance between rewards for innovators and the public good.¹³

14. For technology to be accessible and affordable several conditions have to be present. The absence of these conditions can form barriers to technology transfer. Among the barriers that are normally listed are poor infrastructure, inadequate laws and regulations, shortage of skilled personnel, lack of finance, ignorance of technology issues, high cost of certain technology agreements, problems created by equipment suppliers, and intellectual property rights. Many of these can be dealt with through capacity building of developing countries and their institutions, and through financing cooperation. However other issues, for example intellectual property rights, require international cooperation and joint measures and actions.

15. A range of measures are available to Parties to improve the accessibility and affordability of climate-related technologies.¹⁴ These can be classified according to the type of technologies, including: (1) Existing Technologies in the public domain; (2) Patented Technologies (publicly and privately owned); and (3) New or Future Technologies:

- **Public domain technologies.** For technologies in the public domain the action should be on identifying needs and technologies, and establishing an international cooperation system to ensure that the cheapest prices are offered to developing countries (a system of differential pricing) and the financial terms to transfer the equipment to developing countries. Also required is a system of transferring the know-how of (1) how to use and maintain the technologies; (2) how to adapt them to local conditions. For developing countries that have the capacity or ambition, there should be the transfer of know-how on how to produce these technologies and not simply import the equipment.
- **Patented technologies.** Patented technologies may be owned in the public or the private sector. Many technologies are owned by public research institutions, agencies and other governmental bodies. As acknowledged in a presentation by the government of the United States, there is a need for a "global effort to share government-developed and owned technologies at low or no cost".¹⁵ The sharing should also include the know-how. Fully-owned government technologies should be transferred at no cost. Where governments partially fund research and development, they should have partial ownership of any resulting patent. When a license is issued to a developing country firm, a corresponding proportion of the cost of the license should be waived, thus reducing the overall cost to developing countries.¹⁶ Incentives can also be given to companies (that are publicly funded) to make the patented technology with its know-how available to developing countries. To support no- and low-cost transfer, developed country governments should compile a **Publicly-Owned Technology Inventory**.
- For privately owned technologies, various mechanisms can be examined to make them more accessible and affordable for developing countries. A range of measures relating to compulsory licensing and low-cost voluntary licensing as well as technology pooling and the sharing of know how can be examined. (See section below). The Technology Fund could support the financing of compensation to be paid by developing countries into a technology pool, and also the meet the cost of negotiation and purchasing of licenses at a very reasonable cost with a view to facilitating transfer. As discussed below, complementing the fund is a range of other ways to reduce the costs associated with intellectual property rights, in order to ensure they are not a barrier to transfer, and to strike an appropriate balance between rewards for innovators and the public good. Both developed and developing countries can also consider incentives to stimulate technology transfer within companies, with a view to strengthening capacity in subsidiary companies located in developing countries.
- **Future technologies.** National/regional technology excellence centers should be established to promote technology development, deployment and transfer, stimulate capacity building, improve access to information and establish an appropriate international cooperation environment. Also required are efforts to reinforce north-

south, south-south and triangular cooperation, including Joint Research and Development. As part of future international cooperation, some research and development programmes should be jointly planned and coordinated by governments (developed and developing). If certain products are wholly publicly funded, they could be placed in the public domain, or else made available through affordable licenses. This will make the future technologies more accessible and affordable, especially to developing countries.

Measures relating to intellectual property and climate technologies

16. For climate related technologies, whether intellectual property rights constitute an important barrier depends on several factors, such as whether or not the particular technology is or will be patented, whether there are viable and cost-effective substitutes or alternatives, the degree of competition, the prices at which it is sold, and the degree of reasonableness of terms for licensing, and so on. To the extent they are identified as an important barrier to technology transfer, there is a variety of ways to relax intellectual property rights in relation to climate friendly products and technologies. These include:

- **A mandatory exclusion from patents world-wide** of climate friendly technologies and products. Because most of the technologies required to address climate change already exist, and climate change represents a grave and potentially irreversible threat to human societies, the international community could consider requiring all climate friendly technologies to be free of intellectual property rights to ensure their widest availability. Just as intellectual property rights are relaxed in wartime, the threat of climate change could justify a systemic relaxation of intellectual property rights to strike an appropriate balance between the private interests and the global public good.
- **A mandatory exclusion from patents in developing countries**, while patents can still be granted in developed countries. Both this and the world-wide exclusion would require an amendment of TRIPS Agreement. It is, however, a justifiable demand if climate change is considered a serious challenge. Developed countries cannot justify business as usual in the old system while also demanding a radical departure by developing countries from business as usual in their emissions pathways.
- **Discretionary exclusions from patents in developing countries.** The TRIPS Agreement permits individual countries to “exclude from patentability inventions, the prevention within their territory of the commercial exploitation of which is necessary to protect *ordre public* or morality, including to protect human, animal or plant life or health or to avoid serious prejudice to the environment”.
- **Technology pooling through a collective global approach.** In situations where patents are granted, a collective or global approach could enhance access and affordability. A global technology pool, for example, could be developed in which patent owners of climate friendly technologies are obliged to place their patents in a pool, and developing country firms can have access to the technologies by paying a compensation that is low and on standard terms (that are to be negotiated). This will make it administratively and financially easier for access to take place, while the patent system continues to be respected, while ensuring the system is regulated, and the flexibilities in the TRIPS Agreement (including compulsory license) are systematized in terms of operation.
- **Compulsory licensing in individual developing countries.** The WTO TRIPS Agreement provides countries with significant flexibilities to grant compulsory licenses. These grounds are not restricted, as confirmed by the WTO Ministerial Declaration on TRIPS and Public Health (Doha 2001). It is not necessary to declare a state of emergency, for example. Developed countries regularly exercise compulsory license – or in the case of the United States, powers of “*eminent domain*” – to use patented technologies. Developing countries, similarly, can and should grant compulsory licenses over technologies required to meet their climate objectives.
- **International Declaration on IPRs and Climate Technologies.** It is also useful to establish such a Declaration in order to clarify the ability of countries (especially developing countries) to have maximum affordable access to climate technologies, and that IPRs should not be a barrier, making use of the WTO Doha Declaration on TRIPS and Public Health as an example. The need to modify TRIPS for specific purposes (as in the case of pharmaceutical and health related products) should also be looked into.
- **Regulation of terms of voluntary licenses.** Another measure could be the regulation of the terms of voluntary licenses to ensure that the cost is affordable, and that there are no anti-competitive conditions (such a high

price of licenses, restrictions on markets, or insistence on taking a majority share of the company to which license is provided, which have all happened in recent cases, etc).

- **Sharing of know-how and trade secrets.** Parties may also consider a global cooperation system for sharing know-how and "trade secrets", which is also important as the lack of this is another serious barrier to technology transfer. This should be a component of a technology transfer framework. Even if a technology is not patented, the withholding of "trade secrets", or how to make the technology, can prevent the development of endogenous technology in developing countries.

17. The level of ambition for sustainable development could be raised by proposing that environmentally-friendly technology should be held in the public domain (so that the process of compulsory licensing etc is not even required). There is a strong rationale for this, at least for climate-friendly technology and products:

- The processes of negotiating with the patent holder and of issuing compulsory licenses can be quite cumbersome to countries not familiar with the procedures. In light of the imminent challenges posed by climate change, it is thus better that developing countries be allowed to exempt such technologies from patenting.
- If climate change is truly the serious crisis threatening human well-being, and there is only a few years left to start very strong action, then the situation is similar to emergency war-like conditions. In such conditions, individual commercial interests such as patents are suspended so that there can be concerted national action in the most effective way to face the common threat.
- Developed countries should not treat intellectual property rights as sacrosanct and to be upheld at all costs. Doing so would signal that climate change is not a serious threat, as commercial profits for a few are more important on the scale of values and priorities than are the human lives that are at stake due to global warming. Technology transfer to developing countries to enable them to combat climate change should be the higher priority.
- Developed countries should also not treat climate technology as a new source of monopoly profits, as this would damage the ability of developing countries to phase in existing or new climate-friendly technologies for both mitigation and adaptation.

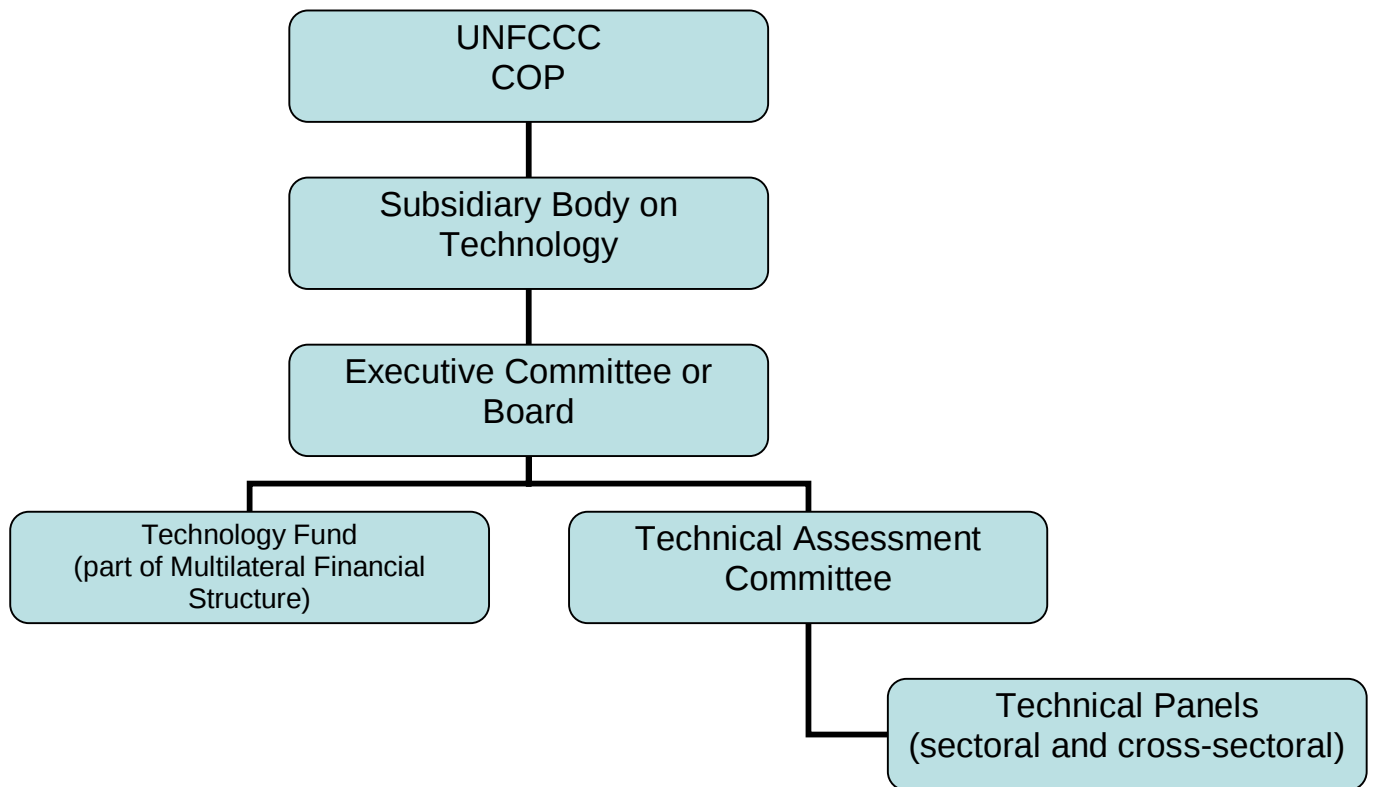
18. In light of these factors, the post-Bali process should adopt the principle that developing countries can exempt climate-friendly technologies from patents. Such a principle would demonstrate that developed countries are serious about resolving the global climate crisis and about assisting developing countries. It would also help developing countries to take on mitigation and adaptation measures, which are dependent on the technologies.

Enabling action at the national level

19. Governments play a variety of important and different roles in the whole cycle of environmentally sound technologies – including the provision of incentives to the private sector and markets; direct public funding for research, development, transfer and deployment; as well as a variety of other policy instruments.¹⁷

20. A range of measures are available to coordinate policies and provide incentives to the private sector to transfer technologies. These include:¹⁸

- Tax exemptions for the export of technologies by companies in developed countries to developing countries;
- Subsidies to encourage research and development of technologies appropriate to the needs and challenges of developing countries and transfer of those technologies;
- Favorable conditions for technology-related export credits, such as guarantees for technology export credits, subsidies, and so on;
- Removal of technology export bans in climate related technologies and products; and
- Other regulations, policies and measures required to implement the Convention.



ENDNOTES

¹ Any architecture for technology transfer could have a set of Principles, a Global Strategy and Plan of Action. This was the move made at the World Health Assembly following the conclusion of the Commission on Public Health, IP and Innovation. The WHA has just adopted this Strategy and Plan of Action. Developing countries were the active proponents of this arrangement.

² China, "China's Proposal on Innovative Mechanism for Development and Transfer of Technologies", 3 June 2008, Workshop on Technology Transfer during UNFCCC Climate Change Talks, AWG-LCA, Bonn, Germany (China's Technology Presentation)

³ China's Technology Presentation

⁴ China's Technology Presentation

⁵ China's Technology Presentation

⁶ Statement of the Group of 77 and China, AWG-LCA 2nd Session, Bonn, Germany, 7 June 2008

⁷ Statement of the Group of 77 and China, AWG-LCA 2nd Session, Bonn, Germany, 7 June 2008

⁸ South Africa, "Effective mechanisms and enhanced means: Scaling up development and transfer of technology", 3 June 2008, Workshop on Technology Transfer during UNFCCC Climate Change Talks, AWG-LCA, Bonn, Germany (South Africa's Technology Presentation)

⁹ India, "Realizing the Full Potential of Technology: Presentation by India", 3 June 2008, Workshop on Technology Transfer during UNFCCC Climate Change Talks, AWG-LCA, Bonn, Germany (India's Technology Presentation)

¹⁰ As noted above, the World Health Assembly has recently adopted a Strategy and Plan of Action as part of the follow up to the Commission on Public Health, IP and Innovation. Developing countries played the leading role in shaping the strategy, plan and a related set of principles.

¹¹ According to the IPCC, technology transfer is abroad set of processes covering the flow of know-how, experiences and equipment for mitigating and adapting to climate change involving different stakeholders including government, the private sector, financial institutions, NGOs, and research and education institutions. It comprises the process of learning to understand, utilize and replicate technologies including the capacity to choose and to adapt technologies to local conditions and integrate it into indigenous technologies. See, IPCC, Special Report of Working Group II, Methodological and Technological Issues in Technology Transfer (IPCC, 2000), at page 3

¹² South Africa's Technology Presentation

¹³ G5 Statement issued by Brazil, China, India, Mexico and South Africa at the 2008 Hokkaido Toyako Summit, July 8, 2008, at paragraph 19

¹⁴ Brazil, "Brazilian Views on Technology Transfer", 3 June 2008, Workshop on Technology Transfer during UNFCCC Climate Change Talks, AWG-LCA, Bonn, Germany (Brazil's Technology Presentation)

¹⁵ US Government, White House Power-point Presentation describing goals of Major Economies Meeting (on file with author). For a summary of home country measures relevant to securing technology transfer see also, UNCTAD, *Facilitating Transfer of Technology to Developing Countries: A Survey of Home-Country Measures* (UNCTAD/ITE/IPC/2004/5) available at http://www.unctad.org/en/docs/iteipc20045_en.pdf

¹⁶ Parties could, for instance, agree on a "Principle of No-Cost and Proportional Cost Transfers" for all technologies that are fully or partially government owned or funded.

¹⁷ China's Technology Presentation

¹⁸ China's Technology Presentation